Carlsbad Field Office
OCD Artesia

Form 3160-3
(June 2015)

FEB 12 2019

DISTRICT II-ARTESIA O.C.D.

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM117119

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☑ Multiple Zone

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

8. Lease Name and Well No.
MOMBA FEDERAL COM
801H
324974

2. Name of Operator
COG OPERATING LLC
229137

9. API Well No.
30-015-45721

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
600 West Illinois Ave Midland TX 79701	(432)683-7443	PURPLE SAGE / WOLFCAMP GAS

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NENE / 210 FNL / 330 FEL / LAT 32.049318 / LONG -104.033202
At proposed prod. zone SESE / 200 FSL / 330 FEL / LAT 32.021513 / LONG -104.033235

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 13 / T26S / R28E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
11 miles	EDDY	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
200 feet	1440	640

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
538 feet	10749 feet / 20658 feet	FED: NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
2935 feet	01/01/2019	30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
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 requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Mayte Reyes / Ph: (575)748-6945	09/05/2018

Title
Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	01/31/2019

Title	Office
Assistant Field Manager Lands & Minerals	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.

APPROVED WITH CONDITIONS

Approval Date: 01/30/2019

RW 2-14-19

(Continued on page 2)

*(Instructions on page 2)

INSTRUCTIONS

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

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

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

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

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

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

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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

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Additional Operator Remarks

Location of Well

1. SHL: NENE / 210 FNL / 330 FEL / TWSP: 26S / RANGE: 28E / SECTION: 13 / LAT: 32.049318 / LONG: -104.033202 (TVD: 0 feet, MD: 0 feet)
   PPP: NESE / 2640 FSL / 330 FEL / TWSP: 26S / RANGE: 28E / SECTION: 13 / LAT: 32.028161 / LONG: -104.033227 (TVD: 10749 feet, MD: 12900 feet)
   PPP: NENE / 330 FNL / 330 FEL / TWSP: 26S / RANGE: 28E / SECTION: 13 / LAT: 32.048988 / LONG: -104.033203 (TVD: 10726 feet, MD: 10875 feet)
   BHL: SESE / 200 FSL / 330 FEL / TWSP: 26S / RANGE: 28E / SECTION: 24 / LAT: 32.021513 / LONG: -104.033235 (TVD: 10749 feet, MD: 20658 feet)

BLM Point of Contact

Name: Katrina Ponder

Title: Geologist

Phone: 5752345969

Email: kponder@blm.gov

Review and Appeal Rights

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

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM117119
WELL NAME & NO.:	Momba Federal Com 801H
SURFACE HOLE FOOTAGE:	210'/N & 330'/E
BOTTOM HOLE FOOTAGE	200'/S & 330'/E
LOCATION:	Section 13, T.26 S., R.28 E., NMPM
COUNTY:	Eddy County, New Mexico

Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	◉ Conventional	○ Multibowl	
Other	☐4 String Area	☐Capitan Reef	☐WIPP

A. HYDROGEN SULFIDE

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13 3/8** inch surface casing shall be set at approximately **525** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

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

    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

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

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

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

   - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

   ❖ In **Medium Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface

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

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

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

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

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8** inch intermediate casing shoe shall be **5000 (5M)** psi.

D. SPECIAL REQUIREMENT(S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

MHH 01292019

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

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

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

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

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the

plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM117119
WELL NAME & NO.:	Momba Federal Com 801H
SURFACE HOLE FOOTAGE:	210'/N & 330'/E
BOTTOM HOLE FOOTAGE	200'/S & 330'/E
LOCATION:	Section 13, T.26 S., R.28 E., NMPM
COUNTY:	Eddy County, New Mexico

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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)

Texas Hornshell Zone D

The oil and gas Participant shall comply with SPCC requirements in accordance with 40 CFR Part 112.

Cave/Karst Surface Mitigation

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

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

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

Pad Berming:

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

Tank Battery Liners and Berms:
Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing, or equivalent, to prevent tears or

punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

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

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

Cave/Karst Subsurface Mitigation

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

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

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

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.
Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

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

Pressure Testing:
The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Hydrology:

The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Electric Lines: Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion.

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

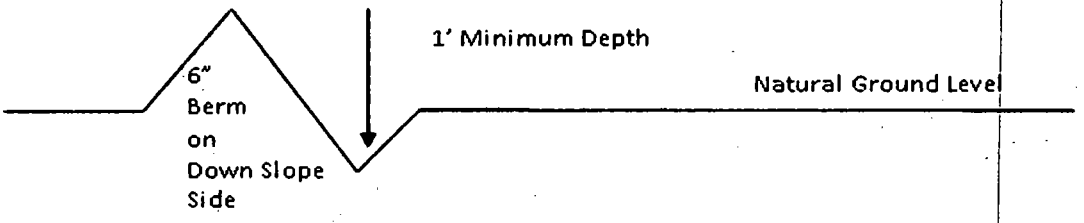
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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:

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

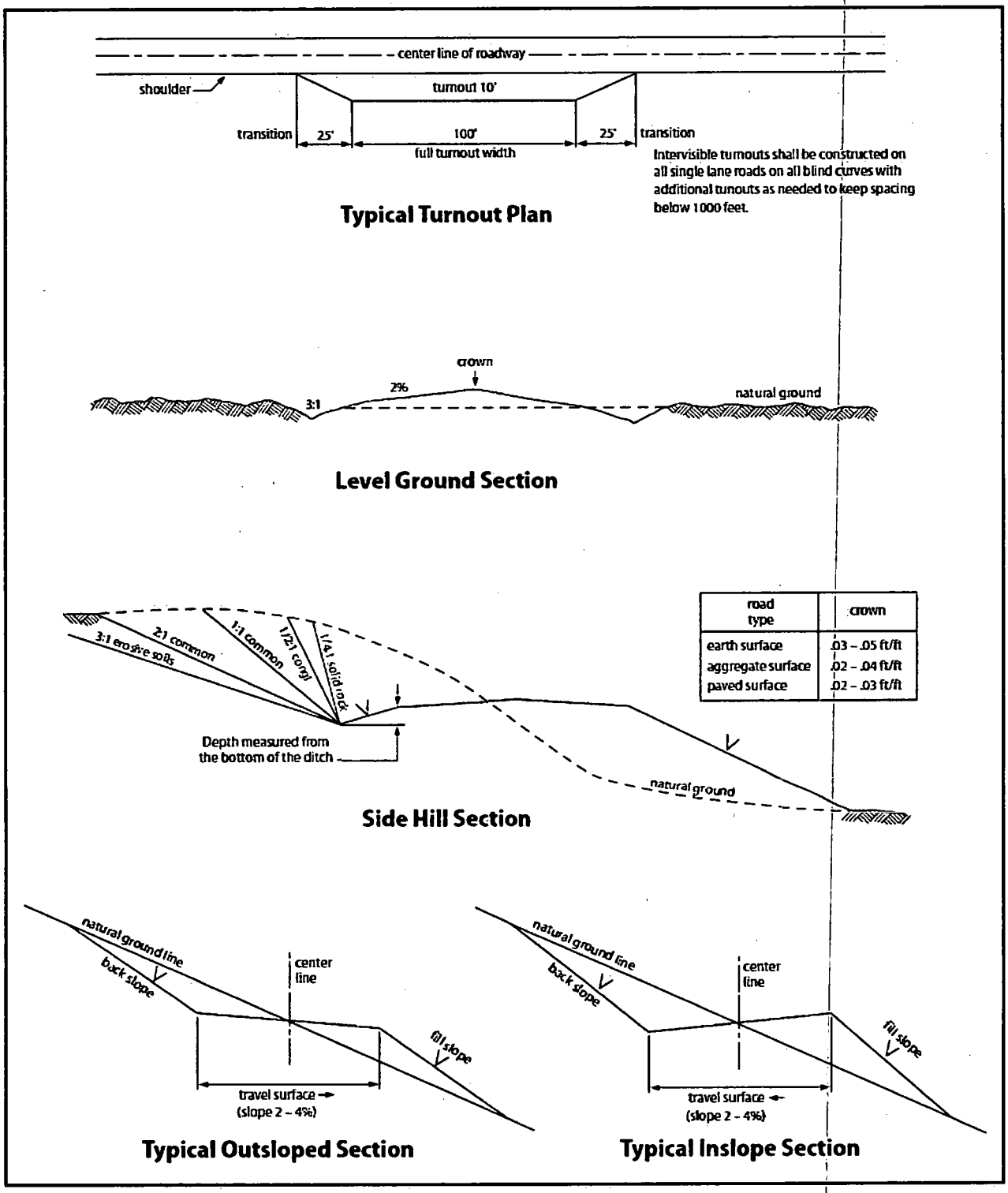


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VI. 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.

VRM Facility Requirement
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).

VII. 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).

VIII. 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).

(Insert Seed Mixture Here)

AFMSS

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

Operator Certification Data Report

02/05/2019

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: Mayte Reyes **Signed on:** 08/31/2018

Title: Regulatory Analyst

Street Address: 2208 W Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-6945

Email address: Mreyes1@concho.com

Field Representative

Representative Name: Gerald Herrera

Street Address: 2208 West Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-6940

Email address: gherrera@concho.com

APD ID: 10400033681 **Submission Date:** 09/05/2018

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400033681 **Tie to previous NOS?** **Submission Date:** 09/05/2018

BLM Office: CARLSBAD **User:** Mayte Reyes **Title:** Regulatory Analyst

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

Lease number: NMNM117119 **Lease Acres:** 1440

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

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

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

Operator letter of designation:

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: MOMBA FEDERAL COM **Well Number:** 801H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** PURPLE SAGE **Pool Name:** WOLFCAMP GAS

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

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

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:**

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 11 Miles **Distance to nearest well:** 538 FT **Distance to lease line:** 200 FT

Reservoir well spacing assigned acres Measurement: 640 Acres

Well plat: COG_Momba_801H_C102_20181205072140.pdf

Well work start Date: 01/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number:

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	210	FNL	330	FEL	26S	28E	13	Aliquot NENE	32.049318	-104.033202	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 117119	2935	0	0
KOP Leg #1	210	FNL	330	FEL	26S	28E	13	Aliquot NENE	32.049318	-104.033202	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 117119	2935	0	0
PPP Leg #1	330	FNL	330	FEL	26S	28E	13	Aliquot NENE	32.048988	-104.033203	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 117119	-7791	10875	10726

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	2640	FSL	330	FEL	26S	28E	13	Aliquot NESE	32.028161	-104.033227	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 012559	-7814	12900	10749
EXIT Leg #1	330	FSL	330	FEL	26S	28E	24	Aliquot SESE	32.021871	-104.033234	EDDY	NEW MEXICO	NEW MEXICO	F	FEE	-7815	20450	10750
BHL Leg #1	200	FSL	330	FEL	26S	28E	24	Aliquot SESE	32.021513	-104.033235	EDDY	NEW MEXICO	NEW MEXICO	F	FEE	-7814	20658	10749

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

[redacted] **Rating Depth:** 10174

Equipment: Annular. Accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
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.

Choke Diagram Attachment:

COG_Momba_801H_3M_Choke_20190115154646.pdf

BOP Diagram Attachment:

COG_Momba_801H_3M_BOP_20190115154658.pdf

COG_Momba_801H_Flex_Hose_20190115154714.pdf

[redacted] **Rating Depth:** 10749

Equipment: Annular, Blind Ram, Pipe Ram. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
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.

Choke Diagram Attachment:

COG_Momba_801H_5M_Choke_20180831091015.pdf

BOP Diagram Attachment:

COG_Momba_801H_5M_BOP_20180831091037.pdf

COG_Momba_801H_Flex_Hose_20190115154830.pdf

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	525	0	525	-6999	-7974	525	J-55	54.5	STC	4.7	0.73	DRY	29.81	DRY	29.81
2	INTERMEDIATE	12.25	9.625	NEW	API	Y	0	10174	0	10174	-6999	-18749	10174	HCL-80	47	OTHER - BTC	1.21	1.43	DRY	3.74	DRY	3.74
3	PRODUCTION	8.5	5.5	NEW	API	N	0	20658	0	20658	-6999	-24211	20658	P-110	23	OTHER - BTC	2.47	2.64	DRY	2.95	DRY	2.95

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Momba_801H_Casing_Prog_20190115154848.pdf

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Momba_801H_Casing_Prog_20190115154904.pdf

Casing Design Assumptions and Worksheet(s):

COG_Momba_801H_Casing_Prog_20190115154914.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Momba_801H_Casing_Prog_20190115154924.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	525	130	1.75	13.5	227	50	Class C	4% Gel + 1% CaCl2
SURFACE	Tail		0	525	250	1.34		335	50		
INTERMEDIATE	Lead		0	10174	750	2	12.7	1500	50	Lead: 35:65:6 C Blend	As needed
INTERMEDIATE	Tail		0	10174	250	1.34		335	50		
PRODUCTION	Lead		0	20658	1560	2.5	11.9	3900	30	50:50:10 H Blend	As needed

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		0	20658	2760	1.24	14.4	3422	30	50/50/2 Class H Cement	As needed

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

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
525	10174	OTHER : Brine Diesel Emulsion	8.4	9							Brine Diesel Emulsion
0	525	OTHER : FW Gel	8.6	8.8							FW Gel
10174	20658	OIL-BASED MUD	9.6	10.5							OBM

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

Section 6 - Test, Logging, Coring

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

None planned

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

CNL,GR

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5870

[redacted]

Anticipated Bottom Hole Temperature(F): 165

Anticipated abnormal pressures, 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:

COG_Momba_801H_H2S_Plan_20180831092330.pdf

COG_Momba_801H_H2S_Schem_20180831092337.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Momba_801H_Direct_Plan_20180831092359.pdf

COG_Momba_801H_AC_Rpt_20180831092432.pdf

Other proposed operations facets description:

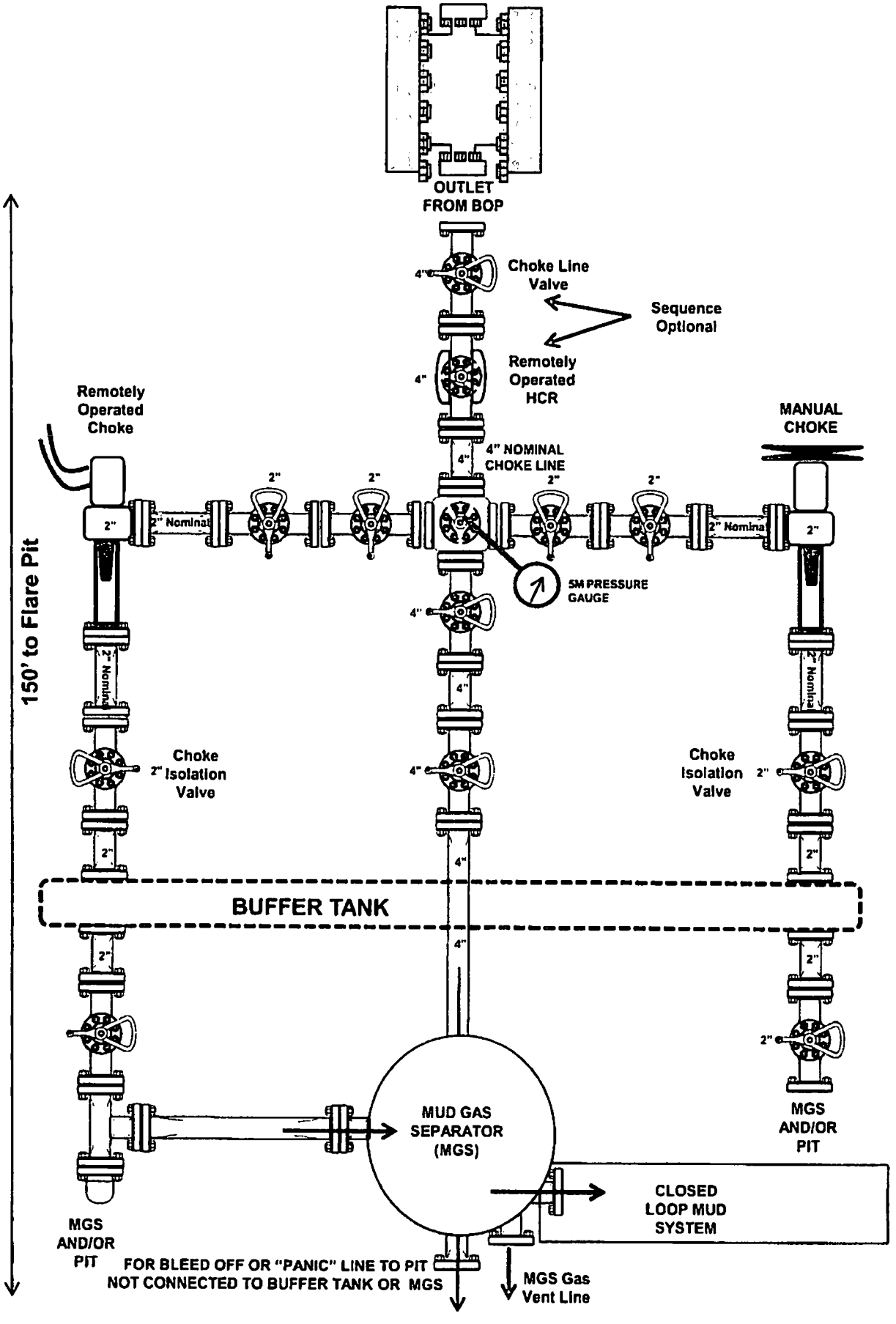
Other proposed operations facets attachment:

COG_Momba_801H_GCP_20180831092458.pdf

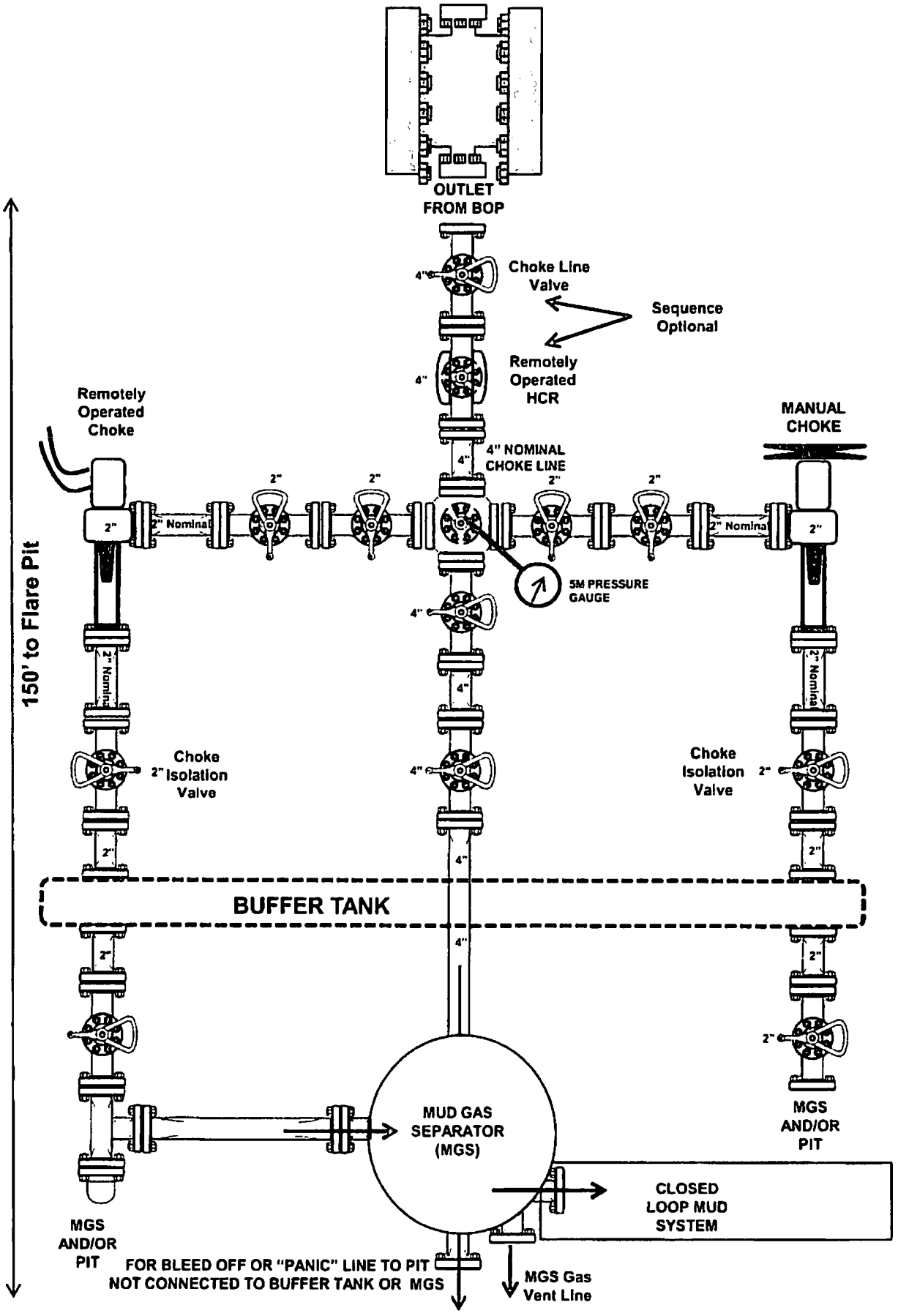
COG_Momba_801H_Drill_Prog_20190115160719.pdf

Other Variance attachment:

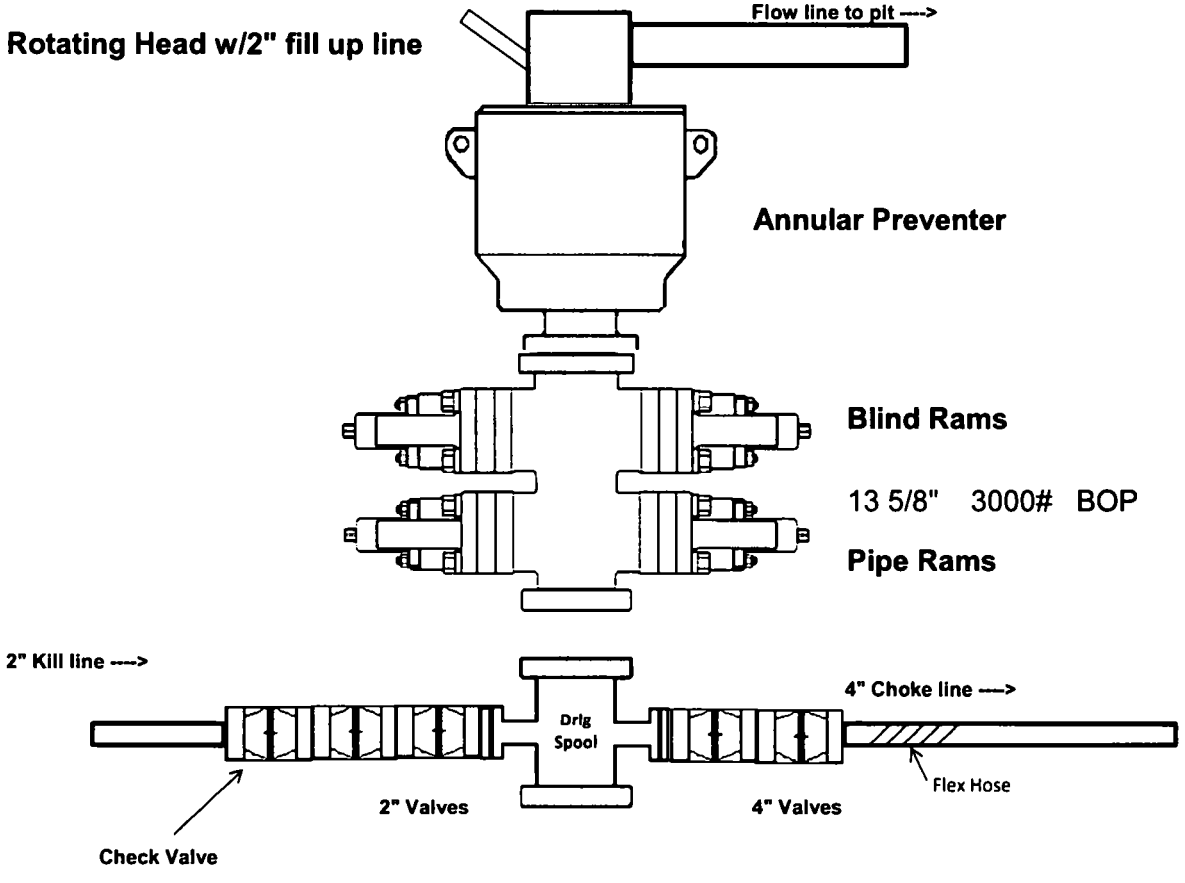
3M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



3,000 psi BOP Schematic



INDEPENDENCE CONTRACT DRILLING
11601 N. GALAYDA STREET
HOUSTON, TX. 77086

PURCHASE ORDER NO.: PO00116446

DATE: February 23, 2018

COPPER STATE RUBBER/SPECIALTIES COMPANY
FILE: CSR / SPECO- 81069

TAB 1

I. CERTIFICATE OF REGISTRATION ISO 9001:2015
APIQR REGISTRATION NO.: 3042
II. API CERTIFICATE OF ACCREDITATION FOR Q1
AND SPEC. 16C CERTIFICATE NO.:16C-0383

COPPER STATE RUBBER CHOKE / KILL HOSE, API SPEC. 16C MONOGRAMMED, FSL 3, TEMP RANGE B/P, 10,000 PSI WP, 15,000 PSI TEST, FIRE RESISTANT, WITH BUTTWELD 4-1/16'' 10K API FLANGE WITH S.S. LINED BX-155 RING GROOVE EACH END. H2S SUITED.
1 EA. 3'' ID X 75 FT.
S/N- 33851

TAB 2

I. CSR CERTIFICATE OF COMPLIANCE
II. COMPLETE ASSEMBLIES VISUAL INSPECTION/HYDROSTATIC TEST REPORTS
III. PRESSURE GAUGE CALIBRATION CERTIFICATE, S/N.: 111291-2
IV. CHART RECORDER CALIBRATION CERTIFICATE, S/N.: 07459

TAB 3

I. METAL COMPONENT REPORTS
   A. INSERTS:
      1. BRENDELL 14C1, ENCORE METALS HT-418595
   B. 4-1/16" 10K API MAWP 6A FLANGE
      1. MACHINE SPECIALTY & MFG. HT-V4760

TAB 4

I. WELDING PROCEDURES AND QUALIFICATION RECORDS
   A. COPPER STATE RUBBER WPS/PQR NOS.: 911171-1 AND 911171-2, REV. 5 FOR INSERTS TO TERMINATING CONNECTOR WELDMENTS

TAB 5

I. NDE REPORTS FOR END FITTINGS TO INSERT WELDMENTS
   A. STRESS RELIEVING
      1. **REPUBLIC HEAT TREAT**
         CERT. ID NO.: 38120-1
         P.O. NO.: 7494
   B. RADIOGRAPHIC INSPECTION
      1. **RADIOGRAPHIC SPECIALISTS**
         P.O. NO.: 7815

TAB 6

I. FIELD TEST PROCEDURES FOR USED COPPER STATE RUBBER ROTARY AND VIBRATOR HOSE ASSEMBLIES
II. COPPER STATE RUBBER 12 MONTH WARRANTY TERMS AND CONDITION

QMS REGISTERED

Certificate of Registration

APIQR® REGISTRATION NUMBER
3042

This certifies that the quality management system of

COPPER STATE RUBBER, INC.
750 S. 59th Avenue
Phoenix, AZ

has been assessed by the American Petroleum Institute Quality Registrar (APIQR®) and found it to be in conformance with the following standard:

ISO 9001:2015

The scope of this registration and the approved quality management system applies to the

Design and Manufacture of Oilfield, Marine and Other Industrial Hoses

APIQR® approves the organization's justification for excluding:

No Exclusions Identified as Applicable

Effective Date:	**MARCH 28, 2017**
Expiration Date:	**APRIL 21, 2019**
Registered Since:	**APRIL 21, 2016**

Vice President, API Global Industry Services

Accredited by Member of the International Accreditation Forum Multilateral Recognition Arrangement for Quality Management Systems

ANAB IAF

This certificate is valid for the period specified herein. The registered organization must continually meet all requirements of APIQR's Registration Program and the requirements of the Registration Agreement. Registration is maintained and regularly monitored through annual full system audits. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001 standard requirements may be obtained by consulting the registered organization. This certificate has been issued from APIQR offices located at 1220 L Street, N.W., Washington, D.C. 20005-4070, U.S.A., it is the property of APIQR and must be returned upon request. To verify the authenticity of this certificate, go to www.api.org/compositelist.

QUALITY REGISTRAR

Certificate of Authority to use the Official API Monogram

License Number: 16C-0383

ORIGINAL

American Petroleum Institute

The American Petroleum Institute hereby grants to

COPPER STATE RUBBER, INC.
750 S. 59th Avenue
Phoenix, AZ

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-16C** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **16C-0383**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Flexible Choke and Kill Lines atFSL 0, FSL 1, FSL 2, FSL 3

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: MARCH 28, 2017
Expiration Date: APRIL 21, 2019

2015-313

To verify the authenticity of this license, go to www.api.org/compositelist.

Vice President, API Global Industry Services

copper state rubber
CSR
Specialties Company

14141 S. Wayside Drive
Houston, Texas 77048

Phone 713-644-1491
Fax 713-644-9830
www.copperstaterubber.com
sales@copperstaterubber.com

February 23, 2018

Independence Contracting Drilling
11601 N. Galayda St.
Houston, Texas 77086

Subject: Purchase Order No.: PO00116446
Date: February 23, 2018
Specialties Company File No.: CSR / SPECO-81069

Equipment: Copper State Rubber Choke/Kill Hose Assembly, 10KSI MAWP X 15KSI T/P, API 16C FSL3, Fire Resistant Cover, Complete 4-1/16" 10KSI MAWP Flange With BX155 SS Lined Ring Groove Each End. H2S Suited.
1EA: 3" ID X 75Ft. S/N-33851

CERTIFICATE OF COMPLIANCE

This is to certify the above referenced equipment meets or exceeds the following requirements and were manufactured from same material specification and manufacturing methods as prototype assemblies for referenced specifications.

I. COMPLETE HOSE ASSEMBLY
- A. API Certificate of Accreditation for Spec: Q1 (Quality Programs) and Spec.: 16C
  1. Copper State Rubber, Inc. Certificate No.: 16C-0383
- B. **CSR** Specification No.: 090-1915C

II. PHYSICAL/CHEMICAL PROPERTIES OF METAL COMPONENTS
- A. **API** Spec. 6A, latest edition
- B. **API** Spec. 16A, latest edition
- C. **NACE** Standard MR0175, latest edition

III. WELDMENTS/NDE REQUIREMENTS
- A. Section IX, **ASME** Boiler & Pressure Code, 1986 Ed., 1987 Add.
- B. CSR/Specialties Company WPS/PQR Nos.: 911171-1, and 911171-2, Rev. 05 dated June 2005

III. WELDMENTS/NDE REQUIREMENTS (continued)

C. **API** Spec. 6A, latest edition

D. **API** Spec. 16A, latest edition

Sincerely,

Joe Leeper,
Technical Department

copper state rubber

Visual Inspection / Hydrostatic Test Report

Manufacturer	Copper State Rubber Inc.
Hose Type	Choke and Kill
Pressure Rating	10,000 PSI MAWP X 15,000 PSI T/P
Spec Number	090-1915C-48
FSL Rating	FSL 3

Serial Number	33851
Size ID	3"
Length	75'
Date	December 9, 2017
Shop Order Number	31162

Connections Description: 4 1/16" 10K API FLANGE WITH SS INLAID BX-155 RING GROOVE EACH END

Traceability of Terminating Connectors

	Insert	Male	Nut	Female	Flanges	Hubs	Other
Connector 1	14C1				V4760		CSR-H1263
Connector 2	14C1				V4760		CSR-H1265

Comments

Calibrated Devices

Pressure Recorder	07459	Calibration Date	1/23/2017
Pressure Gauge	111291-2	Calibration Date	1/23/2017

*This report signifies that the product has been visually inspected for defects in the interior tube, recess, gasket, cover and branding and all have been found to be conforming.

Comments

Hydrostatic Testing Requirements

60 Min @ 15,000 psi (-0/+500 psi)

Length after test

75' OAL

Witness By: Phil Snider

Supervisor

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

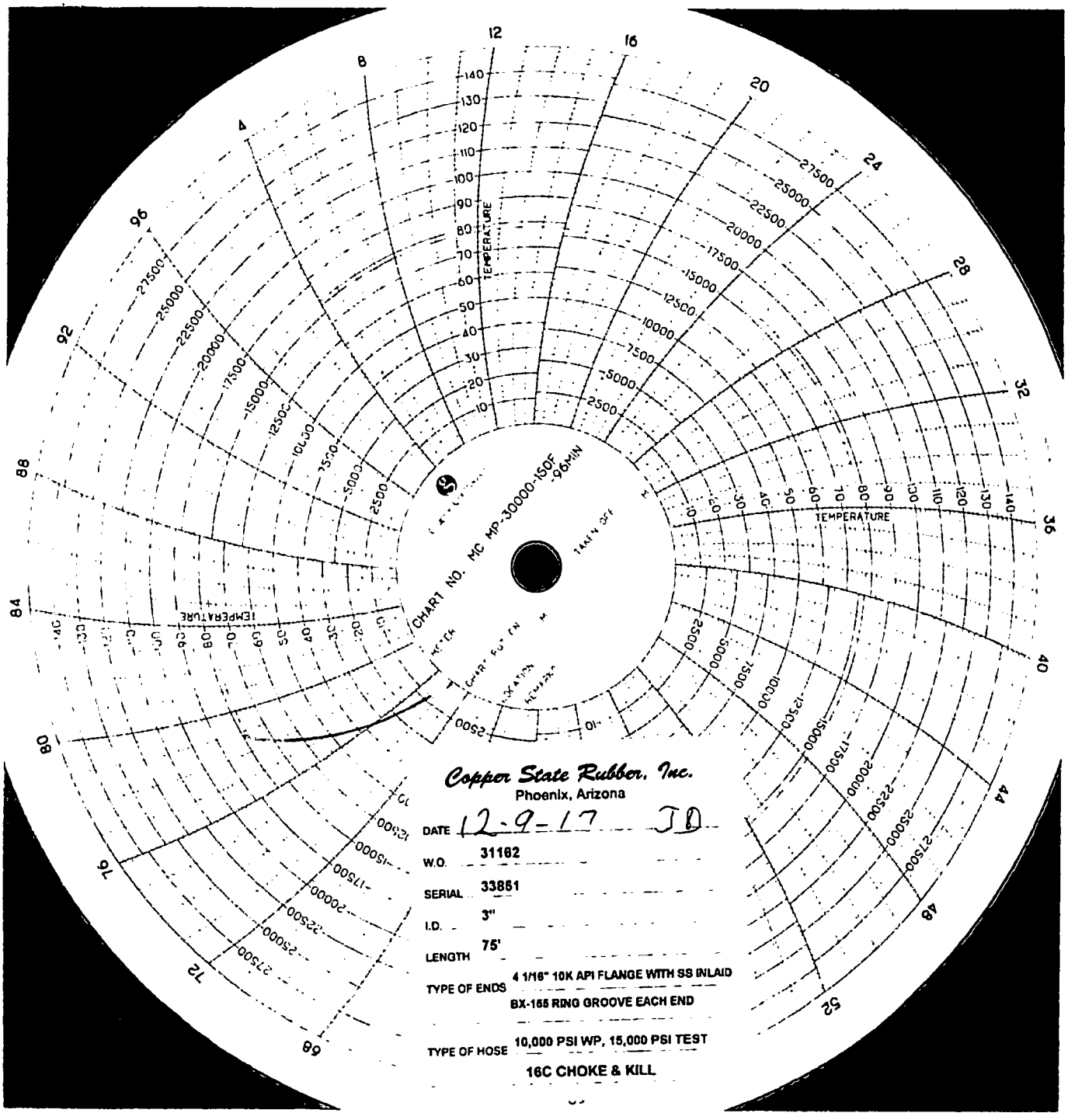


CHART NO. MC MP-30000-150F -96MIN
TEMPERATURE
TAKEN OFF
Copper State Rubber, Inc.
Phoenix, Arizona
DATE 12-9-17 JD
W.O. 31162
SERIAL 33851
I.D. 3"
LENGTH 75'
TYPE OF ENDS 4 1/16" 10K API FLANGE WITH SS INLAID BX-155 RING GROOVE EACH END
TYPE OF HOSE 10,000 PSI WP, 15,000 PSI TEST
16C CHOKE & KILL

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480 921 1021

LABORATORY ACCREDITATION BUREAU ACCREDITED

Certificate of Calibration

Certificate # 1702331

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Approved RS II Quality Dept

Equipment Tested

Description : **McDaniel Pressure Gauge**	Calibration Date : **January 23, 2017** Calibration Due : **January 23, 2018**
Model # : **None Visible**	Identification # : **111291-2**
Range : **0-30000 PSIG**	Serial # : **None Visible**
Accuracy : .50 % of Full Scale	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.100-2013

Measurement Data

% of Span	Gauge Reading	Actual Pressure	Reading Error	Maximum Allowable
20 %	6000	6054.9	54.9	150.0
40 %	12000	11995.2	-4.8	150.0
60 %	18000	17976.6	-23.4	150.0
80 %	24000	23965.8	-34.2	150.0
100 %	30000	29943.9	-56.1	150.0

Ambient Temperature : 19.5° C Relative Humidity : Between 20 & 60%

Comments :

Uncertainty of Measurement is +/- (19 + 0.6*R*) psi
Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2
The results obtained relate only to the item calibrated
Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty.
It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures :PTS Procedure Manual Section **SCP-01 High Pressure Gauge**	Standard : PTS 123 Sensotec Pressure System Cert # 1-132212 Due: 12 Jan 2018

Calibration Performed By K Cassidy

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23. 2018
FILE NO.: CSR / SPECO-81069

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480.921.1021

LABORATORY ACCREDITATION BUREAU ACCREDITED

Certificate of Calibration

Certificate # 1702332

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Approved AS II Quality Dept

Equipment Tested

Description : **TechCal Pressure Gauge**	Calibration Date : **January 23, 2017** Calibration Due : **January 23, 2018**
Model # : **Chart Recorder**	Identification # : **07459**
Range : **0-30000 PSIG**	Serial # : **07459**
Accuracy : .50 % of Full Scale	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.100-2013

Measurement Data

% of Span	Gauge Reading	Actual Pressure	Reading Error	Maximum Allowable
20 %	6000	5911.8	-88.2	150.0
40 %	12000	12075.7	75.7	150.0
60 %	18000	18085.6	85.6	150.0
80 %	24000	24090.2	90.2	150.0
100 %	30000	30045.1	45.1	150.0

Ambient Temperature : 19.5° C Relative Humidity : Between 20 & 60%

Comments : _____

Uncertainty of Measurement is +/- (19 + 0.6*R*) psi

Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2
The results obtained relate only to the item calibrated
Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty.
It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures :PTS Procedure Manual Section **SCP-01 High Pressure Gauge**	Standard : PTS 123 Sensotec Pressure System Cert # 1-132212 Due: 12 Jan 2018

Calibration Performed By K Cassidy

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480 921 1021

LABORATORY ACCREDITATION BUREAU

Certificate of Calibration

Certificate # 1702332

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Approved RS II Quality Dept

Equipment Tested

Description : **TechCal Temperature Gauge**	Calibration Date : **January 23, 2017** Due Date : **January 23, 2018**
Model # : **Chart Recorder**	Identification # : **07459**
Range : **0-150° F**	Serial # : 07459
Accuracy : 1.5 F	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.200 - 2008 (R2013)

Measurement Data in degrees F

Actual	Unit Under Test
50.06	50
100.11	100
150.09	150

Ambient Temperature : 19.5°C Relative Humidity : Between 20 & 60%

Comments : AS RETURNED - Gauge Adjusted

Uncertainty of Measurement is +/- .12 Deg C

Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2

The results obtained relate only to the item calibrated

Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty. It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures : PTS Procedure Manual Section : **SCP 25 – Thermometer – Analog, Digital, Glass**	**Standard :** PTS 111 ThermoWorks Reference Thermometer Certificate # 222834 Due: 02 Sep 2017 PTS 118 Techne Temperature Well Certificate # 161536 Due: 01 Jun 2017

Calibration Performed By K Carnidge

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

14C1

encore metals

CERTIFICATE OF TEST

Certification Date
14-JUL-2014

CUSTOMER ORDER NUMBER
15916

CUSTOMER PART NUMBER
SERIAL#G87

ENCORE METALS US
789 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Invoice Number
S160494

SOLD TO: BRENDELL MANUFACTURING INC
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

SHIP TO: BRENDELL MANUFACTURING INC.
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Description: E4130 HR NORM Q&T BAR API 6A PSL3 NACE MR0175
6-1/2 RD X 20' R/L Line Total: 19.5 FT
HEAT: 418595 ITEM: 505824

Specifications:
NACE MR-01-75
AMS H 6875 A
ASTM A370 11
API 6A PSL 3
ASTM A29 12
ASTM A304 04
EN 10204 3.1
ASTM A322 07

CHEMICAL ANALYSIS

C	MN	SI	P	S	CR	NI	MO
0.313	0.56	0.25	0.014	0.003	1.0600	0.17	0.23

AL	CU	SN	TI	V	NB	AS	CA
0.025	0.28	0.014	0.0027	0.027	0.003	0.006	0.0015

SB	CO	PB
0.001	0.011	0.002

RCPT: R120906

COUNTRY OF ORIGIN : ITALY

MECHANICAL PROPERTIES

DESCRIPTION	YLD STR PSI	ULT TEN PSI	%ELONG IN 02 IN	%RED IN AREA	HARDNESS BHN
TEST PC/QTC	85862.0	104572.0	22.0	60.0	229

DESCRIPTION	YLD STR	ULT TEN	%ELONG	%RED IN AREA	HARDNESS BHN
SURFACE					229

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

Material did not come in contact with mercury while in our possession. DIANA JOHNSON

INSERT MATERIAL
INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23. 2018
FILE NO.: CSR / SPECO-81069

encore metals

CERTIFICATE OF TEST

Certification Date
14-JUL-2014

CUSTOMER ORDER NUMBER
15916

CUSTOMER PART NUMBER
SERIAL#G87

ENCORE METALS US
789 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Invoice Number
S160494

SOLD TO: BRENDELL MANUFACTURING INC
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

SHIP TO: BRENDELL MANUFACTURING INC.
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Description: E4130 HR NORM Q&T BAR API 6A PSL3 NACE MR0175
6-1/2 RD X 20' R/L Line Total: 19.5 FT
HEAT: 418595 ITEM: 505824

GRAIN SIZE :7 -

IMPACT TEST TYPE	TEMP	ORNT	UOM ft-lbs SMPL#1	#2	#3	AVG	% SHEAR	LAT EXPN	DESCRIPTION
CHARPY	-75 F	LONG	33.0	36.0	36.0	35.0			10mm x 10mm

MATERIAL IS FREE FROM MERCURY CONTAMINATION
NO WELD REPAIR PERFORMED ON MATERIAL
THERMAL TREATMENT: OK
NORMALIZED 1652 DEG F X 353'
QUENCHED 1616 DEG F WATER X 353'
TEMPERED 1300 DEG F AIR X 390'
WATER TEMP BEFORE 86 DEG F AFTER 86 DEG F

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

Material did not come in contact with mercury while in our possession.

DIANA JOHNSON

TECHNICAL MANAGER

MACHINE SPECIALTY & MFG., INC.
215 ROUSSEAU ROAD
YOUNGSVILLE, LA 70592
Phone: 337-837-0020
Fax: 337-837-0062

Material Test Report

SOLD TO:	SPECIALTIES CO./COPPER STATE RUBBER INC. 14141 S WAYSIDE DRIVE HOUSTON, TX 77048
SHIP TO:	SPECIALTIES CO./COPPER STATE RUBBER INC. 14141 S WAYSIDE DRIVE HOUSTON, TX 77048

DATE	SALES ORDER #	CUST P.O.#	TAG NUMBER	ITEM TAG
11/17/2016	0260385	110816WL		

ITEM #	QTY	ITEM DESCRIPTION	HEAT CODE	HEAT NUMBER	STARTING MATERIAL
2	8	4 1/16 10M RTJ WN 3 ID 4.5 OD TAPER BORE PSL-3 316SS INLAY SO# 13056-01 THRU -08	V4760	G1207	API 6A 75K 4130

CHEMICAL ANALYSIS

C	Si	Mn	S	P	Cr	Cu	Al	Ni	Mo	V
.32	.22	.51	.011	.013	.98			.065	.17	.008

PHYSICAL PROPERTIES

Yield PSI	Tensile PSI	Elongation	REDUCTION OF AREA %	Hardness Brinell
87898	104257	27.65	70.24	201-233

IMPACT TESTING

TYPE	TEMP	SMPL# 1	# 2	# 3	AVG	%SHEAR	LAT EXP
CHPY-75	- 75F	54 L	58 L	52 L	55	32-31-34	.032-.031-.030

SUPPLEMENTAL INFORMATION

NORMALIZE@1680F FOR 180MIN AUSTENITIZE@1600F FOR 180MIN TEMPER@1260F FOR 240MIN QTC: SACRIFICIAL PIECE CHARPY: 10 X 10 X 55 MELT PRACTICE: EAF-LRF-VD-CCM W/ EMS

WE HEREBY CERTIFY THAT ALL TEST RESULTS CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY. ALL TEMPERATURES ARE IN FAHRENHEIT AND IMPACT TESTING IN FT LBS MANUFACTURED IN USA. EN10204 3.1

Q.A. DEPARTMENT

FLANGE MATERIAL
INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

Specialties Company
copper state rubber, inc.

6401 McGrew St.
Houston, Texas 77087
713-644-1491
713-644-9830 Fax
csrhouston@msn.com

WELDING PROCEDURE SPECIFICATION, WPS NO: 911171-1
SECTION IX, ASME BOILER 7 PRESSURE VESSEL CODE, 1989 EDITION, 1990 ADDENDA

COMPANY: COPPER STATE RUBBER, INC. SUBSIDIARY OF SPECIALTIES CO.

BY: KEN FORDYCE DATE: 10/07/91 REVISED BY: ROGER PEACE
TECHNICAL MANAGER
COPPER STATE RUBBER

REVISION NO: 5 DATE: 5-31-2005

SUPPORTING PQR(s): 911171-2

REVIEWED REV: 5
24 JUNE 2005

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

SwL **SOUTHWESTERN LABORATORIES**

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

222 Cavelcade St. • P.O. Box 8768, Houston Texas 77249 • 713/692-9151

REVIEWED as indicated in ABS letter dated DEC 20 1995 ABS HOUSTON

Welding Procedure Specification, WPS No. 911171-1
Section IX, ASME Boiler & Pressure Vessel Code, 1989 Edition, 1990 Addenda

Company: Copper State Rubber, Inc. subsidiary of Specialties Co.

REVISION 4

By Ken Fordyce Date: 10/07/91 Revised By: ROGER PEACE Date: 7-16-93

TECHNICAL MANAGER
COPPER STATE RUBBER

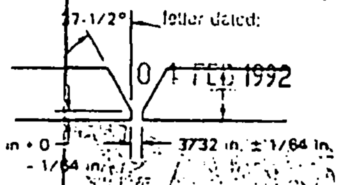
Supporting PQR(s): 911171-2

WELDING PROCESS(es)
Auto: ____ Semi-auto: GMAW-S Machine: ____ Manual: SMAW

APPROVED
This approval covers only ABS requirements and does not include items not required by ABS. See comments in ABS letter dated: 04 FEB 1992

Raise Cvn to 8" thk for low impacts to 2.5" for impacts
MDT -30°C
Acceptable for H_2S service NACE MR0175
ASME IX
DNV (mod) Drill

JOINTS (QW-402)
Joint Design: The joint may be changed from that shown to any other type (e.g. double-V, single-, double-U, single-, double-J, etc.) which is consistent with design and application requirements, including those of the construction code; changes in the design (root gap, use of retainers, etc.) beyond that permitted in this WPS must be specified in a new or revised WPS.



Backing: Use backing or backgouging w/SMAW.

Backing Type: weld metal or base metal

Retainers: metallic/nonmetallic may be used

Single-V-Groove

BASE METALS (QW-403)
Specification: AISI 4130 API 6A 75K material designation, 207-235 BHN

Groove Thickness Range: 3/16"-8" f/nonimpacts Fillet Thickness Range: all

Pipe Groove Diameter Range: all Pipe Fillet Diameter Range: all

Other Base Metal Thickness Limitations:
(1) 1.65" maximum for any single weld pass thicker than 1/2."
(2) 5/8" minimum to 2.5" maximum for impacts

DET NORSKE VERITAS 1864

FILLER METALS (QW-404)
AWS Class No.: Only A-No. 11 low hydrogen electrodes (E10018-D2, Exxx15-D2, & Exxx16-D2) are qualified for impacts; only ER80S-D2 is qualified for impacts.
Specification: 5.28, GMAW; 5.5, SMAW F-No.: 6, GMAW; 4, SMAW A-No.: 11
Size: 0.035"-0.045" diameter for GMAW-S; 1/8"-1/4" diameter for SMAW
Groove Weld Size/Deposit Range: 0.14" max. for GMAW-S; 2.36" max. for SMAW impacts; 7.86" max. for SMAW nonimpacts
Fillet Size Range: any

Other: The maximum SMAW bead size qualified for impacts is 3/16" thick x 1/2" wide x 6" long. See foot note to Table 1. Solid bare wire must be used for GMAW. Supplementary filler metal or powder not permitted.

POSITIONS (QW-405)
Groove: flat for impacts
Fillet: flat for impacts
Vertical Progression: up or down

WELD & BASE METAL TEMPERATURES (QW-406)
Preheat: 200°F for T to 1"; 300°F over 1"
Interpass: 600°F for impacts
Maintenance: none

POSTWELD HEAT TREATMENT (QW-407)
Temperature Range: 1200°F-1225°F or 20°F-30°F below base metal tempering temperature.
Time Range: 1 hour per inch of section thickness

SHIELDING, BACKING, TRAILING GAS (QW-408)

GMAW-S	Gas Type/Mix	Percent Mixture	Flow Rate (cfh)
Shielding:	Argon/CO2*	75% Ar/25%CO2*	30 Minimum
Backing:	none*	none	none
Trailing:	none	none	none

ELECTRICAL CHARACTERISTICS (QW-409)
Current & Polarity: DC reverse (DCEP) Heat Input: See Table 1 note.
Voltage: See Table 1. Transfer Mode:: short-circuiting for GMAW-S

TECHNIQUE (QW-410)
String or Weave: string only for impacts*
Cleaning: wire brush, chip, grind, or other suitable means to remove slag, rust, scale, grease, or other harmful materials from the weld fusion zone
Method of Back Gouging: mechanical or thermal cutting (w/specified preheat)
Tube to Work Distance: 1/4"-1/2" Passes per Side: multiple only for impacts
Electrodes: single only for impacts Peening: may be used on intermediate
GMAW Gas Cup Size: Nos. 3-8 passes to reduce shrinkage stresses

TABLE 1
ESSENTIAL & NONESSENTIAL PROCEDURE VARIABLES

Pass		Filler Metal		Current			Travel	
No.	Process	Class	Dia.	Type	Amps.	Volts	Direction	Speed
1	GMAW-S	ER80S-D2	0.035	DCEP	60-130	15-20	Flat	7.0 ipm
Any	SMAW	E10018-D2	1/8	DCEP	110-140	18-25	Flat	7.0 ipm

*NOTE: The maximum bead size that may be deposited for impacts in any pass is 3/16" thick x 1/2" wide x 6" long with 1/8" diameter electrodes.

This WPS was documented to code requirements by Kelly Hodges of SwL as Report No. 911171-1. It gives the values and/or limits of essential, supplementary essential, and nonessential welding variables permitted by Section IX of the ASME Code as a result of successful procedure qualification. The essential and supplementary essential variables may be changed within the limitations of ASME Section IX, QW-250 without requalification. Changes outside those limits require requalification of the altered procedure.

L P Thaxton
Reviewed By:

Date: 10/07/91 File No.: 12-8075-00

SwL SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

222 Cavalcade St. • PO. Box 8768, Houston, Texas 77249 • 713/692-5151

Prodecure Qualification Record, PQR No. 911171-2

Section IX, ASME Boiler & Pressure Vessel Code, 1989 Edition, 1990 Addenda

Date: 10/07/91 WPS No.(s): 911171-1

WELDING PROCESS(es)

Auto: ——— Semi-auto: GMAW-S Machine: ——— Manual: SMAW

JOINTS (QW-402)

Single-V-Groove Weld with No Backing
Root Gap = 1/8"
Root Face = 1/16"
Groove Angle = 70° 1st 3/4"
Groove Angle = 33° 2nd 3/4"

Joint Design

BASE METALS (QW-403)

Material Spec.: AISI 4130
Type & Grade: API 75k designation
P-No.: — to P-No.: —
Thickness of Test Coupon: 1-1/2"
Diameter of Test Coupon: 10" OD
Other: normalized, quenched, tempered to 228 BHN (Heat No.A2769)

FILLER METALS (QW-404)

	Spec	Class.	F-No.	A-No.	Dia.
GMAW:	5.28	ER80S-D2	6	11	0.035"
SMAW:	5.5	E10018-D2	4	11	1/8"

POSITION (QW-405)

Position of Joint: 1G Rolled
Progression of Weld See Table 1.

PREHEAT TEMPERATURE (QW-406)

Preheat: 300°F minimum
Interpass: 500°F maximum
Maintenance: ——

POSTWELD HEAT TREATMENT (QW-407)

Temperature: 1230°F
Time: 2-1/2 hours
Other: ——

GAS (QW-408)

Shielding Gas: Argon & CO2
Mixture: 75% Ar, 25% CO2
Shielding Flow Rate: 30 cfh
Backing Flow Rate: ———

ELECTRICAL (QW-409)

Voltage: See Table 1.
Current: See Table 1.
Mode of Transfer: Short Circuiting
Heat Input: See Table 1 note.

TECHNIQUE (QW-410)

String or Weave: String & Weave
Passes per Side: multiple
Deposit Thickness 1/8" GMAW; 1-3/8" SMAW
Machine Oscillation: NA
Number of Electrodes: NA

TABLE 1

ESSENTIAL & NONESSENTIAL PROCEDURE VARIABLES

Pass		Filler Metal		Current			Travel	
No.	Process	Class	Dia.	Type	Amps.	Volts	Direction	Speed
1	GMAW-S	ER80S-D2	0.035	DCEP	60-130	15-20	Flat	7.0 ipm
2-24	SMAW	E10018-D2	1/8	DCEP	110-140	18-25	Flat	7.0 ipm

NOTE: The maximum volume of weld metal deposited during any single pass was a 3/16" thick x 1/2" wide bead in a 6" length using a 1/8" diameter E10018-D2 electrode.

TENSILE TEST Nos. 57022 & 57103 (QW-150)

Specimen No.	Width or Dia. (in.)	Thickness (in.)	Area ($in.^2$)	Ultimate Load (lb.)	Ultimate Stress (psi.)	Ultimate Failure Location
1	0.748	1.296	0.9694	98,710	101,800	Weld Metal
2	0.748	1.378	1.0307	105,700	102,500	Weld Metal

GUIDED BEND TEST Nos. 57022 & 57103 (QW-160)

Type & Figure No.	Result
Four Side Bends per QW-462.2	Satisfactory

TOUGHNESS TEST No. 57103 (QW-170)

Specimen No.	Notch Location	Notch Type	Test Temp(°C)	Impact Values	Lateral Exp Mils	Lateral Exp Shear%	Section Size at Notch (mm)	
1	Weld	Vee	-15	88	60	75	8	10
2	Weld	Vee	-15	29	39	30	8	10
3	Weld	Vee	-15	32	42	30	8	10
				Fusion Line (FL)				
1	FL	Vee	-15	52	37	60	8	10
2	FL	Vee	-15	47	36	60	8	10
3	FL	Vee	-15	56	43	60	8	10
1	FL+2mm	Vee	-15	104	70	75	8	10
2	FL+2mm	Vee	-15	118	74	75	8	10
3	FL+2mm	Vee	-15	102	68	75	8	10
1	FL+5mm	Vee	-15	108	70	75	8	10
2	FL+5mm	Vee	-15	106	68	75	8	10
3	FL+5mm	Vee	-15	105	66	75	8	10

Rockwell Hardness Survey (2mm below Face of Weld)

Left Base Metal Zones Unaffected		Left Base Metal Zones Heat Affected		Weld		Right Base Metal Zones Unaffected		Right Base Metal Zones Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
1.	97.2	2.	98.7	3.	96.6	6.	98.3	7.	96.7
				4.	96.9				
				5.	96.6				

Rockwell Hardness Survey (at midwall)

Left Base Metal Zones Unaffected		Left Base Metal Zones Heat Affected		Weld		Right Base Metal Zones Unaffected		Right Base Metal Zones Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
8.	93.6	9.	93.5	10.	92.9	12.	95.8	13.	98.3
				11.	97.7				

Rockwell Hardness Survey (2mm below root of weld)

Left Base Metal Zones Unaffected		Left Base Metal Zones Heat Affected		Weld		Right Base Metal Zones Unaffected		Right Base Metal Zones Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
14.	95.6	15.	99.9	16.	96.4	17.	97.9	18.	99.9

This PQR was documented to code requirements by Ken Lodge of SwL as Report No. 911171-2 from the welding variables recorded by Copper State Rubber, Inc. during the welding of the test coupons and the results of tensile, guided-bend, hardness, and charpy impact tests performed by SwL.

Reviewed By: _____ Date: 10/07/91 Client No.: 12-8075-00

Welder: Randy Wiseman ID/Stamp No.: 234-48-95

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared and tested in accordance with code requirements.

Signed: Copper State Rubber, Inc.

Date: OCT 8, 1991 By: ROGER D. PEACE

ROGER D. PEACE

SOUTHWESTERN LABORATORIES

SwL

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
222 Cavalcade St. • P.O.Box 6768, Houston, Texas 77249 • 713/692 9251

SWL

Welder Qualification Test Record, WQTR No. 930635-1

Section IX, ASME Boiler & Pressure Vessel Code, 1992 Edition

Using WPS No. 911171-1 Rev. 1, Welder Jay B. Williams, ID No. 453-06-6487, qualified for the following ranges.

Test Variables	Test Values	Qualification Range
PROCESS:	*GMAW-S*	*GMAW-S Only*
BACKING:	*Without*	*With or Without*
MATERIAL SPECIFICATION:	*Quenched & Tempered AISI 4130 to API 6A TP 75K*	*P-No. 1 through P-No. 11, P-No. 4X and unassigned metals of similar chemical composition*
DEPOSIT THICKNESS:		
GROOVE	*1/8"*	*9/64" Maximum*
FILLET	*Not Applicable*	*Any*
DIAMETER:		
GROOVE	*4-1/2" OD*	*2-7/8" OD & Over*
FILLET	*Not Applicable*	*Any*
FILLER METAL:		
SPECIFICATION	*SFA-5.28*	
CLASSIFICATION	*AWS ER80S-D2*	
F-NO	*6*	*6, or any bare wire conforming to an analysis listed in QW-442*
POSITION:	*1G*	*Flat Only*
VERTICAL WELDING DIRECTION:	*Not Applicable*	–
BACKING GAS:	*Without*	*With or Without*

Examination & Test Results

GUIDED BEND TEST NO. 60596 PER QW-160:	RESULT:
Two Side Bends per QW-462.2	*Satisfactory*

NOTE:	*The Guided-bend tests were witnessed by Glen R. Laurtsen, Principal surveyor, ABS AMERICA, a division of The AMERICAN BUREAU of SHIPPING.*

This WQTR was documented to Code requirements by Ken Fordyce *of SwL as Report No. 930635-1 from the welding variables recorded by Copper State Rubber, Inc., Specialties Co. during the welding of the test coupon and the results of guided-bend tests performed by SwL.*

REVIEWED BY

DATE:	*May 12, 1993*	FILE NO.:	*12-8075-00*

SOUTHWESTERN LABORATORIES

SwL

SWL

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
222 Cavalcade St.• P.O.Box 8768, Houston, Texas 77249 • 713/692 9251

Welder Qualification Test Record, WQTR No. 930635-2

Section IX, ASME Boiler & Pressure Vessel Code, 1992 Edition

Using WPS No. 911171-1 Rev. 1, Welder Jay B. Williams, ID No. 453-06-6487, qualified for the following ranges.

Test Variables	Test Values	Qualification Range
PROCESS:	SMAW	SMAW Only
BACKING:	With	With Only
MATERIAL SPECIFICATION:	Quenched & Tempered AISI 4130 to API 6A TP 75K	P-No. 1 through P-No. 11, P-No. 4X and unassigned metals of similar chemical composition
DEPOSIT THICKNESS:		
GROOVE	5/8"	1-1/4" Maximum
FILLET	Not Applicable	Any
DIAMETER:		
GROOVE	4-1/2" OD	2-7/8" OD & Over
FILLET	Not Applicable	Any
FILLER METAL.:		
SPECIFICATION	SFA-5.5	
CLASSIFICATION	AWS E10018-D2	
F-NO.	4	1, 2, 3, & 4
POSITION:	1G	Flat Only
VERTICAL WELDING DIRECTION:	Not Applicable	–
BACKING GAS:	Not Applicable	–

Examination & Test Results

GUIDED-BEND TEST NO. 60596 PER QW-160:	RESULT:
Two Side Bends per QW-462.2	Satisfactory

NOTE:	The Guided-bend tests were witnessed by Glen R. Lauritsen, Principal surveyor, ABS AMERICA, a division of The AMERICAN BUREAU of SHIPPING.

This WQTR was documented to Code requirements by Ken Jordyn *of SwL as Report No. 930635-2 from the welding variables recorded by Copper State Rubber, Inc., Specialties Co. during the welding of the test coupon and the results of guided-bend tests performed by SwL.*

REVIEWED BY:

DATE:	May 12, 1993	FILE NO.:	12-8075-00

American Bureau of Shipping

TWO WORLD TRADE CENTER, 106TH FLOOR
NEW YORK, NEW YORK 10048

93-HS57593 1 6 May 1993

WELDER QUALIFICATION TEST

Jay Williams — Welder's Name:
S.S. No:453-06-6487 — Identification

QUALIFICATION TESTS:
SPECIFICATION - ASME CODE, SECTION IX, Boiler & Pressure vessel code, 1989 Ed, 1990 ad.
WELDING PROCESS - Semi-Auto: GMAW-S - Manual: SMAW
JOINT TYPE - Single-V-Groove Weld with no backing
BASE MATERIAL TYPE - AISI 4130, API 75k designation
BASE MATERIAL THICKNESS/SIZE - 1-1/2" thick
FILLER METAL TYPE - GMAW Spec 5.28 ER805-D2
SMAW Spec 5.5 E10018-D2
FILLER METAL "F" - NO. F-6, F-4
TEST POSITION - 1G Rolled

GUIDED BEND TEST RESULTS:

Specimen No.	Type	Results
S-1	Side	Satisfactory
S-2	Side	Satisfactory

POSITION AND TYPE WELD QUALIFIED:
MATERIAL GROUP: API 75k designation
FILLER METAL GROUP: GMAW 5.28 Spec ER805-D2
SMAW 5.5 Spec E10018-D2

	MATERIAL	THICKNESS/SIZE	POSITION
GROOVE WELD:	PLATE & PIPE	MAX TO BE WELDED	FLAT
FILLET WELD	PLATE & PIPE	ALL	FLAT
	PLATE & PIPE	ALL	FLAT

R.G. Carver, Surveyor

G.R. Lauritsen, Surveyor

NOTE: This Report evidences that the survey reported herein was carried out in compliance with one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Report is a representation only that the vessel, structure, item of material, equipment, machinery or any other item covered by this Report has been examined for compliance with, or has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping. The validity, applicability and interpretation of this Report is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Report or in any notation made in contemplation of this Report shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.

AB 141 Revised 12/85

American Bureau of Shipping

STATEMENT OF FACT

CERTIFICATE No. 93-HS57593

PORT OF Houston, Texas

DATE 6 May 1993

This is to Certify that the undersigned Surveyor to this Bureau, did, at the request of Copper State Rubber/Specialties of Houston, Texas on the28th day of April 1993 and in order to witness and report on Welder Qualification Test. For further particulars, see report as follows:

1. The following welder was tested in accordance with Section IX of ASME Boiler and Pressure Vessel Code and the American Welding Society Structural Welding Code. Weld Specimens were physically tested, examined and found satisfactory.

   Jay Williams S.S. NO. 453-06-6487

2. For particulars on tests performed, material, electrodes and positions qualified for, see attached sheet.

R.G. Carver, Surveyor

G.R. Lauritsen, Surveyor

SWL

SOUTHWESTERN LABORATORIES, INC.

222 Cavalcade
P.O. Box 8766
Houston, Texas 77249
Phone: (713) 692-9151
Fax: (713) 686-6202

Report No.: 930949
Date: July 16, 1993
Client No.: 12-8075-00
Page No.: 1 of 2

For compliance with UK DEN "OFFSHORE INSTALLATIONS (CONSTRUCTION AND SURVEY) REGULATIONS, 1974"

REVIEWED as indicated in ABS Letter dated DEC 2 0 1995 ABS HOUSTON

For compliance with the applicable parts of the Norwegian Petroleum Directorate's "ACTS, REGULATIONS AND PROVISIONS FOR THE PETROLEUM INDUSTRY"

Copper State Rubber, Inc.
P.O. Box 266084
Houston, TX 77207

Attention: Mr. Roger Peace

Projects: Charpy Impact Testing of a Procedure Qualification Test Weld

PROJECT INFORMATION

WELDING PROCEDURE:	*Previously qualified WPS No. 911171-1 (supported by PQR No. 911171-2)*
WELDMENT AS-RECEIVED:	*AISI 4130, as-welded condition*
IDENTIFICATION:	*Heat No. A2769*
SPECIFICATIONS:	*ABS, Guide for the Certification of Drilling Systems, 1990*

Post Weld Heat Treatment

SPECIFICATION:	*PQR No. 911171-2*
TIME:	*2 hours at temperature*
TEMPERATURE:	*1200° F-1210° F*
HEATING RATE:	*212° F per hour from 700° F*
COOLING RATE:	*318° F per hour to 700° F*

HEAT TREATMENT:	*No. 60973*	HEAT TREATMENT DATE:	*July 12, 1993*

Charpy Impact Test Results

SPECIFICATIONS:	*0.015" lateral expansion*	TEST TEMPERATURE:	*Minus 30° C*
LINEAR HAMMER VELOCITY:			*16.8 feet per second*
EFFECTIVE ENERGY:	*264 foot pound force*	TECHNICIAN:	*M. Petersen*
SPECIMEN TYPE & SIZE:	*ASTM A 370, E 23, Type A; 10 mm x 10 mm*		
LOCATION & ORIENTATION:	*Weld metal, HAZ, and base metal, 2mm and 5mm from the fusion line, 1/16" below the surface and transverse to the weld axis*		
TEST EQUIPMENT:	*Tinius Olsen Serial No. 103222*	TEST PROCEDURE:	*ASTM A 370, E 23*
TEST NO.:	*60988*	TEST DATE:	*July 14, 1993*

SPECIMEN IDENTIFICATION	WIDTH, INCHES	EFFECTIVE THICKNESS, INCHES	IMPACT ENERGY, FT-LBF	LATERAL EXPANSION, MILS	PERCENT DUCTILE FRACTURE
930949-1-1 (WELD)	*0.394*	*0.316*	*60*	*40*	*25*
930949-1-2 (WELD)	*0.394*	*0.316*	*59*	*40*	*25*
930949-1-3 (WELD)	*0.394*	*0.316*	*62*	*42*	*25*
930949-2-1 (HAZ)	*0.394*	*0.316*	*49*	*32*	*25*
930949-2-2 (HAZ)	*0.394*	*0.316*	*101*	*60*	*50*
930949-2-3 (HAZ)	*0.394*	*0.316*	*40*	*22*	*25*

SOUTHWESTERN LABORATORIES

REPORT NO. : 930949

COPPER STATE RUBBER COMPANY

SPECIMEN IDENTIFICATION	WIDTH, INCHES	EFFECTIVE THICKNESS, INCHES	IMPACT ENERGY, FT-LBF	LATERAL EXPANSION, MILS	PERCENT DUCTILE FRACTURE
930949-3-1 (2 MM)	0.394	0.315	76	50	60
930949-3-2 (2 MM)	0.394	0.315	71	47	60
930949-3-3 (2 MM)	0.394	0.315	114	69	90
930949-4-1 (5 MM)	0.394	0.315	80	47	70
930949-4-2 (5 MM)	0.394	0.315	82	51	70
930949-4-3 (5 MM)	0.394	0.315	75	45	70

COMPLIANCE:	*The impact test results met the specification.*

KF/kf Reviewed By: Prepared By:

Det norske Veritas Industry, Inc.
16340 Park Ten Place, Suite 100
Houston, Texas 77084
Tel: (713) 579-9003
Facsimile: (713) 579-1360

INSPECTION REPORT

QAS Project Number: 51-05428-63	**QAS Report Number:** 51-05428-63-1
P.O. Number: 2322RP	**Inspection Date:** February 18, 1994
Main Vendor: Copper State Rubber	**Insp. Location:** Houston, Texas
Sub Vendor: N/A	**Vendor Contact:** Roger Peace
Vendor Ref: wps 911171-1	**Vendor Phone:** 713 644 1491
Req. No: N/A	**Quantity:** N/A
Part No: N/A	**Serial No:** N/A

EQUIPMENT DESCRIPTION: Weld Procedure Review

Inspection Comments:

Purpose of Inspection: Review Weld Procedure.

Acceptance Criteria: ASME IX
NACE MR-0175
DNV Rules Drill(N), MOU

Reference Documents: None

Scope of Activity:

DNV reviewed the above Weld Procedure and found it to be in compliance with the above referenced standards with comments (see front page of WPS for comments).

FAX: Yes **Date:** 02/18/94 **Signature:** Harold Melton

Distribution:		**Attn:**	**FAX #:**
Original to Client:	Copper State Rubber	Roger Peace	713 644 9830
Copy to File:	51-05428-63 (D-217)		

February 18, 1994

Copper State Rubber
Attn: Roger Peace
6401 McGrew Street
Houston, Texas 77087

Reference: WPS No: 911171-1 Rev. 4

DNV Reference: 51-05428-63

Dear Mr. Peace

Please find enclosed one copy of the referenced weld procedures for your review and action as noted below:

- Reviewed with comments - for your records (For comments - see front page of W.P.S.)

The referenced weld procedure was reviewed against the following standards (latest revision):

X	ASME IX	__	DNV Tech. Note B-108
__	AWS D1.1	__	DNV Rules - Lifting Appliances
__	API 6A	__	DNV Rules - Submarine Pipelines
X	NACE MR-01-75	X	DNV Rules - Drill(N) for Mobile Offshore Units

If you should have questions or comments regarding this review, please do not hesitate to contact us and discuss it.

Regards,

Harold Melton
Q.A. Specialist

Procedure # RT-5

Radiographic Specialists, Inc.

4110 Mohawk Houston, Tx 77093

Phone: 281-449-1634 Fax: 281-449-1640

IP-Inadequate Penetration
IF-Inadequate Fusion
BTA-Burn Through Area
SL-Slag Line
SI-Slag Inclusion
P-Porosity
GP-Gas Pocket

C-Crack
IU-Internal Undercut
OU-Outside Undercut
LC-Low Crown

Page: 1 OF: 1
Date: 5-17-05
S/O: CSR48608-BA / 2-B
P/O: 3651 RP
Spec/Heat/Other: ASME SEC VIII & API 1104-57

Customer: Upper State Rubber Job Location: RSI

#	Seam #	Film #	Mat Dia.	Thk	Acc Y	Acc N	Remarks	#	Seam #	Film #	Mat'l Dia.	Thk	Acc Y	Acc N	Remarks
1	W1	1-2	5" .750		✓			23							
2		2-3			✓			24							
3		3-4			✓			25							
4		4-1			✓			26							
5								27							
6								28							
7								29							
8	3 hardness						Rockwell 15	30							
9								31							
10	Weld -	BHN	240				188 Base	32							
11	HAZ	"	240					33							
12	Base		240					34							
13								35							
14								36							
15								37							
16								38							
17								39							
18								40							
19								41							
20								42							
21								43							
22								44							

IDENTIFICATION
5" PIPE PQR TEST TONY ADAMS

Single Or Double Wall: DW
Material: C/S
Thickness: 3/4"
Single Or Double Viewing: SV
Penetrameter: 20E
Screen: 10/5
Mapping Loc.When App.: 90°
No. Of Exp: 4
Film Brand: AGFA
Min.Source To Film Distance: 6.4"
Focal Spot Size: .146
Isotope Used: TRIB2
Designation: D4

Depart Shop: ______ Arrive Job: ______ Depart Job: ______ Arrive Shop: ______

Film Total: 4 Stand-By: ______ No Of Film Per Cassette: ______

Technician: [signature] Level: II Customer: [signature] 5-17-05

The results reported represent opinions only and are not to be considered as warranties or guarantees of quality, classification, or usability of material examined. We shall assume not further responsibility for radiographs following the acceptance by the customer's field representative upon signing of field report. In no event shall the liability of Radiographic Specialists,Inc.,As to any items inspected or tested (including any liability as to selection and/or results of such test) exceed the charge of Radiographic Specialists, Inc. for the inspection of such items

RADIOGRAPHIC SPECIALISTS, INC.

4110 MOHAWK
HOUSTON TX 77093

PHONE (281) 449-1634
PAX (281) 449-1640

RESULTS OF TEST ON STEEL SPECIMENS

TO: COPPER STATES RUBBER/SPECIALTIES COMPANY

DATE: 05-31-05

LAB TEST NO: 05-31-9036

MATERIAL:

CUSTOMER JOB NO:

SPEC. IDENTIFICATION: 5" PIPE PQR TEST TONY ADAMS

Other Test

CHARPY IMPACT -30 DEG F

WELD METAL	HAZ.
55 FT LBS 30% SHEAR .048 LAT EXP	125 FT LBS 60 % SHEAR .091 LAT EXP
60 FT LBS 30% SHEAR .062 LAT EXP	120 FT LBS 60% SHEAR .085 LAT EXP
55 FT LBS 30% SHEAR .048 LAT EXP	125 FT LBS 60 % SHEAR .091 LAT EXP

WITNESS BY:

COPIES:

RADIOGRAPHIC SPECICALISTS, INC.

BY: TIM BRADLEY II

REPUBLIC HEAT TREAT

8902 N. MAIN
HOUSTON, TX 770220
Ph: 713-692-3410 Fax: 713-692-3910

Certification

Order Number
35022

Customer: 00000074
SPECIALTIES COMPANY
6401 MC GREW
HOUSTON, TX 77087

Shipped To:
WILL CALL
6401 MC GREW
HOUSTON, TX 77087

Customer Purchase Order No.	Customer Shipper No.	Material Type	Mat'l Heat Code	Lot Number
48619		ANY		

Process: STRESS RELIEVE

PROCESSING SPECIFICATIONS

Requirement	Specified	Qty Tested	Test Results

Line#	Quantity	Weight	Part Number/Description	Revision
1	1	21.0	6" OD X 4-1/4" ID X 13" LENGTH	
2			WELD TEST COUPON	
3			ID NOS:CSR-48608-1-A & 48608-2-B	

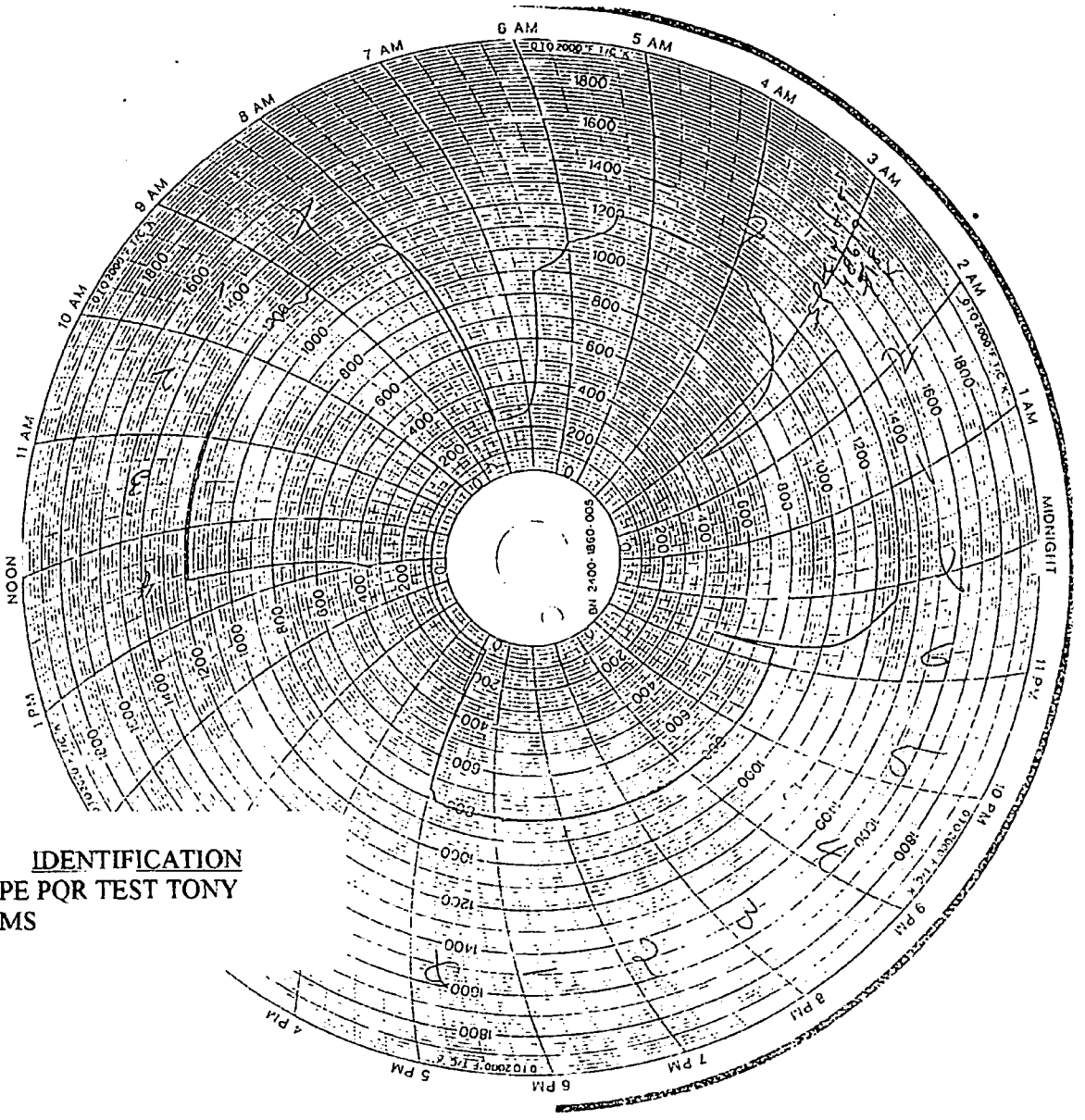
Operation	Spec Temp Range	Specified Soak Time	Furnace# Load#	Atmos/Dpt CarbPot	Q-Media Q-Temp	Start Date	Time In	Time Out	Date Complete
STRESS	1200	1:00	3			05/18/2005	2:45	6:30	05/18/2005

COMMENTS

JAMES MUSGROVE 5-18-05
Date Signed

IDENTIFICATION
5" PIPE PQR TEST TONY
ADAMS

REVIEW OF REPUBLIC
WORK AND TEST DOCUMENTS
5-18-05



IDENTIFICATION
5" PIPE PQR TEST TONY
ADAMS

HOUSTON HEAT TREAT, INC.
Houston, Texas

Customer Specialties Company
Description 2 6"OD X 4 1/4" ID X 12" Length Weld Test Coupon
P.O. 48619 SO
Furnace #3 Serial No.
Date 5-18-05 Heat No.
Temperature 1200° Time 11a.

ID Nos: CSR-48608-1-A+
48608-2-B.

LTV COPPERWELD
TUBULAR PRODUCTS

LTV COPPERWELD
MECHANICAL GROUP SHELBY
SHELBY, OHIO 44875-1471
Telephone 419/342-1200 FAX: 419/342-1437

MATERIAL TEST REPORT

FAXED

QS9000/ISO 9002 CERTIFIED

SHELBY ORDER NO 140562

CUSTOMER	SPECIFICATION	CUSTOMER ORDER
TUBULAR STEEL INC 1031 EXECUTIVE PARKWAY DRIVE ST LOUIS MO 63141	ASTM A519 96	4538

GRADE	SIZE(O.D x ID x WALL)	QUANTITY	SHIPPED	DATE
4130	6.000 X 4.000 X 1.000	8214 LB 153.83 FT	02/15/01	02/15/01

CONDITION: SMLS HF HEAT TREATED QUENCH & TEMPER ELECTRIC FUR

PART NO.

S# 00099194
50043089

CHEMICAL ANALYSIS

HEAT NO	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	V	Al	OTHER	GRAIN SIZE
14086	.31	.62	.009	.018	.230	.110	.960	.180	.120	.004	.022	CA .0002	6-8

MECHANICAL PROPERTIES

HEAT NO.	LOAD NO	YIELD PSI	TENSILE PSI	ELONG %	RED AREA %	HARDNESS BHN	HARDNESS ROCKWELL	IMPACT FT.-LBS	MAGNAFLUX FREQ	MAGNAFLUX SEVERITY
14086	T2692147	84100	103800	2.0" 28	68		RC 19	SIZE 10.0X10.0 TEMP F -50 RESULTS 112 77 115		

JOMINY HARDENABILITY (EXPRESSED IN 16THS)

HEAT NO.	1	2	3	4	5	6	7	8	10	12	14	16	20	24	28	32
14086	51	50	49	47	42	39	36	33	31	29	29	28	25	26	24	24

J-K RATING

HEAT NO.	A	B	C	D

SLAG-OXIDE RATING

INCOT	OXIDE	SLAG

IDENTIFICATION
5" PIPE PQR TEST TONY ADAMS

MELT SOURCE: ESG

OTHER INSPECTION: MACRO ETCH: S2 R1 C2
NON DESTRUCIVE TESTED
Non-Destructive Tested
NACE STD, MR0175, REV-1993 PARAGRAPH 3.

THIS TEST REPORT NOTARIZED WHEN REQUIRED
SWORN AND SUBSCRIBED BEFORE ME
THIS _____ DAY OF _____

_____
NOTARY PUBLIC

Brian M. Clark
Brian M. Clark, Chief Metallurgist

Specialties Company
copper state rubber, inc.

6401 McGrew St.
Houston, Texas 77087
713-644-1491
713-644-9830 Fax
csrhouston@msn.com

ADDENDUM

WELDING PROCEDURE SPECIFICATION, WPS NO.: 911171-1
PROCEDURE QUALIFICATION RECORD, PQR NO.: 911171-2

COMPANY: COPPER STATE RUBBER, INC./SUBSIDIARY OF SPECIALTIES COMPANY

REVISION 1:	DATE 1-31-92 – CORRECT TYPOGRAPHIC ERROR STRINGER PASS, AMPERES AND VOLTS
REVISION 2:	DATE 5-12-93 – JAY B. WILLIAMS I.D. NO.: 453-06-6487 QUALIFIED TO THIS WPS: WQTR NOS.: 930635-1 AND 930635-2
REVISION 3:	DATE 6-14-93 – CORRECT TYPOGRAPHIC ERROR SMAW PROCESS, AMPERES AND VOLTS
REVISION 4:	DATE 7-16-93 – WPS QUALIFIED FOR CHARPY IMPACTS AT -30°C; SwL REPORT NO.: 930949
REVISION 5:	DATE 5-31-2005 – CHANGE STRESS RELIEVE TIME FROM 2 HOURS TO 1 HOUR

REVIEWED REV. 5
24 JUNE 2005

REPUBLIC HEAT TREAT

CERTIFICATION

Specialties Company
14141 S. WAYSIDE DR.
Houston, TX 77048 USA

Certification ID: 38120-1
Date: 11/21/2017
Cert Date: 11/21/2017
Purchase Order: 7494
Material: ANY

We are pleased to provide you with the following Certification.

Part Number	Part Description	Qty	Weight
NONE	3"CK W/4-1/16 10M FLANGE, S/N: H1263-H1266	4	820.00
NONE	4"CK W/4-1/16 10K HUBS, S/N: 80868-1,2	2	0.00

Customer Requirements

Inspection Type	U Of M	Lower Spec	Lower Control	Target Value	Upper Control	Upper Spec

Results

Inspection Type	Scale	Minimum	Maximum

Operation

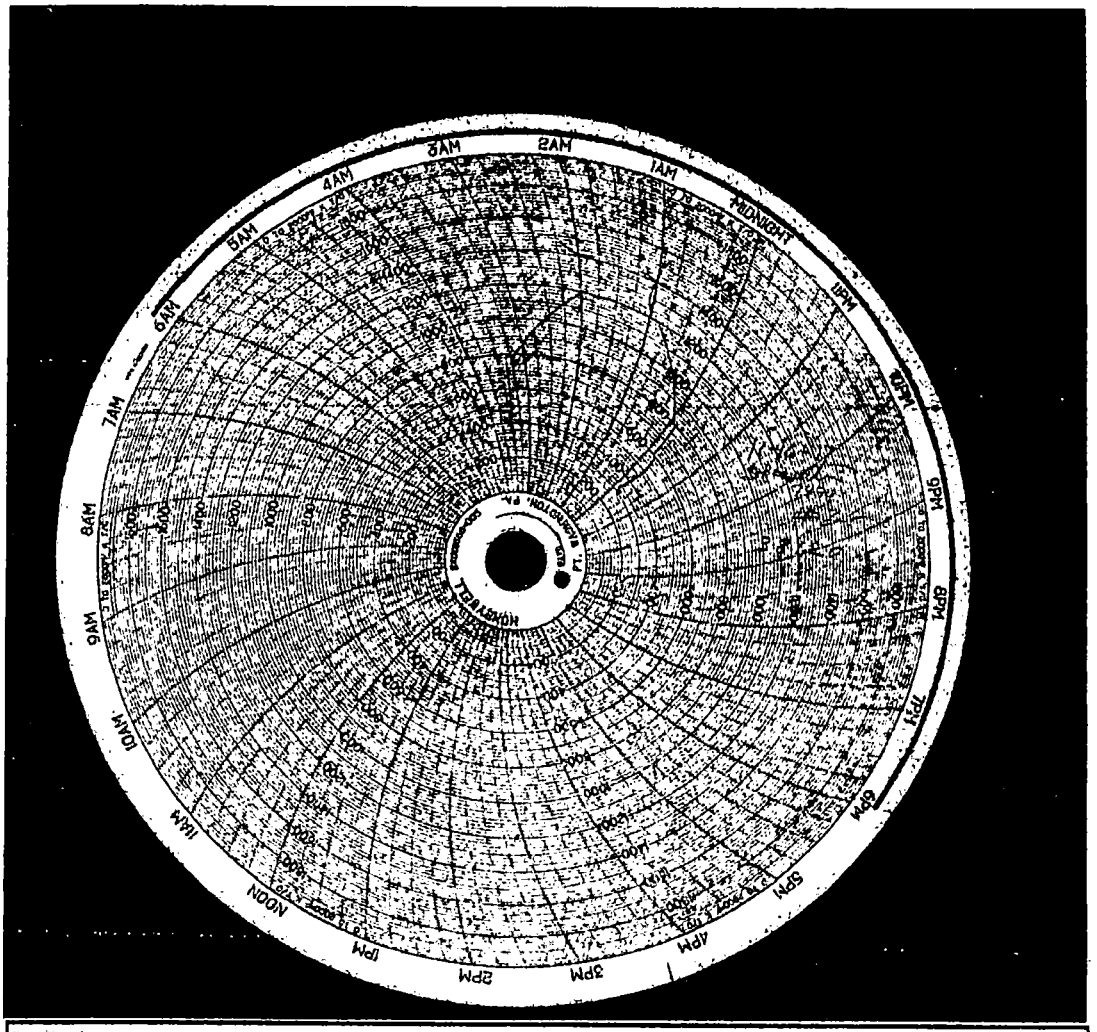
STRESS RELIEVE:1200 FOR 1HR

Certification Statement

THIS MATERIAL HAS BEEN STRESSED PER CUSTOMER REQUIREMENTS

Certified By: Chris Yeppez
Title: General Manager
Date: 11/21/2017

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069



Part Number	Part Description	Quantity	Wt. Each	Wt. Extended
NONE S/N: H1263-H1266	3"CK W/4-1/16 10M FLANGE	4	205.00	820.00
NONE S/N: 80868-1,2	4"CK W/4-1/16 10K HUBS	2	0.00	0.00

	SPECIALTIES COMPANY		
	SEE ABOVE		
7494			38120
3			SEE ABOVE
11/16/17			SEE ABOVE
S/R		1200F	1 HRS

Procedure # RT-3

Radiographic Specialists, Inc.

41 1 0 Mohawk Houston, Tx 77093

Phone: 281-449-1634 Fax: 281-449-1640

IP-Inadequate Penetration
IF-Inadequate Fusion
BTA-Burn Through Area
SL-Slag Line
SI-Slag Inclusion
P-Porosity
GP-Gas Pocket
C-Crack
IU-Internal Undercut
OU-Outside Undercut
LC-Low Crown

Page: _____ Of: _____
Date: 11/20/17
S/O: _____
P/O: 7815
Spec/Heat/0ther: ASME SEC VIII SEC. VIII DIV.1 UW 51

Customer: COPPER STATE RUBBER Job Location: R.S.I.

#	Seam #	Film #	Matl Dia.	Thk	Acc y	Acc N	Remarks	#	Seam #	Film #	Matl Dia.	Thk	Acc y	Acc N	Remarks
1	H1263	1 2	3"	7/8"	X			23							
2		2 3			X			24							
3		3 4			X			25							
4		4 1			X			26							
5	H1264	1 2			X			27							
6		2 3			X			28							
7		3 4			X			29							
8		4 1			X			30							
9	H1265	1 2			X			31							
10		2 3			X			32							
11		3 4			X			33							
12		4 1			X			34							
13	H1266	1 2			X			35							
14		2 3			X			36							
15		3 4			X			37							
16		4 1			X			38							
17								39							
18								40							
19								41							
20								42							
21								43							
22								44							

Single Or Double Wall: D.W. Material- C/S Thickness- 7/8"

Single Or Double Viewing: S.V. Penetrameter: B PACK Screen: .005

Mapping Loc.When App.: 90 DEG. No. Of Exp: 16 Film Brand: AGFA

Min.Source To Film Distance: CONT. Focal Spot Size: .146

Min. Film to Obj. Distance: Contact Isotope Used: IR192 Designation: D5

Depart Shop: _____ Arrive Job: _____ Depart Job: _____ Arrive Shop: _____

Film Total: 16 Stand-By: _____ No Of Film Per Cassette: 1

Technician: TIM BRADLEY Level: III Customer: _____

The results reported represent opinions only and are not to be considered as warranties or guarantees of quality, classification, or usability of material examined. We shall assume not further responsibility for radiographs following the acceptance by the customer's field representative upon signing of field report. In no event shall the liability of Radiographic Specialists, Inc., as to any items inspected or tested (including any liability as to selection and/or results of such test) exceed the charge of Radiographic Specialists, Inc. for the inspection of such items.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

RADIOGRAPHIC SPECIALISTS, INC.

4110 MOHAWK
HOUSTON TX 77093

Ph. 281-449-1634
Fax 281-449-1640

TO: COPPER STATES

DATE: 11/20/17
P. O. NO. 7815
JOB NO.
DEL SLIP

LOCATION: R.S.I.

MAGNETIC PARTICLE INSPECTION REPORT

ITEM NO.	DESCRIPTION	REJ	ACC	COMMENTS
4	3" CK FTG. W/4-1/16" 10M FLANGE H1263 THRU H1266		X	

Materials Used 1 CAN 850A

APPLICABLE SPECIFICATION SE709

ACCEPTANCE STANDARD ASME SEC VIII APP6 PAR6.4

SCOPE OF EXAMINATION 100% OF WELDED AREA

PROCEDURE NO. MT-5 Rev. 14

METHOD: WET X DRY

INSTRUMENT USED CONTOUR PROBE

MODEL: DA100 S/N. 7178

AMPERES: 10 #LIFT 6.5 AMP.

CURRENT: AC X DC

FLUORESCENT

BLACK LIGHT:

CALIBRATION:

LIGHT METER:

PREPARED BATH CIRCLE SAFE

TYPE: 850A

BATCH NO: 19685

TECHNICIAN TIM BRADLEY

LEVEL III

WITNESSED BY

CUSTOMER

TIME LEFT RSI:

TIME ARRIVED RSI:

Radiographic Specialists,Inc

(281)449-1634 4110 Mohawk Houston,Texas 77093 Fax (281)449-1640

To: COPPER STATE RUBBER

Date: 11-20-17

P.O.: 7815

Job No.:

Location: R.S.I.

BRINELL HARDNESS

LOCATION	BASE	WELD	BASE
H1263	200	206	198
H1264	214	206	206
H1265	223	214	223
H1266	214	206	214

API 16C

TECHNICIAN: TIM BRADLEY **CUSTOMER:** III

copper state rubber
CSR
Specialties Company

14141 S. Wayside Drive
Houston, Texas 77048

Phone 713-644-1491
Fax 713-644-9830
www.copperstaterubber.com
sales@copperstaterubber.com

FIELD TEST PROCEDURES FOR USED COPPER STATE RUBBER CHOKE/KILL AND SUPER CHOKE/KILL HOSE

VISUAL INSPECTION
ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR

1. ARRANGE HOSE SO THAT IT CAN BE OBSERVED FROM ALL ANGLES.
2. CONDUCT THE EXAMINATION FOR EXTERNAL DAMAGE TO THE COVER, END STRUCTURE, AND TERMINATING CONNECTORS.
3. IF THE COVER HAS GOUGING OR TEARS FROM NORMAL ABRASION, THIS CAN BE REPAIRED BY UTILIZING A RUBBER REPAIR KIT. THE SOLE PURPOSE OF THE COVER IS TO PROTECT THE INTERNAL REINFORCEMENT WIRES THAT HOLD THE PRESSURE.
4. IF NO INTERNAL WIRES ARE EXPOSED, REPAIR THE COVER DAMAGE BEFORE IT BECOMES WORSE AND EXPOSES THE INTERNAL REINFORCEMENT WIRES TO THE EFFECTS OF THE ELEMENTS. FULL PRESSURE INTEGRITY REMAINS.
5. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE EXPOSED, CHECK FOR ANY TYPE OF RUST/DETERIORATION OR BREAKS. IF THE WIRES ARE NOT DAMAGED, CLEAN THE AREA AND REPAIR WITH RUBBER REPAIR KIT. FULL PRESSURE INTEGRITY REMAINS.
6. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE DAMAGED, THE HOSE SHOULD BE REMOVED FROM SERVICE IMMEDIATELY AND CONSIDERED UNSAFE FOR FURTHER SERVICE.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

VISUAL INSPECTION
ASSEMBLIES WITH STAINLESS STEEL PROTECTIVE ARMOR

1. FOLLOW STEPS 1 AND 2 FOR ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR.
2. IF THE OUTER STL/ST PROTECTIVE ARMOR HAS BEEN BROKEN, EXAMINE THE RUBBER COVER FOR GOUGES OR TEARS FROM NORMAL ABRASION. THEN FOLLOW STEP 4 FOR ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR.
3. SECURE LOOSE ENDS OF PROTECTIVE ARMOR TO PROTECT AGAINST ADDITIONAL GOUGES OR TEARS TO RUBBER COVER.
4. HOSE ASSEMBLY SHOULD BE RETURNED TO COPPER STATE RUBBER, PHOENIX, ARIZONA USA AS SOON AS POSSIBLE FOR REPAIRS TO PROTECTIVE ARMOR.
5. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE EXPOSED, CHECK FOR ANY TYPE OF RUST/DETERIORATION OR BREAKS. IF THE WIRES ARE NOT DAMAGED, CLEAN THE AREA AND REPAIR WITH RUBBER REPAIR KIT. FULL PRESSURE INTEGRITY REMAINS.
6. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE DAMAGED, THE HOSE SHOULD BE REMOVED FROM SERVICE IMMEDIATELY AND CONSIDERED UNSAFE FOR FURTHER SERVICE.

CSR RECOMMENDS VISUAL INSPECTION WHENEVER POSSIBLE, ON A DAILY BASIS.

HYDROSTATIC TEST

1. TEST HOSE TO 1-1/4 TIMES MAX. ALLOWABLE WORKING PRESSURE WITH WATER, OIL, OR MUD BEING SURE ALL AIR HAS BEEN BLED OFF. HOLD FOR 15 MINUTES AFTER PRESSURE HAS STABILIZED

CSR RECOMMENDS HYDROSTATIC TEST AT APPROXIMATELY 6 MONTH INTERVALS ON RIG AND HOSE BE RETURNED TO OEM FOR INSPECTION AND RECERTIFICATION AT 5 YEARS FROM MANUFACTURE

COPPER STATE RUBBER

14141 S WAYSIDE DR.
HOUSTON, TEXAS 77048
TEL: (713) 644-1491
FAX: (713) 644-9830

WARRANTY TERMS AND CONDITONS

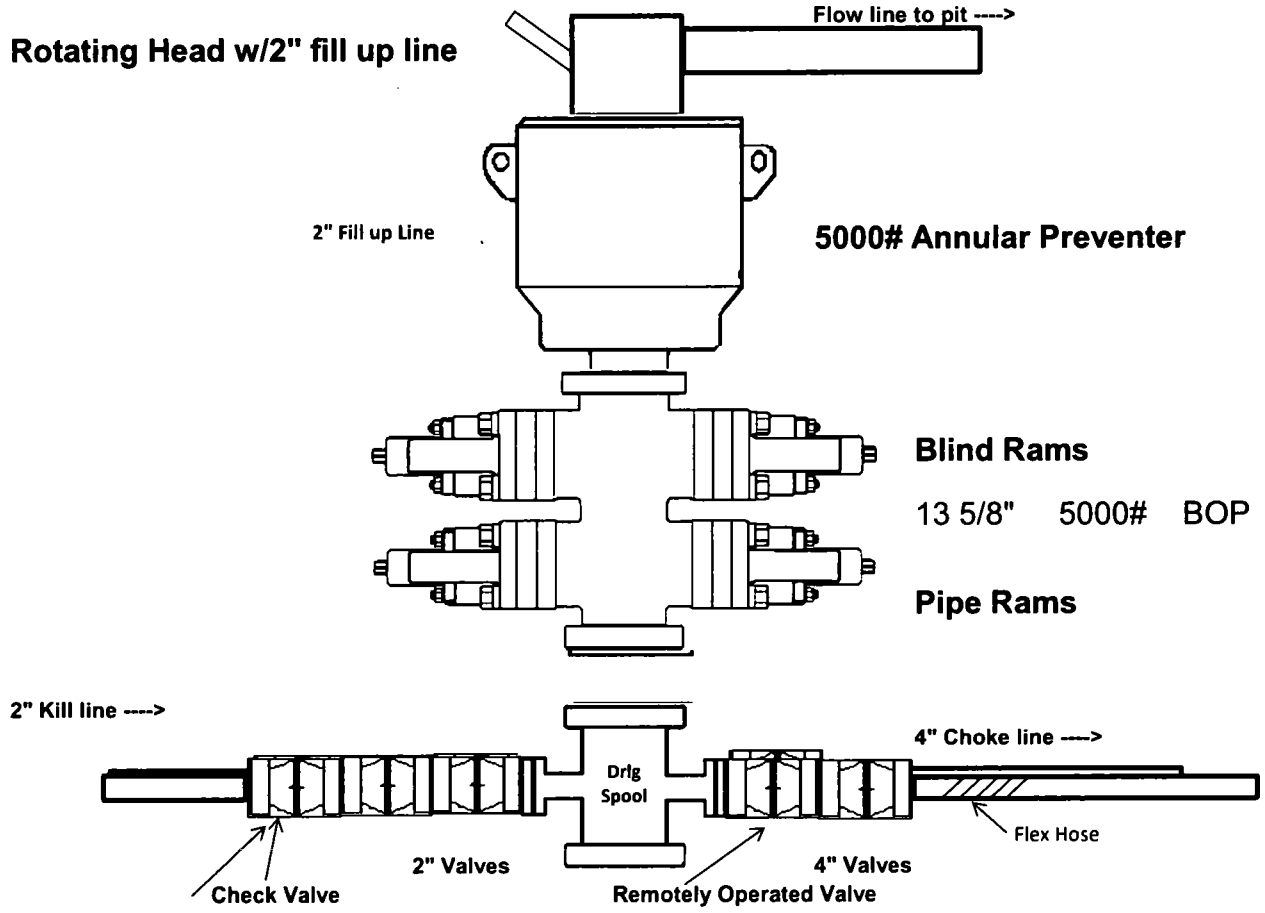
COPPER STATE RUBBER DRILLING HOSES ARE GUARANTEED FOR THE PERIOD OF 12 MONTHS (FROM DATE OF FIRST SERVICE) TO BE FREE FROM DEFECTS IN MATERIALS AND/OR WORKMANSHIP.

IN ORDER TO ESTABLISH A VALID WARRANTY CLAIM, CUSTOMER MUST GIVE NOTICE TO COPPER STATE RUBBER WITHIN 10 DAYS AFTER DISCOVERING THE DEFECT. WE WILL ADVISE IF HOSE SHOULD BE RETURNED TO FACTORY FOR INSPECTION (FREIGHT PREPAID). IF COPPER STATE DETERMINES HOSE TO BE DEFECTIVE, COPPER STATE WILL REPAIR OR REPLACE (AT ITS OPTION) THE HOSE IN QUESTION. ALL REPAIRS AND REPLACEMENTS WILL BE F.O.B. COPPER STATE RUBBER'S PLANT.

REMOVAL OR WELDING OF END FITTINGS WILL VOID WARRANTY

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

5,000 psi BOP Schematic



INDEPENDENCE CONTRACT DRILLING
11601 N. GALAYDA STREET
HOUSTON, TX. 77086

PURCHASE ORDER NO.: PO00116446

DATE: February 23, 2018

COPPER STATE RUBBER/SPECIALTIES COMPANY
FILE: CSR / SPECO- 81069

TAB 1

I. CERTIFICATE OF REGISTRATION ISO 9001:2015
APIQR REGISTRATION NO.: 3042
II. API CERTIFICATE OF ACCREDITATION FOR Q1
AND SPEC. 16C CERTIFICATE NO.:16C-0383

COPPER STATE RUBBER CHOKE / KILL HOSE, API SPEC. 16C MONOGRAMMED, FSL 3, TEMP RANGE B/P, 10,000 PSI WP, 15,000 PSI TEST, FIRE RESISTANT, WITH BUTTWELD 4-1/16'' 10K API FLANGE WITH S.S. LINED BX-155 RING GROOVE EACH END. H2S SUITED.
1 EA. 3'' ID X 75 FT.
S/N- 33851

TAB 2

I. CSR CERTIFICATE OF COMPLIANCE
II. COMPLETE ASSEMBLIES VISUAL INSPECTION/HYDROSTATIC TEST REPORTS
III. PRESSURE GAUGE CALIBRATION CERTIFICATE, S/N.: 111291-2
IV. CHART RECORDER CALIBRATION CERTIFICATE, S/N.: 07459

TAB 3

I. METAL COMPONENT REPORTS
   A. INSERTS:
      1. BRENDELL 14C1, ENCORE METALS HT-418595
   B. 4-1/16" 10K API MAWP 6A FLANGE
      1. MACHINE SPECIALTY & MFG. HT-V4760

TAB 4

I. WELDING PROCEDURES AND QUALIFICATION RECORDS
   A. COPPER STATE RUBBER WPS/PQR NOS.: 911171-1 AND 911171-2, REV. 5 FOR INSERTS TO TERMINATING CONNECTOR WELDMENTS

TAB 5

I. NDE REPORTS FOR END FITTINGS TO INSERT WELDMENTS
   A. STRESS RELIEVING
      1. **REPUBLIC HEAT TREAT**
         CERT. ID NO.: 38120-1
         P.O. NO.: 7494
   B. RADIOGRAPHIC INSPECTION
      1. **RADIOGRAPHIC SPECIALISTS**
         P.O. NO.: 7815

TAB 6

I. FIELD TEST PROCEDURES FOR USED COPPER STATE RUBBER ROTARY AND VIBRATOR HOSE ASSEMBLIES
II. COPPER STATE RUBBER 12 MONTH WARRANTY TERMS AND CONDITION

QMS REGISTERED

Certificate of Registration

APIQR® REGISTRATION NUMBER
3042

This certifies that the quality management system of

COPPER STATE RUBBER, INC.
750 S. 59th Avenue
Phoenix, AZ

has been assessed by the American Petroleum Institute Quality Registrar (APIQR®) and found it to be in conformance with the following standard:

ISO 9001:2015

The scope of this registration and the approved quality management system applies to the

Design and Manufacture of Oilfield, Marine and Other Industrial Hoses

APIQR® approves the organization's justification for excluding:

No Exclusions Identified as Applicable

Effective Date:	**MARCH 28, 2017**
Expiration Date:	**APRIL 21, 2019**
Registered Since:	**APRIL 21, 2016**

Vice President, API Global Industry Services

Accredited by Member of the International Accreditation Forum Multilateral Recognition Arrangement for Quality Management Systems

ANAB IAF

This certificate is valid for the period specified herein. The registered organization must continually meet all requirements of APIQR's Registration Program and the requirements of the Registration Agreement. Registration is maintained and regularly monitored through annual full system audits. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001 standard requirements may be obtained by consulting the registered organization. This certificate has been issued from APIQR offices located at 1220 L Street, N.W., Washington, D.C. 20005-4070, U.S.A., it is the property of APIQR, and must be returned upon request. To verify the authenticity of this certificate, go to www.api.org/compositelist.

QUALITY REGISTRAR

Certificate of Authority to use the Official API Monogram

License Number: 16C-0383 **ORIGINAL**

The American Petroleum Institute hereby grants to

COPPER STATE RUBBER, INC.
750 S. 59th Avenue
Phoenix, AZ

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-16C** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **16C-0383**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Flexible Choke and Kill Lines atFSL 0, FSL 1, FSL 2, FSL 3

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: MARCH 28, 2017
Expiration Date: APRIL 21, 2019

To verify the authenticity of this license, go to www.api.org/compositelist.

Vice President, API Global Industry Services

American Petroleum Institute

2015-313

copper state rubber
CSR
Specialties Company

14141 S. Wayside Drive
Houston, Texas 77048

Phone 713-644-1491
Fax 713-644-9830
www.copperstaterubber.com
sales@copperstaterubber.com

February 23, 2018

Independence Contracting Drilling
11601 N. Galayda St.
Houston, Texas 77086

Subject: Purchase Order No.: PO00116446
Date: February 23, 2018
Specialties Company File No.: CSR / SPECO-81069

Equipment: Copper State Rubber Choke/Kill Hose Assembly, 10KSI MAWP X 15KSI T/P, API 16C FSL3, Fire Resistant Cover, Complete 4-1/16" 10KSI MAWP Flange With BX155 SS Lined Ring Groove Each End. H2S Suited.
1EA: 3" ID X 75Ft. S/N-33851

CERTIFICATE OF COMPLIANCE

This is to certify the above referenced equipment meets or exceeds the following requirements and were manufactured from same material specification and manufacturing methods as prototype assemblies for referenced specifications.

I. COMPLETE HOSE ASSEMBLY
- A. API Certificate of Accreditation for Spec: Q1 (Quality Programs) and Spec.: 16C
  1. Copper State Rubber, Inc. Certificate No.: 16C-0383
- B. **CSR** Specification No.: 090-1915C

II. PHYSICAL/CHEMICAL PROPERTIES OF METAL COMPONENTS
- A. **API** Spec. 6A, latest edition
- B. **API** Spec. 16A, latest edition
- C. **NACE** Standard MR0175, latest edition

III. WELDMENTS/NDE REQUIREMENTS
- A. Section IX, **ASME** Boiler & Pressure Code, 1986 Ed., 1987 Add.
- B. CSR/Specialties Company WPS/PQR Nos.: 911171-1, and 911171-2, Rev. 05 dated June 2005

III. WELDMENTS/NDE REQUIREMENTS (continued)

C. **API** Spec. 6A, latest edition

D. **API** Spec. 16A, latest edition

Sincerely,

Joe Leeper,
Technical Department

copper state rubber

Visual Inspection / Hydrostatic Test Report

Manufacturer	Copper State Rubber Inc.
Hose Type	Choke and Kill
Pressure Rating	10,000 PSI MAWP X 15,000 PSI T/P
Spec Number	090-1915C-48
FSL Rating	FSL 3

Serial Number	33851
Size ID	3"
Length	75'
Date	December 9, 2017
Shop Order Number	31162

Connections Description: 4 1/16" 10K API FLANGE WITH SS INLAID BX-155 RING GROOVE EACH END

Traceability of Terminating Connectors

	Insert	Male	Nut	Female	Flanges	Hubs	Other
Connector 1	14C1				V4760		CSR-H1263
Connector 2	14C1				V4760		CSR-H1265

Comments

Calibrated Devices

Pressure Recorder	07459	Calibration Date	1/23/2017
Pressure Gauge	111291-2	Calibration Date	1/23/2017

*This report signifies that the product has been visually inspected for defects in the interior tube, recess, gasket, cover and branding and all have been found to be conforming.

Comments

Hydrostatic Testing Requirements

60 Min @ 15,000 psi (-0/+500 psi)

Length after test

75' OAL

Witness By: Phil Snider

Supervisor

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

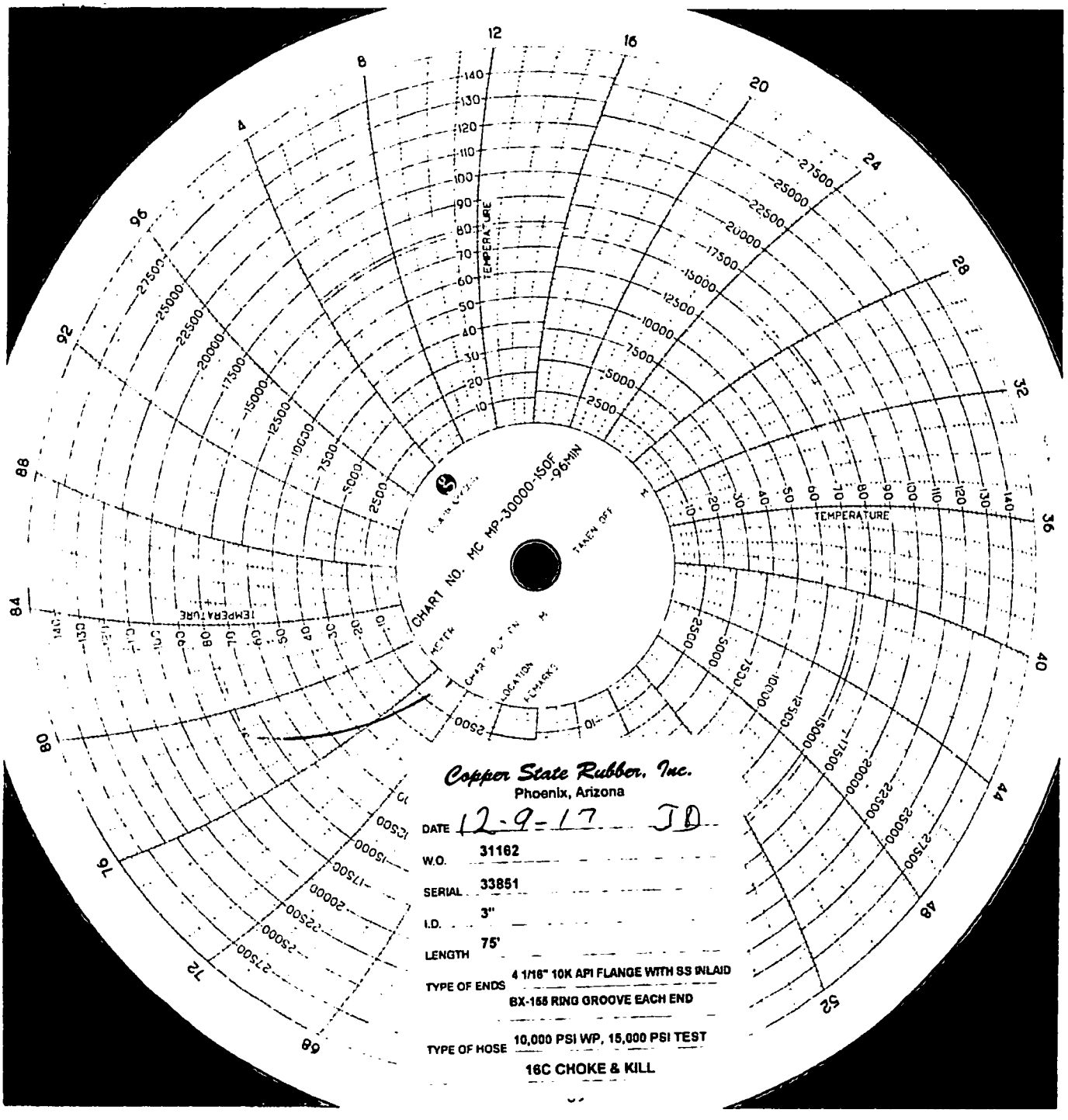


CHART NO. MC MP-30000-150F -96-MIN
TEMPERATURE
METER
LOCATION
REMARKS
TAKEN OFF
Copper State Rubber, Inc.
Phoenix, Arizona
DATE 12-9-17 JD
W.O. 31162
SERIAL 33851
I.D. 3"
LENGTH 75'
TYPE OF ENDS 4 1/16" 10K API FLANGE WITH SS INLAID
BX-155 RING GROOVE EACH END
TYPE OF HOSE 10,000 PSI WP, 15,000 PSI TEST
16C CHOKE & KILL

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480 921 1021

LABORATORY ACCREDITATION BUREAU ACCREDITED

Certificate of Calibration

Certificate # 1702331

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Approved RS II Quality Dept

Equipment Tested

Description : **McDaniel Pressure Gauge**	Calibration Date : **January 23, 2017** Calibration Due : **January 23, 2018**
Model # : **None Visible**	Identification # : **111291-2**
Range : **0-30000 PSIG**	Serial # : **None Visible**
Accuracy : .50 % of Full Scale	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.100-2013

Measurement Data

% of Span	Gauge Reading	Actual Pressure	Reading Error	Maximum Allowable
20 %	6000	6054.9	54.9	150.0
40 %	12000	11995.2	-4.8	150.0
60 %	18000	17976.6	-23.4	150.0
80 %	24000	23965.8	-34.2	150.0
100 %	30000	29943.9	-56.1	150.0

Ambient Temperature : 19.5° C Relative Humidity : Between 20 & 60%

Comments :

Uncertainty of Measurement is +/- (19 + 0.6*R*) psi
Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2
The results obtained relate only to the item calibrated
Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty. It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures :PTS Procedure Manual Section **SCP-01 High Pressure Gauge**	Standard : PTS 123 Sensotec Pressure System Cert # 1-132212 Due: 12 Jan 2018

Calibration Performed By K Cannidy

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480.921.1021

LABORATORY ACCREDITATION BUREAU ACCREDITED

Certificate of Calibration

Certificate # 1702332

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Approved RS II Quality Dept

Equipment Tested

Description : **TechCal Pressure Gauge**	Calibration Date : **January 23, 2017** Calibration Due : **January 23, 2018**
Model # : **Chart Recorder**	Identification # : **07459**
Range : **0-30000 PSIG**	Serial # : **07459**
Accuracy : .50 % of Full Scale	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.100-2013

Measurement Data

% of Span	Gauge Reading	Actual Pressure	Reading Error	Maximum Allowable
20 %	6000	5911.8	-88.2	150.0
40 %	12000	12075.7	75.7	150.0
60 %	18000	18085.6	85.6	150.0
80 %	24000	24090.2	90.2	150.0
100 %	30000	30045.1	45.1	150.0

Ambient Temperature : 19.5° C Relative Humidity : Between 20 & 60%

Comments :

Uncertainty of Measurement is +/- (19 + 0.6*R*) psi
Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2
The results obtained relate only to the item calibrated
Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty.
It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures :PTS Procedure Manual Section **SCP-01 High Pressure Gauge**	Standard : PTS 123 Sensotec Pressure System Cert # 1-132212 Due: 12 Jan 2018

Calibration Performed By K Conridge

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480 921 1021

LABORATORY ACCREDITATION BUREAU

Certificate of Calibration

Certificate # 1702332

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Approved RS II Quality Dept

Equipment Tested

Description : **TechCal Temperature Gauge**	Calibration Date : **January 23, 2017** Due Date : **January 23, 2018**
Model # : **Chart Recorder**	Identification # : **07459**
Range : **0-150° F**	Serial # : 07459
Accuracy : 1.5 F	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.200 - 2008 (R2013)

Measurement Data in degrees F

Actual	Unit Under Test
50.06	50
100.11	100
150.09	150

Ambient Temperature : 19.5°C Relative Humidity : Between 20 & 60%

Comments : AS RETURNED - Gauge Adjusted

Uncertainty of Measurement is +/- .12 Deg C

Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2

The results obtained relate only to the item calibrated

Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty. It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures : PTS Procedure Manual Section : **SCP 25 – Thermometer – Analog, Digital, Glass**	**Standard :** PTS 111 ThermoWorks Reference Thermometer Certificate # 222834 Due: 02 Sep 2017 PTS 118 Techne Temperature Well Certificate # 161536 Due: 01 Jun 2017

Calibration Performed By K Cavridge

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

14C1

encore metals

CERTIFICATE OF TEST

Certification Date
14-JUL-2014

CUSTOMER ORDER NUMBER
15916

CUSTOMER PART NUMBER
SERIAL#G87

ENCORE METALS US
789 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Invoice Number
S160494

SOLD TO: BRENDELL MANUFACTURING INC
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

SHIP TO: BRENDELL MANUFACTURING INC.
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Description: E4130 HR NORM Q&T BAR API 6A PSL3 NACE MR0175
6-1/2 RD X 20' R/L Line Total: 19.5 FT
HEAT: 418595 ITEM: 505824

Specifications:
NACE MR-01-75 API 6A PSL 3 EN 10204 3.1
AMS H 6875 A ASTM A29 12 ASTM A322 07
ASTM A370 11 ASTM A304 04

CHEMICAL ANALYSIS

C	MN	SI	P	S	CR	NI	MO
0.313	0.56	0.25	0.014	0.003	1.0600	0.17	0.23

AL	CU	SN	TI	V	NB	AS	CA
0.025	0.28	0.014	0.0027	0.027	0.003	0.006	0.0015

SB	CO	PB
0.001	0.011	0.002

RCPT: R120906

COUNTRY OF ORIGIN : ITALY

MECHANICAL PROPERTIES

DESCRIPTION	YLD STR PSI	ULT TEN PSI	%ELONG IN 02 IN	%RED IN AREA	HARDNESS BHN
TEST PC/QTC	85862.0	104572.0	22.0	60.0	229

DESCRIPTION	YLD STR	ULT TEN	%ELONG	%RED IN AREA	HARDNESS BHN
SURFACE					229

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

Material did not come in contact with mercury while in our possession.

DIANA JOHNSON

INSERT MATERIAL
INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

encore metals

CERTIFICATE OF TEST

Certification Date
14-JUL-2014

CUSTOMER ORDER NUMBER
15916

CUSTOMER PART NUMBER
SERIAL#G87

ENCORE METALS US
789 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Invoice Number
S160494

SOLD TO: BRENDELL MANUFACTURING INC
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

SHIP TO: BRENDELL MANUFACTURING INC.
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Description: E4130 HR NORM Q&T BAR API 6A PSL3 NACE MR0175
6-1/2 RD X 20' R/L Line Total: 19.5 FT
HEAT: 418595 ITEM: 505824

GRAIN SIZE :7 -

IMPACT TEST TYPE	TEMP	ORNT	UOM ft-lbs SMPL#1	#2	#3	AVG	% SHEAR	LAT EXPN	DESCRIPTION
CHARPY	-75 F	LONG	33.0	36.0	36.0	35.0			10mm x 10mm

MATERIAL IS FREE FROM MERCURY CONTAMINATION
NO WELD REPAIR PERFORMED ON MATERIAL
THERMAL TREATMENT: OK
NORMALIZED 1652 DEG F X 353'
QUENCHED 1616 DEG F WATER X 353'
TEMPERED 1300 DEG F AIR X 390'
WATER TEMP BEFORE 86 DEG F AFTER 86 DEG F

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

Material did not come in contact with mercury while in our possession.

DIANA JOHNSON

TECHNICAL MANAGER

MACHINE SPECIALTY & MFG., INC.
215 ROUSSEAU ROAD
YOUNGSVILLE, LA 70592
Phone: 337-837-0020
Fax: 337-837-0062

Material Test Report

SOLD TO:	SHIP TO:
SPECIALTIES CO./COPPER STATE RUBBER INC. 14141 S WAYSIDE DRIVE HOUSTON, TX 77048	SPECIALTIES CO./COPPER STATE RUBBER INC. 14141 S WAYSIDE DRIVE HOUSTON, TX 77048

DATE	SALES ORDER #	CUST P.O.#	TAG NUMBER	ITEM TAG
11/17/2016	0260385	110816WL		

ITEM #	QTY	ITEM DESCRIPTION	HEAT CODE	HEAT NUMBER	STARTING MATERIAL
2	8	4 1/16 10M RTJ WN 3 ID 4.5 OD TAPER BORE PSL-3 316SS INLAY SO# 13056-01 THRU -08	V4760	G1207	API 6A 75K 4130

CHEMICAL ANALYSIS

C	Si	Mn	S	P	Cr	Cu	Al	Ni	Mo	V
.32	.22	.51	.011	.013	.98			.065	.17	.008

PHYSICAL PROPERTIES

Yield PSI	Tensile PSI	Elongation	REDUCTION OF AREA %	Hardness Brinell
87898	104257	27.65	70.24	201-233

IMPACT TESTING

TYPE	TEMP	SMPL# 1	# 2	# 3	AVG	%SHEAR	LAT EXP
CHPY-75	- 75F	54 L	58 L	52 L	55	32-31-34	.032-.031-.030

SUPPLEMENTAL INFORMATION

NORMALIZE@1680F FOR 180MIN AUSTENITIZE@1600F FOR 180MIN TEMPER@1260F FOR 240MIN QTC: SACRIFICIAL PIECE CHARPY: 10 X 10 X 55 MELT PRACTICE: EAF-LRF-VD-CCM W/ EMS

WE HEREBY CERTIFY THAT ALL TEST RESULTS CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY. ALL TEMPERATURES ARE IN FAHRENHEIT AND IMPACT TESTING IN FT LBS MANUFACTURED IN USA. EN10204 3.1

Q.A. DEPARTMENT

FLANGE MATERIAL
INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

Specialties Company
copper state rubber, inc.

6401 McGrew St.
Houston, Texas 77087
713-644-1491
713-644-9830 Fax
csrhouston@msn.com

WELDING PROCEDURE SPECIFICATION, WPS NO: 911171-1
SECTION IX, ASME BOILER 7 PRESSURE VESSEL CODE, 1989 EDITION, 1990 ADDENDA

COMPANY: COPPER STATE RUBBER, INC. SUBSIDIARY OF SPECIALTIES CO.

BY: KEN FORDYCE DATE: 10/07/91 REVISED BY: ROGER PEACE
TECHNICAL MANAGER
COPPER STATE RUBBER

REVISION NO: 5 DATE: 5-31-2005

SUPPORTING PQR(s): 911171-2

REVIEWED REV: 5
24 JUNE 2005

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

SwL SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

222 Cavalcade St. • P.O. Box 8768, Houston Texas 77249 • 713/692-9151

REVIEWED as indicated in ABS Letter dated DEC 20 1995 ABS HOUSTON

Welding Procedure Specification, WPS No. 911171-1
Section IX, ASME Boiler & Pressure Vessel Code, 1989 Edition, 1990 Addenda

Company: Copper State Rubber, Inc. subsidiary of Specialties Co.

By Ken Fordyce Date: 10/07/91 Revised By: ROGER PEACE Date: 7-16-93 REVISION 4
TECHNICAL MANAGER
COPPER STATE RUBBER

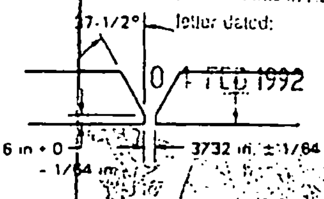
Supporting PQR(s): 911171-2

WELDING PROCESS(es)
Auto: —— Semi-auto: GMAW-S Machine: —— Manual: SMAW

APPROVED
This approval covers only ABS requirements and does not include items not required by ABS. See comments in ABS letter dated: 04 FEB 1992

Raise Cum to 8" thk for non impacts
to 2.5" for impacts
MDT -30°C
Acceptable for H_2S Service NACE MR0175
ASME IX
DNV (not) Drill

JOINTS (QW-402)
Joint Design: The joint may be changed from that shown to any other type (e.g. double-V, single-, double-U, single-, double-J, etc.) which is consistent with design and application requirements, including those of the construction code; changes in the design (root gap, use of retainers, etc.) beyond that permitted in this WPS must be specified in a new or revised WPS.



Backing: Use backing or backgouging w/SMAW.

Backing Type: weld metal or base metal

Retainers: metallic/nonmetallic may be used

Single-V-Groove

BASE METALS (QW-403)
Specification: AISI 4130 API 6A 75K material designation, 207-235 BHN

Groove Thickness Range: 3/16"-8" f/nonimpacts Fillet Thickness Range: all

Pipe Groove Diameter Range: all Pipe Fillet Diameter Range: all

Other Base Metal Thickness Limitations:
(1) 1.65" maximum for any single weld pass thicker than 1/2."
(2) 5/8" minimum to 2.5" maximum for impacts

REGULATIONS FOR PETROLEUM INDUSTRY

FILLER METALS (QW-404)
AWS Class No.: Only A-No. 11 low hydrogen electrodes (E10018-D2, Exxx15-D2, & Exxx16-D2) are qualified for impacts; only ER80S-D2 is qualified for impacts.
Specification: 5.28, GMAW; 5.5, SMAW F-No.: 6, GMAW; 4, SMAW A-No.: 11
Size: 0.035"-0.045" diameter for GMAW-S; 1/8"-1/4" diameter for SMAW
Groove Weld Size/Deposit Range: 0.14" max. for GMAW-S; 2.36" max. for SMAW impacts; 7.86" max. for SMAW nonimpacts
Fillet Size Range: any
Other: The maximum SMAW bead size qualified for impacts is 3/16" thick x 1/2" wide x 6" long. See foot note to Table 1. Solid bare wire must be used for GMAW. Supplementary filler metal or powder not permitted.

POSITIONS (QW-405)
Groove: flat for impacts
Fillet: flat for impacts
Vertical Progression: up or down

WELD & BASE METAL TEMPERATURES (QW-406)
Preheat: 200°F for T to 1"; 300°F over 1"
Interpass: 600°F for impacts
Maintenance: none

POSTWELD HEAT TREATMENT (QW-407)
Temperature Range: 1200°F-1225°F or 20°F-30°F below base metal tempering temperature.
Time Range: 1 hour per inch of section thickness

SHIELDING, BACKING, TRAILING GAS (QW-408)

GMAW-S	Gas Type/Mix	Percent Mixture	Flow Rate (cfh)
Shielding:	Argon/CO2*	75% Ar/25%CO2*	30 Minimum
Backing:	none*	none	none
Trailing:	none	none	none

ELECTRICAL CHARACTERISTICS (QW-409)
Current & Polarity: DC reverse (DCEP) Heat Input: See Table 1 note.
Voltage: See Table 1. Transfer Mode:: short-circuiting for GMAW-S

TECHNIQUE (QW-410)
String or Weave: string only for impacts*
Cleaning: wire brush, chip, grind, or other suitable means to remove slag, rust, scale, grease, or other harmful materials from the weld fusion zone
Method of Back Gouging: mechanical or thermal cutting (w/specified preheat)
Tube to Work Distance: 1/4"-1/2" Passes per Side: multiple only for impacts
Electrodes: single only for impacts Peening: may be used on intermediate passes to reduce shrinkage stresses
GMAW Gas Cup Size: Nos. 3-8

TABLE 1
ESSENTIAL & NONESSENTIAL PROCEDURE VARIABLES

Pass No.	Process	Filler Metal Class	Filler Metal Dia.	Current Type	Current Amps.	Volts	Travel Direction	Travel Speed
1	GMAW-S	ER80S-D2	0.035	DCEP	60-130	15-20	Flat	7.0 ipm
Any	SMAW	E10018-D2	1/8	DCEP	110-140	18-25	Flat	7.0 ipm

*NOTE: The maximum bead size that may be deposited for impacts in any pass is 3/16" thick x 1/2" wide x 6" long with 1/8" diameter electrodes.

This WPS was documented to code requirements by Tony Gordy of SwL as Report No. 911171-1. It gives the values and/or limits of essential, supplementary essential, and nonessential welding variables permitted by Section IX of the ASME Code as a result of successful procedure qualification. The essential and supplementary essential variables may be changed within the limitations of ASME Section IX, QW-250 without requalification. Changes outside those limits require requalification of the altered procedure.

[signature] Date: 10/07/91 File No.: 12-8075-00
Reviewed By:

SwL SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

222 Cavalcade St. • PO. Box 8768, Houston, Texas 77249 • 713/692-5151

Prodecure Qualification Record, PQR No. 911171-2
Section IX, ASME Boiler & Pressure Vessel Code, 1989 Edition, 1990 Addenda

Date: 10/07/91 WPS No.(s): 911171-1

WELDING PROCESS(es)
Auto: ——— Semi-auto: GMAW-S Machine: ——— Manual: SMAW

JOINTS (QW-402)

Single-V-Groove Weld with No Backing
Root Gap = 1/8"
Root Face = 1/16"
Groove Angle = 70° 1st 3/4"
Groove Angle = 33° 2nd 3/4"

Joint Design

BASE METALS (QW-403)
Material Spec.: AISI 4130
Type & Grade: API 75k designation
P-No.: — to P-No.: —
Thickness of Test Coupon: 1-1/2"
Diameter of Test Coupon: 10" OD
Other: normalized, quenched, tempered to 228 BHN (Heat No.A2769)

FILLER METALS (QW-404)

	Spec	Class.	F-No.	A-No.	Dia.
GMAW:	5.28	ER80S-D2	6	11	0.035"
SMAW:	5.5	E10018-D2	4	11	1/8"

POSITION (QW-405)
Position of Joint: 1G Rolled
Progression of Weld See Table 1.

PREHEAT TEMPERATURE (QW-406)
Preheat: 300°F minimum
Interpass: 500°F maximum
Maintenance: —

POSTWELD HEAT TREATMENT (QW-407)
Temperature: 1230°F
Time: 2-1/2 hours
Other: —

GAS (QW-408)
Shielding Gas: Argon & CO2
Mixture: 75% Ar, 25% CO2
Shielding Flow Rate: 30 cfh
Backing Flow Rate: ———

ELECTRICAL (QW-409)
Voltage: See Table 1.
Current: See Table 1.
Mode of Transfer: Short Circuiting
Heat Input: See Table 1 note.

TECHNIQUE (QW-410)
String or Weave: String & Weave
Passes per Side: multiple
Deposit Thickness 1/8" GMAW; 1-3/8" SMAW
Machine Oscillation: NA
Number of Electrodes: NA

TABLE 1

ESSENTIAL & NONESSENTIAL PROCEDURE VARIABLES

Pass		Filler Metal		Current			Travel	
No.	Process	Class	Dia.	Type	Amps.	Volts	Direction	Speed
1	GMAW-S	ER80S-D2	0.035	DCEP	60-130	15-20	Flat	7.0 ipm
2-24	SMAW	E10018-D2	1/8	DCEP	110-140	18-25	Flat	7.0 ipm

NOTE: The maximum volume of weld metal deposited during any single pass was a 3/16" thick x 1/2" wide bead in a 6" length using a 1/8" diameter E10018-D2 electrode.

TENSILE TEST Nos. 57022 & 57103 (QW-150)

Specimen No.	Width or Dia. (in.)	Thickness (in.)	Area ($in.^2$)	Ultimate Load (lb.)	Ultimate Stress (psi.)	Ultimate Failure Location
1	0.748	1.296	0.9694	98,710	101,800	Weld Metal
2	0.748	1.378	1.0307	105,700	102,500	Weld Metal

GUIDED BEND TEST Nos. 57022 & 57103 (QW-160)

Type & Figure No.	Result
Four Side Bends per QW-462.2	Satisfactory

TOUGHNESS TEST No. 57103 (QW-170)

Specimen No.	Notch Location	Notch Type	Test Temp(°C)	Impact Values	Lateral Exp Mils	Lateral Exp Shear%	Section Size at Notch (mm)	
1	Weld	Vee	-15	88	60	75	8	10
2	Weld	Vee	-15	29	39	30	8	10
3	Weld	Vee	-15	32	42	30	8	10
			Fusion Line (FL)					
1	FL	Vee	-15	52	37	60	8	10
2	FL	Vee	-15	47	36	60	8	10
3	FL	Vee	-15	56	43	60	8	10
1	FL+2mm	Vee	-15	104	70	75	8	10
2	FL+2mm	Vee	-15	118	74	75	8	10
3	FL+2mm	Vee	-15	102	68	75	8	10
1	FL+5mm	Vee	-15	108	70	75	8	10
2	FL+5mm	Vee	-15	106	68	75	8	10
3	FL+5mm	Vee	-15	105	66	75	8	10

Rockwell Hardness Survey (2mm below Face of Weld)

Left Base Metal Zones Unaffected		Left Base Metal Zones Heat Affected		Weld		Right Base Metal Zones Unaffected		Right Base Metal Zones Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
1.	97.2	2.	98.7	3.	96.6	6.	98.3	7.	96.7
				4.	96.9				
				5.	96.6				

Rockwell Hardness Survey (at midwall)

Left Base Metal Zones Unaffected		Left Base Metal Zones Heat Affected		Weld		Right Base Metal Zones Unaffected		Right Base Metal Zones Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
8.	93.6	9.	93.5	10.	92.9	12.	95.8	13.	98.3
				11.	97.7				

Rockwell Hardness Survey (2mm below root of weld)

Left Base Metal Zones Unaffected		Left Base Metal Zones Heat Affected		Weld		Right Base Metal Zones Unaffected		Right Base Metal Zones Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
14.	95.6	15.	99.9	16.	96.4	17.	97.9	18.	99.9

This PQR was documented to code requirements by Ken Lodge of SwL as Report No. 911171-2 from the welding variables recorded by Copper State Rubber, Inc. during the welding of the test coupons and the results of tensile, guided-bend, hardness, and charpy impact tests performed by SwL.

Reviewed By: _____ Date: 10/07/91 Client No.: 12-8075-00

Welder: Randy Wiseman ID/Stamp No.: 234-48-95

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared and tested in accordance with code requirements.

Signed: Copper State Rubber, Inc.

Date: OCT 8, 1991 By: ROGER D PEACE

ROGER D. PEACE

SOUTHWESTERN LABORATORIES

SwL

Materials,environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
222 Cavalcade St.• P.O.Box 8768, Houston, Texas 77249 • 713/692 9251

SWL

Welder Qualification Test Record, WQTR No. 930635-1

Section IX, ASME Boiler & Pressure Vessel Code, 1992 Edition

Using WPS No. 911171-1 Rev. 1, Welder Jay B. Williams, ID No. 453-06-6487, qualified for the following ranges.

Test Variables	Test Values	Qualification Range
PROCESS:	*GMAW-S*	*GMAW-S Only*
BACKING:	*Without*	*With or Without*
MATERIAL SPECIFICATION:	*Quenched & Tempered AISI 4130 to API 6A TP 75K*	*P-No. 1 through P-No. 11, P-No. 4X and unassigned metals of similar chemical composition*
DEPOSIT THICKNESS:		
GROOVE	*1/8"*	*9/64" Maximum*
FILLET	*Not Applicable*	*Any*
DIAMETER:		
GROOVE	*4-1/2" OD*	*2-7/8" OD & Over*
FILLET	*Not Applicable*	*Any*
FILLER METAL:		
SPECIFICATION	*SFA-5.28*	
CLASSIFICATION	*AWS ER80S-D2*	
F-NO.	*6*	*6, or any bare wire conforming to an analysis listed in QW-442*
POSITION:	*1G*	*Flat Only*
VERTICAL WELDING DIRECTION:	*Not Applicable*	–
BACKING GAS:	*Without*	*With or Without*

Examination & Test Results

GUIDED-BEND TEST NO. 60596 PER QW-160:	RESULT:
Two Side Bends per QW-462.2	*Satisfactory*

NOTE:	*The Guided-bend tests were witnessed by Glen R. Lauritsen, Principal surveyor, ABS AMERICA, a division of The AMERICAN BUREAU of SHIPPING.*

This WQTR was documented to Code requirements by Jay Jordyn *of SwL as Report No. 930635-1 from the welding variables recorded by Copper State Rubber, Inc., Specialties Co. during the welding of the test coupon and the results of guided-bend tests performed by SwL.*

REVIEWED BY

DATE:	May 12, 1993	FILE NO.:	12-8075-00

SOUTHWESTERN LABORATORIES

SwL

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
222 Cavalcade St.• P.O.Box 8768, Houston, Texas 77249 • 713/692 9251

SWL

Welder Qualification Test Record, WQTR No. 930635-2

Section IX, ASME Boiler & Pressure Vessel Code, 1992 Edition

Using WPS No. 911171-1 Rev. 1, Welder Jay B. Williams, ID No. 453-06-6487, qualified for the following ranges.

Test Variables	Test Values	Qualification Range
PROCESS:	SMAW	SMAW Only
BACKING:	With	With Only
MATERIAL SPECIFICATION:	Quenched & Tempered AISI 4130 to API 6A TP 75K	P-No. 1 through P-No. 11, P-No. 4X and unassigned metals of similar chemical composition
DEPOSIT THICKNESS:		
GROOVE	5/8"	1-1/4" Maximum
FILLET	Not Applicable	Any
DIAMETER:		
GROOVE	4-1/2" OD	2-7/8" OD & Over
FILLET	Not Applicable	Any
FILLER METAL.:		
SPECIFICATION	SFA-5.5	
CLASSIFICATION	AWS E10018-D2	
F-NO.	4	1, 2, 3, & 4
POSITION:	1G	Flat Only
VERTICAL WELDING DIRECTION:	Not Applicable	–
BACKING GAS:	Not Applicable	–

Examination & Test Results

GUIDED-BEND TEST NO. 60596 PER QW-160:	RESULT:
Two Side Bends per QW-462.2	Satisfactory

NOTE:	The Guided-bend tests were witnessed by Glen R. Lauritsen, Principal surveyor, ABS AMERICA, a division of The AMERICAN BUREAU of SHIPPING.

This WQTR was documented to Code requirements by Ken Jordyn *of SwL as Report No. 930635-2 from the welding variables recorded by Copper State Rubber, Inc., Specialties Co. during the welding of the test coupon and the results of guided-bend tests performed by SwL.*

REVIEWED BY:

DATE:	May 12, 1993	FILE NO.:	12-8075-00

American Bureau of Shipping

TWO WORLD TRADE CENTER, 106TH FLOOR
NEW YORK, NEW YORK 10048

93-HS57593 1 6 May 1993

WELDER QUALIFICATION TEST

Jay Williams — Welder's Name:
S.S. No:453-06-6487 — Identification

QUALIFICATION TESTS:
SPECIFICATION - ASME CODE, SECTION IX, Boiler & Pressure vessel code, 1989 Ed, 1990 ad.
WELDING PROCESS - Semi-Auto: GMAW-S - Manual: SMAW
JOINT TYPE - Single-V-Groove Weld with no backing
BASE MATERIAL TYPE - AISI 4130, API 75k designation
BASE MATERIAL THICKNESS/SIZE - 1-1/2" thick
FILLER METAL TYPE - GMAW Spec 5.28 ER805-D2
SMAW Spec 5.5 E10018-D2
FILLER METAL "F" - NO. F-6, F-4
TEST POSITION - 1G Rolled

GUIDED BEND TEST RESULTS:

Specimen No.	Type	Results
S-1	Side	Satisfactory
S-2	Side	Satisfactory

POSITION AND TYPE WELD QUALIFIED:
MATERIAL GROUP: API 75k designation
FILLER METAL GROUP: GMAW 5.28 Spec ER805-D2
SMAW 5.5 Spec E10018-D2

	MATERIAL	THICKNESS/SIZE	POSITION
GROOVE WELD:	PLATE & PIPE	MAX TO BE WELDED	FLAT
FILLET WELD	PLATE & PIPE	ALL	FLAT
	PLATE & PIPE	ALL	FLAT

R.G. Carver, Surveyor

G.R. Lauritsen, Surveyor

NOTE: This Report evidences that the survey reported herein was carried out in compliance with one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Report is a representation only that the vessel, structure, item of material, equipment, machinery or any other item covered by this Report has been examined for compliance with, or has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping. The validity, applicability and interpretation of this Report is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Report or in any notation made in contemplation of this Report shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.

AB 141 Revised 12/85

American Bureau of Shipping

STATEMENT OF FACT

CERTIFICATE No. 93-HS57593

PORT OF Houston, Texas

DATE 6 May 1993

This is to Certify that the undersigned Surveyor to this Bureau, did, at the request of Copper State Rubber/Specialties of Houston, Texas on the28th day of April 1993 and in order to witness and report on Welder Qualification Test. For further particulars, see report as follows:

1. The following welder was tested in accordance with Section IX of ASME Boiler and Pressure Vessel Code and the American Welding Society Structural Welding Code. Weld Specimens were physically tested, examined and found satisfactory.

   Jay Williams S.S. NO. 453-06-6487

2. For particulars on tests performed, material, electrodes and positions qualified for, see attached sheet.

R.G. Carver, Surveyor

G.R. Lauritsen, Surveyor

SWL

SOUTHWESTERN LABORATORIES, INC.

222 Cavalcade
P.O. Box 8768
Houston, Texas 77249
Phone: (713) 692-9151
Fax: (713) 686-6207

Report No.: 930949
Date: July 16, 1993
Client No.: 12-8075-00
Page No.: 1 of 2

For compliance with UK DEN "OFFSHORE INSTALLATIONS (CONSTRUCTION AND SURVEY) REGULATIONS, 1974"

REVIEWED as indicated in ABS Letter dated: DEC 20 1995 ABS HOUSTON

For compliance with the applicable parts of the Norwegian Petroleum Directorate's "ACTS, REGULATIONS AND PROVISIONS FOR THE PETROLEUM INDUSTRY"

Copper State Rubber, Inc.
P.O. Box 266084
Houston, TX 77207

Attention: Mr. Roger Peace

Projects: Charpy Impact Testing of a Procedure Qualification Test Weld

PROJECT INFORMATION

WELDING PROCEDURE:	*Previously qualified WPS No. 911171-1 (supported by PQR No. 911171-2)*
WELDMENT AS-RECEIVED:	*AISI 4130, as-welded condition*
IDENTIFICATION:	*Heat No. A2769*
SPECIFICATIONS:	*ABS, Guide for the Certification of Drilling Systems, 1990*

Post Weld Heat Treatment

SPECIFICATION:	*PQR No. 911171-2*
TIME:	*2 hours at temperature*
TEMPERATURE:	*1200° F-1210° F*
HEATING RATE:	*212° F per hour from 700° F*
COOLING RATE:	*318° F per hour to 700° F*

HEAT TREATMENT:	*No. 60973*	HEAT TREATMENT DATE:	*July 12, 1993*

Charpy Impact Test Results

SPECIFICATIONS:	*0.015" lateral expansion*	TEST TEMPERATURE:	*Minus 30° C*
LINEAR HAMMER VELOCITY:			*16.8 feet per second*
EFFECTIVE ENERGY:	*264 foot pound force*	TECHNICIAN:	*M. Petersen*
SPECIMEN TYPE & SIZE:	*ASTM A 370, E 23, Type A; 10 mm x 10 mm*		
LOCATION & ORIENTATION:	*Weld metal, HAZ, and base metal, 2mm and 5mm from the fusion line, 1/16" below the surface and transverse to the weld axis*		
TEST EQUIPMENT:	*Tinius Olsen Serial No. 103222*	TEST PROCEDURE:	*ASTM A 370, E 23*
TEST NO.:	*60988*	TEST DATE:	*July 14, 1993*

SPECIMEN IDENTIFICATION	WIDTH, INCHES	EFFECTIVE THICKNESS, INCHES	IMPACT ENERGY, FT-LBF	LATERAL EXPANSION, MILS	PERCENT DUCTILE FRACTURE
930949-1-1 (WELD)	0.394	0.316	60	40	25
930949-1-2 (WELD)	0.394	0.316	59	40	25
930949-1-3 (WELD)	0.394	0.316	62	42	25
930949-2-1 (HAZ)	0.394	0.316	49	32	25
930949-2-2 (HAZ)	0.394	0.316	101	60	50
930949-2-3 (HAZ)	0.394	0.316	40	22	25

REPORT NO. : 930949

COPPER STATE RUBBER COMPANY

SPECIMEN IDENTIFICATION	WIDTH, INCHES	EFFECTIVE THICKNESS, INCHES	IMPACT ENERGY, FT-LBF	LATERAL EXPANSION, MILS	PERCENT DUCTILE FRACTURE
930949-3-1 (2 MM)	*0.394*	*0.315*	*76*	*50*	*60*
930949-3-2 (2 MM)	*0.394*	*0.315*	*71*	*47*	*60*
930949-3-3 (2 MM)	*0.394*	*0.315*	*114*	*69*	*90*
930949-4-1 (5 MM)	*0.394*	*0.315*	*80*	*47*	*70*
930949-4-2 (5 MM)	*0.394*	*0.315*	*82*	*51*	*70*
930949-4-3 (5 MM)	*0.394*	*0.315*	*75*	*45*	*70*

COMPLIANCE:	*The impact test results met the specification.*

KF/kf *Reviewed By:*

Prepared By:

Det norske Veritas Industry, Inc.
16340 Park Ten Place, Suite 100
Houston, Texas 77084
Tel: (713) 579-9003
Facsimile: (713) 579-1360

INSPECTION REPORT

QAS Project Number: 51-05428-63	**QAS Report Number:** 51-05428-63-1
P.O. Number: 2322RP	**Inspection Date:** February 18, 1994
Main Vendor: Copper State Rubber	**Insp. Location:** Houston, Texas
Sub Vendor: N/A	**Vendor Contact:** Roger Peace
Vendor Ref: wps 911171-1	**Vendor Phone:** 713 644 1491
Req. No: N/A	**Quantity:** N/A
Part No: N/A	**Serial No:** N/A

EQUIPMENT DESCRIPTION: Weld Procedure Review

Inspection Comments:

Purpose of Inspection: Review Weld Procedure.

Acceptance Criteria: ASME IX
NACE MR-0175
DNV Rules Drill(N), MOU

Reference Documents: None

Scope of Activity:

DNV reviewed the above Weld Procedure and found it to be in compliance with the above referenced standards with comments (see front page of WPS for comments).

FAX: Yes **Date:** 02/18/94 **Signature:** Harold Melton

Distribution: **Attn:** **FAX #:**
Original to Client: Copper State Rubber Roger Peace 713 644 9830
Copy to File: 51-05428-63 (D-217)

February 18, 1994

Copper State Rubber
Attn: Roger Peace
6401 McGrew Street
Houston, Texas 77087

Reference: WPS No: 911171-1 Rev. 4

DNV Reference: 51-05428-63

Dear Mr. Peace

Please find enclosed one copy of the referenced weld procedures for your review and action as noted below:

- Reviewed with comments - for your records (For comments - see front page of W.P.S.)

The referenced weld procedure was reviewed against the following standards (latest revision):

X	ASME IX	__	DNV Tech. Note B-108
__	AWS D1.1	__	DNV Rules - Lifting Appliances
__	API 6A	__	DNV Rules - Submarine Pipelines
X	NACE MR-01-75	X	DNV Rules - Drill(N) for Mobile Offshore Units

If you should have questions or comments regarding this review, please do not hesitate to contact us and discuss it.

Regards,

Harold Melton
Q.A. Specialist

Procedure # RT-3

Radiographic Specialists, Inc.

4110 Mohawk Houston, Tx 77093

Phone: 281-449-1634 Fax: 281-449-1640

IP-Inadequate Penetration
IF-Inadequate Fusion
BTA-Burn Through Area
SL-Slag Line
SI-Slag Inclusion
P-Porosity
GP-Gas Pocket
C-Crack
IU-Internal Undercut
OU-Outside Undercut
LC-Low Crown

Page: 1 OF: 1
Date: 5-12-?
S/O: CSR 48608-?A / 2-B
P/O: 36.51 RP
Spec/Heat/Other: ASME Sec VIII & AWI ...

Customer: Upper State Rubber Job Location: RSI

#	Seam #	Film #	Mat Dia.	Thk	Acc Y	Acc N	Remarks	#	Seam #	Film #	Mat Dia.	Thk	Acc Y	Acc N	Remarks
1	[illegible]	1-2	[illegible]	.375	✓			23							
2		2-3			✓			24							
3		3-4			✓			25							
4		4-1			✓			26							
5								27							
6								28							
7								29							
8	2 [illegible]			[illegible]				30							
9						✓		31							
10	[illegible]	[illegible]	240				188 Bar	32							
11	[illegible]	"	240					33							
12	[illegible]		240					34							
13								35							
14								36							
15								37							
16								38							
17								39							
18								40							
19								41							
20								42							
21								43							
22								44							

IDENTIFICATION
5" PIPE PQR TEST TONY ADAMS

Single Or Double Wall: DW
Material: C/S
Thickness: 3/4"
Single Or Double Viewing: SV
Penetrameter: 2 F
Screen: .005
Mapping Loc.When App.: 90°
No. Of Exp: 4
Film Brand: AGFA
Min.Source To Film Distance: 6 1/4
Focal Spot Size: .146
Isotope Used: IR192
Designation: D4

Depart Shop: ______ Arrive Job: ______ Depart Job: ______ Arrive Shop: ______

Film Total: 4 Stand-By: ______ No Of Film Per Cassette: ______

Technician: [signature] Level: II Customer: [signature] 5-12-?

RADIOGRAPHIC SPECIALISTS, INC.

4110 MOHAWK
HOUSTON TX 77093

PHONE (281) 449-1634
PAX (281) 449-1640

RESULTS OF TEST ON STEEL SPECIMENS

TO: COPPER STATES RUBBER/SPECIALTIES COMPANY

DATE: 05-31-05

LAB TEST NO: 05-31-9036

MATERIAL:

CUSTOMER JOB NO:

SPEC. IDENTIFICATION: 5" PIPE PQR TEST TONY ADAMS

Other Test

CHARPY IMPACT -30 DEG F

WELD METAL	HAZ.
55 FT LBS 30% SHEAR .048 LAT EXP	125 FT LBS 60 % SHEAR .091 LAT EXP
60 FT LBS 30% SHEAR .062 LAT EXP	120 FT LBS 60% SHEAR .085 LAT EXP
55 FT LBS 30% SHEAR .048 LAT EXP	125 FT LBS 60 % SHEAR .091 LAT EXP

WITNESS BY:

COPIES:

RADIOGRAPHIC SPECICALISTS, INC.

BY: TIM BRADLEY III

REPUBLIC HEAT TREAT

8902 N. MAIN
HOUSTON, TX 770220
Ph: 713-692-3410 Fax: 713-692-3910

Certification

Order Number
35022

Customer: 00000074
SPECIALTIES COMPANY
6401 MC GREW
HOUSTON, TX 77087

Shipped To:
WILL CALL
6401 MC GREW
HOUSTON, TX 77087

Customer Purchase Order No.	Customer Shipper No.	Material Type	Mat'l Heat Code	Lot Number
48619		ANY		

Process: STRESS RELIEVE

PROCESSING SPECIFICATIONS

Requirement	Specified	Qty Tested	Test Results

Line#	Quantity	Weight	Part Number/Description	Revision
1	1	21.0	6" OD X 4-1/4" ID X 13" LENGTH	
2			WELD TEST COUPON	
3			ID NOS:CSR-48608-1-A & 48608-2-B	

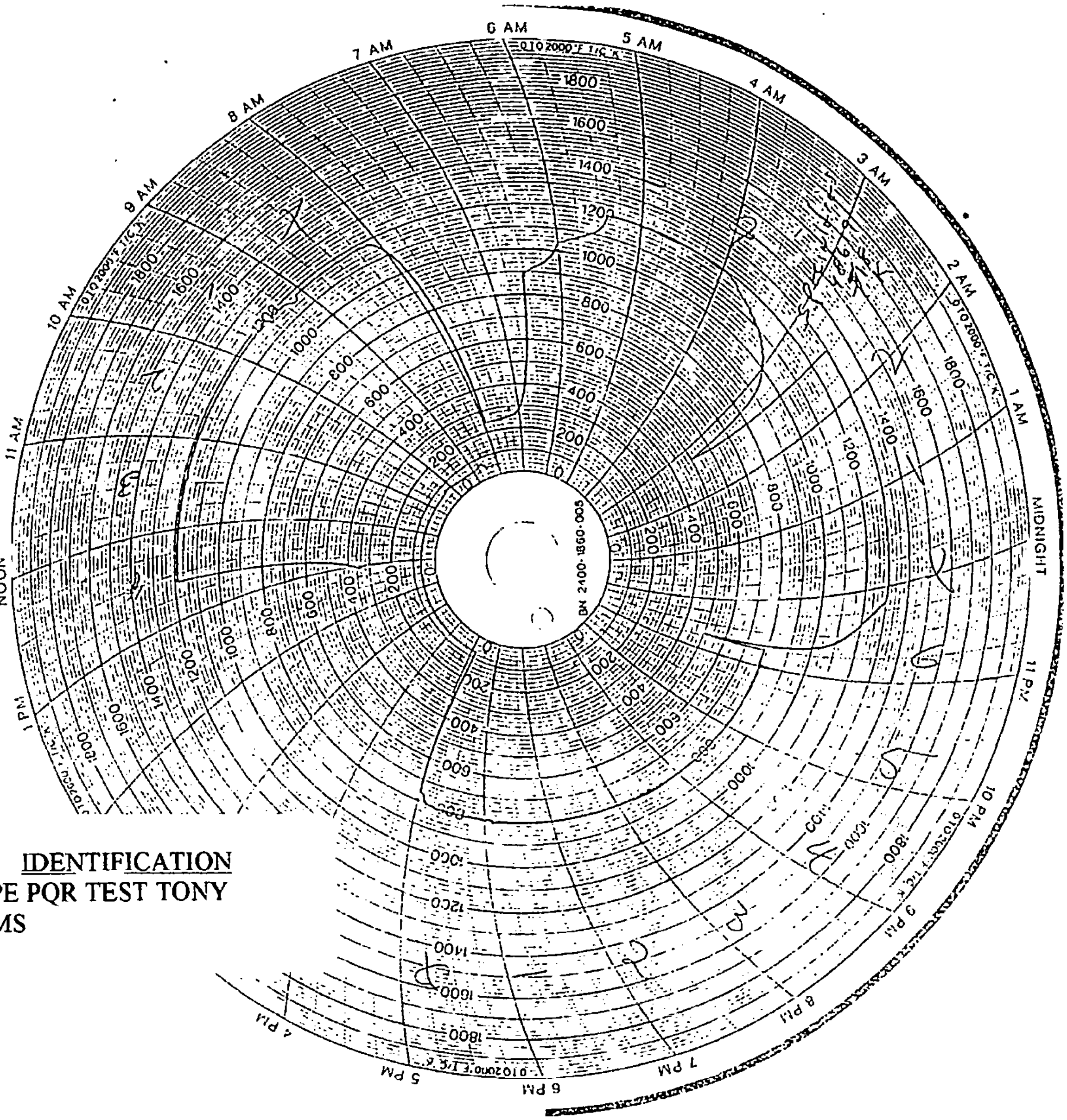
Operation	Spec Temp Range	Specified Soak Time	Furnace# Load#	Atmos/Dpt CarbPot	Q-Media Q-Temp	Start Date	Time In	Time Out	Date Complete
STRESS	1200	1:00	3			05/18/2005	2:45	6:30	05/18/2005

COMMENTS

JAMES MUSGROVE [signature] Date Signed 5-18-05

IDENTIFICATION
5" PIPE PQR TEST TONY
ADAMS

REVIEW OF REPUBLIC
WORK CERTIFICATIONS ☑
TO CUSTOMER REQUIREMENTS
DATE 5-18-05 [initials]



IDENTIFICATION
5" PIPE PQR TEST TONY ADAMS

[illegible] HEAT TREAT, INC.
Houston, Texas

Customer: Specialties Company
Description: (1) 6" OD X 4 1/4" ID X 12" Length Weld Test Coupon
P.O. 48619 S.O. ______
Furnace #3 Serial No. ______
Date 5-18-05 Heat No. ______
Temperature 1200° Time 1 Hr.

ID Nos: CSR-48608-1-A + 48608-2-0.

LTV COPPERWELD
TUBULAR PRODUCTS

LTV COPPERWELD
MECHANICAL GROUP SHELBY
SHELBY, OHIO 44875-1471
Telephone 419/342-1200 FAX: 419/342-1437

MATERIAL TEST REPORT

FAXED

QS9000/ISO 9002 CERTIFIED

SHELBY ORDER NO 140562

CUSTOMER	SPECIFICATION	CUSTOMER ORDER
TUBULAR STEEL INC 1031 EXECUTIVE PARKWAY DRIVE ST LOUIS MO 63141	ASTM A519 96	4538

GRADE	SIZE(O.D x ID x WALL)	QUANTITY	SHIPPED	DATE
4130	6.000 X 4.000 X 1.000	2214 L2 153.83 FT	02/15/01	02/15/01

CONDITION: SMLS HF HEAT TREATED QUENCH & TEMPER ELECTRIC FUR

PART NO.:

S# 00099194
50043089

CHEMICAL ANALYSIS

HEAT NO	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	V	Al	OTHER	GRAIN SIZE
14086	.31	.52	.009	.018	.230	.110	.960	.180	.120	.004	.022	CA .0002	6-8

MECHANICAL PROPERTIES

HEAT NO.	LOAD NO.	YIELD PSI	TENSILE PSI	ELONG %	RED AREA %	HARDNESS BHN	HARDNESS ROCKWELL	IMPACT FT.-LBS	FREQ	SEVERITY
				2.0"			RC	SIZE		
14086	T2692147	84100	103800	28	68		19	10.0X10.0 TEMP F -50 RESULTS 112 77 115		

MAGNAFLUX

JOMINY HARDENABILITY (EXPRESSED IN 16THS)

HEAT NO.	1	2	3	4	5	6	7	8	10	12	14	16	20	24	28	32
14086	51	50	49	47	42	39	36	33	31	29	29	28	25	26	24	24

J-K RATING

SLAG-OXIDE RATING

HEAT NO.	A	B	C	D	INGOT	OXIDE	SLAG

IDENTIFICATION
5" PIPE PQR TEST TONY
ADAMS

MELT SOURCE: ESG

OTHER INSPECTION: MACRO ETCH: S2 R1 C2
NON DESTRUCIVE TESTED
Non-Destructive Tested
NACE STD, MR0175, REV-1993 PARAGRAPH 3.

THIS TEST REPORT NOTARIZED WHEN REQUIRED
SWORN AND SUBSCRIBED BEFORE ME
THIS _____ DAY OF _____

NOTARY PUBLIC

Brian M. Clark
Brian M. Clark, Chief Metallurgist

Specialties Company
copper state rubber, inc.

6401 McGrew St.
Houston, Texas 77087
713-644-1491
713-644-9830 Fax
csrhouston@msn.com

ADDENDUM

WELDING PROCEDURE SPECIFICATION. WPS NO.: 911171-1
PROCEDURE QUALIFICATION RECORD. PQR NO.: 911171-2

COMPANY: COPPER STATE RUBBER, INC./SUBSIDIARY OF SPECIALTIES COMPANY

REVISION 1:	DATE 1-31-92 – CORRECT TYPOGRAPHIC ERROR STRINGER PASS. AMPERES AND VOLTS
REVISION 2:	DATE 5-12-93 – JAY B. WILLIAMS I.D. NO.: 453-06-6487 QUALIFIED TO THIS WPS: WQTR NOS.: 930635-1 AND 930635-2
REVISION 3:	DATE 6-14-93 – CORRECT TYPOGRAPHIC ERROR SMAW PROCESS. AMPERES AND VOLTS
REVISION 4:	DATE 7-16-93 – WPS QUALIFIED FOR CHARPY IMPACTS AT -30°C; SwL REPORT NO.: 930949
REVISION 5:	DATE 5-31-2005 – CHANGE STRESS RELIEVE TIME FROM 2 HOURS TO 1 HOUR

REVIEWED REV. 5
24 JUNE 2005

REPUBLIC HEAT TREAT

CERTIFICATION

Specialties Company
14141 S. WAYSIDE DR.
Houston, TX 77048 USA

Certification ID: 38120-1
Date: 11/21/2017
Cert Date: 11/21/2017
Purchase Order: 7494
Material: ANY

We are pleased to provide you with the following Certification.

Part Number	Part Description	Qty	Weight
NONE	3"CK W/4-1/16 10M FLANGE, S/N: H1253-H1266	4	820.00
NONE	4"CK W/4-1/16 10K HUBS, S/N: 80868-1,2	2	0.00

Customer Requirements

Inspection Type	U Of M	Lower Spec	Lower Control	Target Value	Upper Control	Upper Spec

Results

Inspection Type	Scale	Minimum	Maximum

Operation

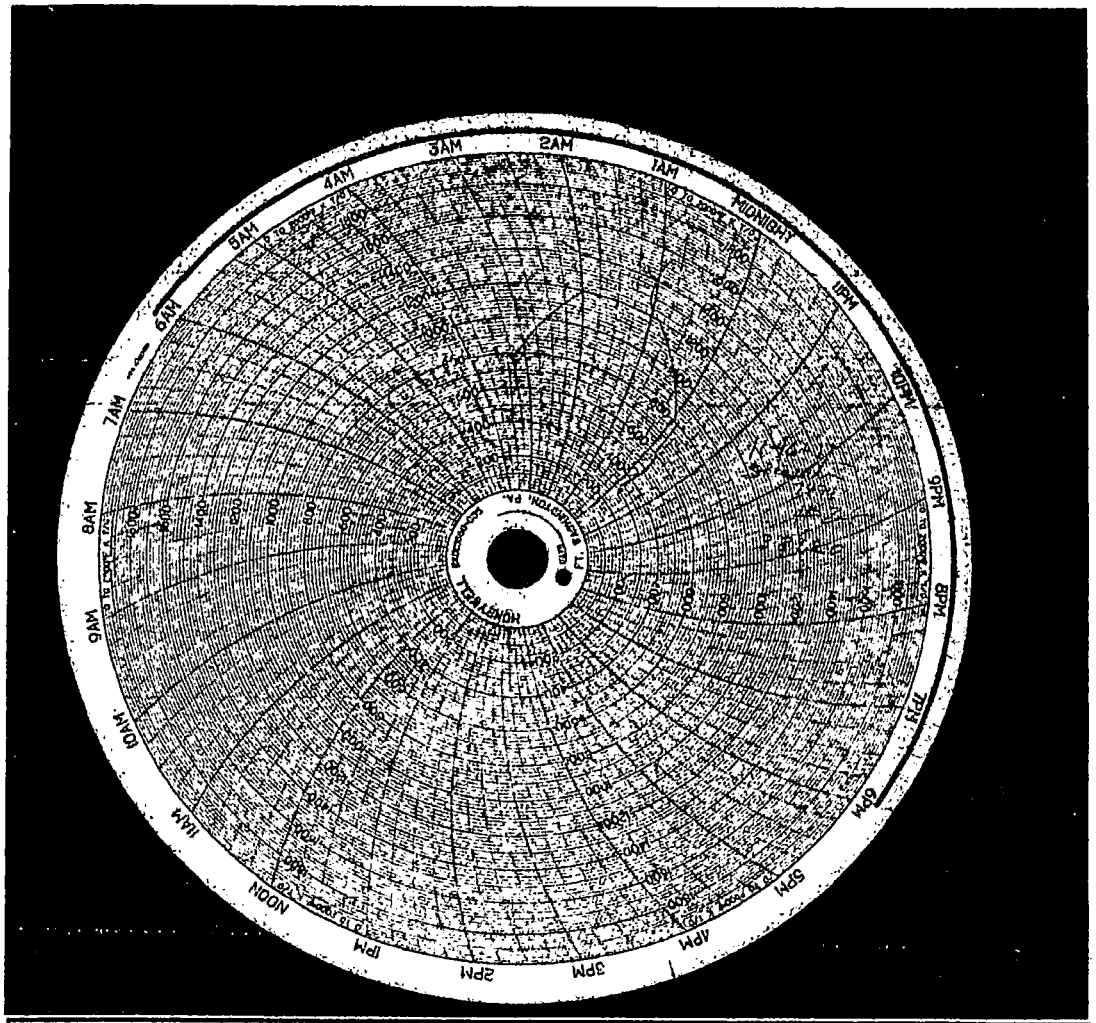
STRESS RELIEVE:1200 FOR 1HR

Certification Statement

THIS MATERIAL HAS BEEN STRESSED PER CUSTOMER REQUIREMENTS

Certified By: Chris Yeppez
Title: General Manager
Date: 11/21/2017

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069



Part Number	Part Description	Quantity	Wt. Each	Wt. Extended
NONE S/N: H1263-H1266	3"CK W/4-1/16 10M FLANGE	4	205.00	820.00
NONE S/N: 80868-1,2	4"CK W/4-1/16 10K HUBS	2	0.00	0.00

	SPECIALTIES COMPANY				
	SEE ABOVE				
	7494		38120		
	3		SEE ABOVE		
	11/16/17		SEE ABOVE		
	S/R		1200F		1 HRS

Procedure # RT-3

Radiographic Specialists, Inc.

41 1 0 Mohawk Houston, Tx 77093

Phone: 281-449-1634 Fax: 281-449-1640

IP-Inadequate Penetration
IF-Inadequate Fusion
BTA-Burn Through Area
SL-Slag Line
SI-Slag Inclusion
P-Porosity
GP-Gas Pocket
C-Crack
IU-Internal Undercut
OU-Outside Undercut
LC-Low Crown

Page: _____ Of: _____

Date: 11/20/17

S/O: _____

P/O: 7815

Spec/Heat/0ther: ASME SEC VIII SEC. VIII DIV.1 UW 51

Customer: COPPER STATE RUBBER Job Location: R.S.I.

#	Seam #	Film #	Matl Dia.	Thk	Acc y	Acc N	Remarks	#	Seam #	Film #	Matl Dia.	Thk	Acc y	Acc N	Remarks
1	H1263	1 2	3"	7/8"	X			23							
2		2 3			X			24							
3		3 4			X			25							
4		4 1			X			26							
5	H1264	1 2			X			27							
6		2 3			X			28							
7		3 4			X			29							
8		4 1			X			30							
9	H1265	1 2			X			31							
10		2 3			X			32							
11		3 4			X			33							
12		4 1			X			34							
13	H1266	1 2			X			35							
14		2 3			X			36							
15		3 4			X			37							
16		4 1			X			38							
17								39							
18								40							
19								41							
20								42							
21								43							
22								44							

Single Or Double Wall: D.W. Material- C/S Thickness- 7/8"

Single Or Double Viewing: S.V. Penetrameter: B PACK Screen: .005

Mapping Loc.When App.: 90 DEG. No. Of Exp: 16 Film Brand: AGFA

Min.Source To Film Distance: CONT. Focal Spot Size: .146

Min. Film to Obj. Distance: Contact Isotope Used: IR192 Designation: D5

Depart Shop: _____ Arrive Job: _____ Depart Job: _____ Arrive Shop: _____

Film Total: 16 Stand-By: _____ No Of Film Per Cassette: 1

Technician: TIM BRADLEY Level: III Customer: _____

The results reported represent opinions only and are not to be considered as warranties or guarantees of quality, classification, or usability of material examined. We shall assume not further responsibility for radiographs following the acceptance by the customer's field representative upon signing of field report. In no event shall the liability of Radiographic Specialists, Inc., as to any items inspected or tested (including any liability as to selection and/or results of such test) exceed the charge of Radiographic Specialists, Inc. for the inspection of such items.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

RADIOGRAPHIC SPECIALISTS, INC.

4110 MOHAWK
HOUSTON TX 77093

Ph. 281-449-1634
Fax 281-449-1640

TO: COPPER STATES

DATE: 11/20/17
P. O. NO. 7815
JOB NO.
DEL SLIP

LOCATION: R.S.I.

MAGNETIC PARTICLE INSPECTION REPORT

ITEM NO.	DESCRIPTION	REJ	ACC	COMMENTS
4	3" CK FTG. W/4-1/16" 10M FLANGE H1263 THRU H1266		X	

Materials Used 1 CAN 850A

APPLICABLE SPECIFICATION SE709

ACCEPTANCE STANDARD ASME SEC VIII APP6 PAR6.4

SCOPE OF EXAMINATION 100% OF WELDED AREA

PROCEDURE NO. MT-5 Rev. 14

METHOD: WET X DRY

INSTRUMENT USED CONTOUR PROBE

MODEL: DA100 S/N. 7178

AMPERES: 10 #LIFT 6.5 AMP.

CURRENT: AC X DC

FLUORESCENT

BLACK LIGHT:

CALIBRATION:

LIGHT METER:

PREPARED BATH CIRCLE SAFE

TYPE: 850A

BATCH NO: 19685

TECHNICIAN TIM BRADLEY

LEVEL III

WITNESSED BY

CUSTOMER

TIME LEFT RSI:

TIME ARRIVED RSI:

Radiographic Specialists,Inc

(281)449-1634 4110 Mohawk Houston,Texas 77093 Fax (281)449-1640

To: COPPER STATE RUBBER

Date: 11-20-17

P.O.: 7815

Job No.:

Location: R.S.I.

BRINELL HARDNESS

LOCATION	BASE	WELD	BASE
H1263	200	206	198
H1264	214	206	206
H1265	223	214	223
H1266	214	206	214

API 16C

TECHNICIAN: TIM BRADLEY **CUSTOMER:** III

copper state rubber
CSR
Specialties Company

14141 S. Wayside Drive
Houston, Texas 77048

Phone 713-644-1491
Fax 713-644-9830
www.copperstaterubber.com
sales@copperstaterubber.com

FIELD TEST PROCEDURES FOR USED COPPER STATE RUBBER CHOKE/KILL AND SUPER CHOKE/KILL HOSE

VISUAL INSPECTION
ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR

1. ARRANGE HOSE SO THAT IT CAN BE OBSERVED FROM ALL ANGLES.
2. CONDUCT THE EXAMINATION FOR EXTERNAL DAMAGE TO THE COVER, END STRUCTURE, AND TERMINATING CONNECTORS.
3. IF THE COVER HAS GOUGING OR TEARS FROM NORMAL ABRASION, THIS CAN BE REPAIRED BY UTILIZING A RUBBER REPAIR KIT. THE SOLE PURPOSE OF THE COVER IS TO PROTECT THE INTERNAL REINFORCEMENT WIRES THAT HOLD THE PRESSURE.
4. IF NO INTERNAL WIRES ARE EXPOSED, REPAIR THE COVER DAMAGE BEFORE IT BECOMES WORSE AND EXPOSES THE INTERNAL REINFORCEMENT WIRES TO THE EFFECTS OF THE ELEMENTS. FULL PRESSURE INTEGRITY REMAINS.
5. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE EXPOSED, CHECK FOR ANY TYPE OF RUST/DETERIORATION OR BREAKS. IF THE WIRES ARE NOT DAMAGED, CLEAN THE AREA AND REPAIR WITH RUBBER REPAIR KIT. FULL PRESSURE INTEGRITY REMAINS.
6. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE DAMAGED, THE HOSE SHOULD BE REMOVED FROM SERVICE IMMEDIATELY AND CONSIDERED UNSAFE FOR FURTHER SERVICE.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

VISUAL INSPECTION
ASSEMBLIES WITH STAINLESS STEEL PROTECTIVE ARMOR

1. FOLLOW STEPS 1 AND 2 FOR ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR.
2. IF THE OUTER STL/ST PROTECTIVE ARMOR HAS BEEN BROKEN, EXAMINE THE RUBBER COVER FOR GOUGES OR TEARS FROM NORMAL ABRASION. THEN FOLLOW STEP 4 FOR ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR.
3. SECURE LOOSE ENDS OF PROTECTIVE ARMOR TO PROTECT AGAINST ADDITIONAL GOUGES OR TEARS TO RUBBER COVER.
4. HOSE ASSEMBLY SHOULD BE RETURNED TO COPPER STATE RUBBER, PHOENIX, ARIZONA USA AS SOON AS POSSIBLE FOR REPAIRS TO PROTECTIVE ARMOR.
5. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE EXPOSED, CHECK FOR ANY TYPE OF RUST/DETERIORATION OR BREAKS. IF THE WIRES ARE NOT DAMAGED, CLEAN THE AREA AND REPAIR WITH RUBBER REPAIR KIT. FULL PRESSURE INTEGRITY REMAINS.
6. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE DAMAGED, THE HOSE SHOULD BE REMOVED FROM SERVICE IMMEDIATELY AND CONSIDERED UNSAFE FOR FURTHER SERVICE.

CSR RECOMMENDS VISUAL INSPECTION WHENEVER POSSIBLE, ON A DAILY BASIS.

HYDROSTATIC TEST

1. TEST HOSE TO 1-1/4 TIMES MAX. ALLOWABLE WORKING PRESSURE WITH WATER, OIL, OR MUD BEING SURE ALL AIR HAS BEEN BLED OFF. HOLD FOR 15 MINUTES AFTER PRESSURE HAS STABILIZED

CSR RECOMMENDS HYDROSTATIC TEST AT APPROXIMATELY 6 MONTH INTERVALS ON RIG AND HOSE BE RETURNED TO OEM FOR INSPECTION AND RECERTIFICATION AT 5 YEARS FROM MANUFACTURE

F:\WPDOCS\MSTR\TESPROS

COPPER STATE RUBBER

14141 S WAYSIDE DR.
HOUSTON, TEXAS 77048
TEL: (713) 644-1491
FAX: (713) 644-9830

WARRANTY TERMS AND CONDITONS

COPPER STATE RUBBER DRILLING HOSES ARE GUARANTEED FOR THE PERIOD OF 12 MONTHS (FROM DATE OF FIRST SERVICE) TO BE FREE FROM DEFECTS IN MATERIALS AND/OR WORKMANSHIP.

IN ORDER TO ESTABLISH A VALID WARRANTY CLAIM, CUSTOMER MUST GIVE NOTICE TO COPPER STATE RUBBER WITHIN 10 DAYS AFTER DISCOVERING THE DEFECT. WE WILL ADVISE IF HOSE SHOULD BE RETURNED TO FACTORY FOR INSPECTION (FREIGHT PREPAID). IF COPPER STATE DETERMINES HOSE TO BE DEFECTIVE, COPPER STATE WILL REPAIR OR REPLACE (AT ITS OPTION) THE HOSE IN QUESTION. ALL REPAIRS AND REPLACEMENTS WILL BE F.O.B. COPPER STATE RUBBER'S PLANT.

REMOVAL OR WELDING OF END FITTINGS WILL VOID WARRANTY

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23. 2018
FILE NO.: CSR / SPECO-81069

Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
	From	To							
13.5"	0	975	10.75"	45.5	N80	BTC	5.54	1.20	23.44
9.875"	0	11750	7.625"	29.7	P110	BTC	1.29	1.11	3.11
6.75"	0	11250	5.5"	23	P110	BTC	1.95	2.04	3.25
6.75"	11250	17,212	5"	18	P110	BTC	1.95	2.04	3.25
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	875	13.375"	54.5	J55	STC	2.82	1.27	10.78
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.00	3.25
12.25"	4000	4875	9.625"	40	L80	LTC	1.21	1.45	5.73
8.75"	0	14,768	5.5"	17	P110	LTC	1.50	2.69	2.54
			BLM Minimum Safety Factor				1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Intermediate burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Casing Program

Hole Size	Casing Interval		Csg. Size	Weight	Grade	Conn.	SF	SF Burst	SF
	From	To		(lbs)			Collapse		Body
17.5"	0	525	13.375"	54.5	J55	STC	4.70	0.73	29.81
12.25"	0	4,000	9.625"	40	L80	BTC	1.65	1.20	2.03
12.25	4,000	10,174	9.625"	47	HCL80	BTC	1.21	1.43	3.74
8.5"	0	20,658	5.5"	23	P110	BTC	2.47	2.64	2.95
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface. Shoe will break down before casing would burst.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Casing Program

Hole Size	Casing Interval		Csg. Size	Weight	Grade	Conn.	SF	SF Burst	SF
	From	To		(lbs)			Collapse		Body
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				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

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

COG PRODUCTION LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. 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:

a. The hazards and characteristics of hydrogen sulfide (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

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

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the H_2S Drilling Operations Plan and the 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. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with remotely operated choke.
   Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
   Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG PRODUCTION LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

WARNING

YOU ARE ENTERING AN H_2S AREA
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. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG PRODUCTION LLC

1-575-748-6940

EMERGENCY CALL LIST

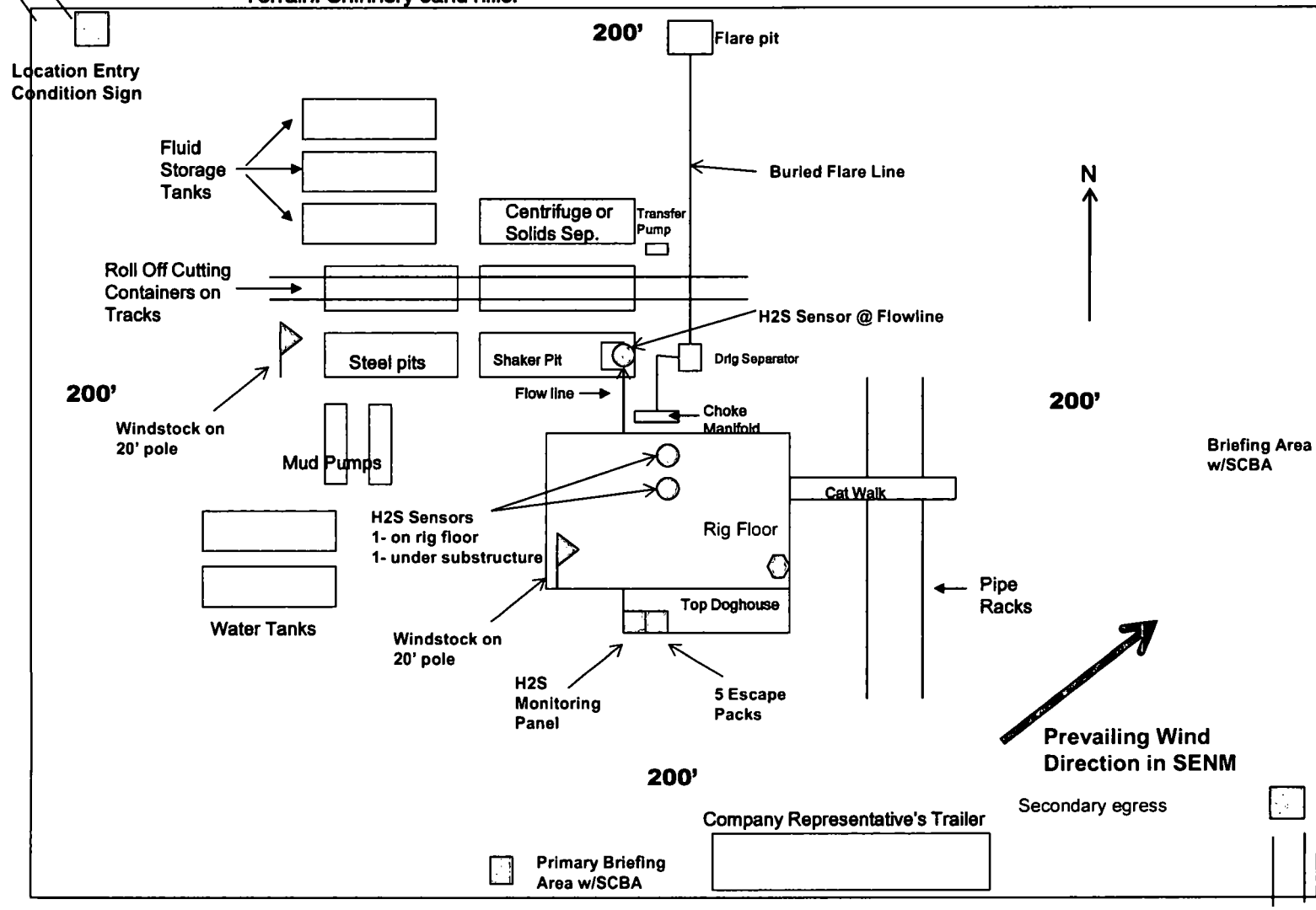
	OFFICE	MOBILE
COG PRODUCTION LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

EMERGENCY RESPONSE NUMBERS

	OFFICE
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

COG Operating LLC
H_2S Equipment Schematic
Terrain: Shinnery sand hills.

Well pad will be 400' x 400'
with cellar in center of pad



CONCHO

COG Operating, LLC

Eddy County, NM (NAD 27)
Sec 13, T26-S, R28-E
Momba Federal Com #801H

Wellbore #1

Plan: Design #1

QES Well Planning Report

29 August, 2018

QES
QUINTANA ENERGY SERVICES

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Company:	COG Operating, LLC	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site:	Sec 13, T26-S, R28-E	**North Reference:**	Grid
Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Eddy County, NM (NAD 27)		
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	Sec 13, T26-S, R28-E				
Site Position:		**Northing:**	377,288.90 usft	**Latitude:**	32° 2' 12.934 N
From:	Map	**Easting:**	593,054.10 usft	**Longitude:**	104° 1' 58.922 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.16 °

Well	Momba Federal Com #801H					
Well Position	**+N/-S**	4,462.8 usft	**Northing:**	381,751.70 usft	**Latitude:**	32° 2' 57.098 N
	+E/-W	85.8 usft	**Easting:**	593,139.90 usft	**Longitude:**	104° 1' 57.781 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	2,935.0 usft

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	9/5/2018	7.02	59.81	47,663.71658567

Design	Design #1				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.0	0.0	0.0	179.90	

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
10,271.5	0.00	0.00	10,271.5	0.0	0.0	0.00	0.00	0.00	0.00	
11,021.4	89.99	179.90	10,749.0	-477.4	0.8	12.00	12.00	23.99	179.90	
20,658.5	89.99	179.90	10,750.0	-10,114.4	17.6	0.00	0.00	0.00	0.00	MFC #801 - PBHL

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Company:	COG Operating, LLC	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site:	Sec 13, T26-S, R28-E	**North Reference:**	Grid
Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
498.0	0.00	0.00	498.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
TOS									
962.0	0.00	0.00	962.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
BOS (Fletcher)									
2,568.0	0.00	0.00	2,568.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
LMAR (Top Delaware)									
2,758.0	0.00	0.00	2,758.0	0.0	0.0	0.0	0.00	0.00	0.00
BLCN									
2,792.0	0.00	0.00	2,792.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
CYCN									
3,615.0	0.00	0.00	3,615.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Company:	COG Operating, LLC	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site:	Sec 13, T26-S, R28-E	**North Reference:**	Grid
Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
BYCN									
6,206.0	0.00	0.00	6,206.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Sprg (BSGL)									
6,434.0	0.00	0.00	6,434.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
U Avalon Sh									
6,523.0	0.00	0.00	6,523.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
L Avalon Sh									
7,292.0	0.00	0.00	7,292.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
B Avalon Sh									
7,310.0	0.00	0.00	7,310.0	0.0	0.0	0.0	0.00	0.00	0.00
FBSG_sand									
7,362.0	0.00	0.00	7,362.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
SBSG_sand									

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Company:	COG Operating, LLC	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site:	Sec 13, T26-S, R28-E	**North Reference:**	Grid
Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
8,034.0	0.00	0.00	8,034.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
SBSG_sand_Base									
8,549.0	0.00	0.00	8,549.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
TBSG_sand									
9,205.0	0.00	0.00	9,205.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
WFMP									
9,565.0	0.00	0.00	9,565.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
WFMP A Shale									
9,741.0	0.00	0.00	9,741.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
WFMP B									
10,032.0	0.00	0.00	10,032.0	0.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 12°/100'									
10,271.5	0.00	0.00	10,271.5	0.0	0.0	0.0	0.00	0.00	0.00
10,275.0	0.42	179.90	10,275.0	0.0	0.0	0.0	12.00	12.00	0.00
10,300.0	3.42	179.90	10,300.0	-0.9	0.0	0.9	12.00	12.00	0.00
WFMP C									
10,306.0	4.14	179.90	10,306.0	-1.2	0.0	1.2	12.00	12.00	0.00
10,325.0	6.42	179.90	10,324.9	-3.0	0.0	3.0	12.00	12.00	0.00
10,350.0	9.42	179.90	10,349.6	-6.4	0.0	6.4	12.00	12.00	0.00
10,375.0	12.42	179.90	10,374.2	-11.2	0.0	11.2	12.00	12.00	0.00
10,400.0	15.42	179.90	10,398.5	-17.2	0.0	17.2	12.00	12.00	0.00
10,425.0	18.42	179.90	10,422.4	-24.5	0.0	24.5	12.00	12.00	0.00
10,450.0	21.42	179.90	10,445.9	-33.0	0.1	33.0	12.00	12.00	0.00
10,475.0	24.42	179.90	10,468.9	-42.7	0.1	42.7	12.00	12.00	0.00
10,500.0	27.42	179.90	10,491.4	-53.6	0.1	53.6	12.00	12.00	0.00
10,525.0	30.42	179.90	10,513.3	-65.7	0.1	65.7	12.00	12.00	0.00
10,550.0	33.42	179.90	10,534.5	-78.9	0.1	78.9	12.00	12.00	0.00
10,575.0	36.42	179.90	10,555.0	-93.3	0.2	93.3	12.00	12.00	0.00
10,600.0	39.42	179.90	10,574.7	-108.6	0.2	108.6	12.00	12.00	0.00
10,625.0	42.42	179.90	10,593.6	-125.0	0.2	125.0	12.00	12.00	0.00
WFMP D									

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Company:	COG Operating, LLC	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site:	Sec 13, T26-S, R28-E	**North Reference:**	Grid
Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
10,646.3	44.98	179.90	10,609.0	-139.7	0.2	139.7	12.00	12.00	0.00
10,650.0	45.42	179.90	10,611.6	-142.3	0.2	142.3	12.00	12.00	0.00
10,675.0	48.42	179.90	10,628.7	-160.6	0.3	160.6	12.00	12.00	0.00
10,700.0	51.42	179.90	10,644.8	-179.7	0.3	179.7	12.00	12.00	0.00
10,725.0	54.42	179.90	10,659.8	-199.7	0.3	199.7	12.00	12.00	0.00
10,750.0	57.42	179.90	10,673.8	-220.4	0.4	220.4	12.00	12.00	0.00
10,775.0	60.42	179.90	10,686.7	-241.8	0.4	241.8	12.00	12.00	0.00
10,800.0	63.42	179.90	10,698.5	-263.8	0.5	263.8	12.00	12.00	0.00
10,825.0	66.42	179.90	10,709.1	-286.5	0.5	286.5	12.00	12.00	0.00
10,850.0	69.42	179.90	10,718.5	-309.6	0.5	309.6	12.00	12.00	0.00
10,875.0	72.42	179.90	10,726.7	-333.3	0.6	333.3	12.00	12.00	0.00
10,900.0	75.42	179.90	10,733.6	-357.3	0.6	357.3	12.00	12.00	0.00
10,925.0	78.42	179.90	10,739.2	-381.6	0.7	381.6	12.00	12.00	0.00
10,950.0	81.42	179.90	10,743.6	-406.2	0.7	406.2	12.00	12.00	0.00
10,975.0	84.42	179.90	10,746.7	-431.0	0.8	431.0	12.00	12.00	0.00
11,000.0	87.42	179.90	10,748.5	-456.0	0.8	456.0	12.00	12.00	0.00
EOC @ 89.99° Inc / 179.90° Azm / 10749.0' TVD									
11,021.4	89.99	179.90	10,749.0	-477.4	0.8	477.4	12.00	12.00	0.00
11,100.0	89.99	179.90	10,749.0	-556.0	1.0	556.0	0.00	0.00	0.00
11,200.0	89.99	179.90	10,749.0	-656.0	1.1	656.0	0.00	0.00	0.00
11,300.0	89.99	179.90	10,749.0	-756.0	1.3	756.0	0.00	0.00	0.00
11,400.0	89.99	179.90	10,749.0	-856.0	1.5	856.0	0.00	0.00	0.00
11,500.0	89.99	179.90	10,749.0	-956.0	1.7	956.0	0.00	0.00	0.00
11,600.0	89.99	179.90	10,749.0	-1,056.0	1.8	1,056.0	0.00	0.00	0.00
11,700.0	89.99	179.90	10,749.0	-1,156.0	2.0	1,156.0	0.00	0.00	0.00
11,800.0	89.99	179.90	10,749.0	-1,256.0	2.2	1,256.0	0.00	0.00	0.00
11,900.0	89.99	179.90	10,749.1	-1,356.0	2.4	1,356.0	0.00	0.00	0.00
12,000.0	89.99	179.90	10,749.1	-1,456.0	2.5	1,456.0	0.00	0.00	0.00
12,100.0	89.99	179.90	10,749.1	-1,556.0	2.7	1,556.0	0.00	0.00	0.00
12,200.0	89.99	179.90	10,749.1	-1,656.0	2.9	1,656.0	0.00	0.00	0.00
12,300.0	89.99	179.90	10,749.1	-1,756.0	3.1	1,756.0	0.00	0.00	0.00
12,400.0	89.99	179.90	10,749.1	-1,856.0	3.2	1,856.0	0.00	0.00	0.00
12,500.0	89.99	179.90	10,749.1	-1,956.0	3.4	1,956.0	0.00	0.00	0.00
12,600.0	89.99	179.90	10,749.1	-2,056.0	3.6	2,056.0	0.00	0.00	0.00
12,700.0	89.99	179.90	10,749.1	-2,156.0	3.8	2,156.0	0.00	0.00	0.00
12,800.0	89.99	179.90	10,749.2	-2,256.0	3.9	2,256.0	0.00	0.00	0.00
12,900.0	89.99	179.90	10,749.2	-2,356.0	4.1	2,356.0	0.00	0.00	0.00
13,000.0	89.99	179.90	10,749.2	-2,456.0	4.3	2,456.0	0.00	0.00	0.00
13,100.0	89.99	179.90	10,749.2	-2,556.0	4.4	2,556.0	0.00	0.00	0.00
13,200.0	89.99	179.90	10,749.2	-2,656.0	4.6	2,656.0	0.00	0.00	0.00
13,300.0	89.99	179.90	10,749.2	-2,756.0	4.8	2,756.0	0.00	0.00	0.00
13,400.0	89.99	179.90	10,749.2	-2,856.0	5.0	2,856.0	0.00	0.00	0.00
13,500.0	89.99	179.90	10,749.2	-2,956.0	5.1	2,956.0	0.00	0.00	0.00
13,600.0	89.99	179.90	10,749.2	-3,056.0	5.3	3,056.0	0.00	0.00	0.00
13,700.0	89.99	179.90	10,749.3	-3,156.0	5.5	3,156.0	0.00	0.00	0.00
13,800.0	89.99	179.90	10,749.3	-3,256.0	5.7	3,256.0	0.00	0.00	0.00
13,900.0	89.99	179.90	10,749.3	-3,356.0	5.8	3,356.0	0.00	0.00	0.00
14,000.0	89.99	179.90	10,749.3	-3,456.0	6.0	3,456.0	0.00	0.00	0.00
14,100.0	89.99	179.90	10,749.3	-3,556.0	6.2	3,556.0	0.00	0.00	0.00
14,200.0	89.99	179.90	10,749.3	-3,656.0	6.4	3,656.0	0.00	0.00	0.00
14,300.0	89.99	179.90	10,749.3	-3,756.0	6.5	3,756.0	0.00	0.00	0.00
14,400.0	89.99	179.90	10,749.3	-3,856.0	6.7	3,856.0	0.00	0.00	0.00
14,500.0	89.99	179.90	10,749.3	-3,956.0	6.9	3,956.0	0.00	0.00	0.00

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Wellbore:	Wellbore #1		
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)
14,600.0	89.99	179.90	10,749.3	-4,056.0	7.1	4,056.0	0.00	0.00	0.00
14,700.0	89.99	179.90	10,749.4	-4,156.0	7.2	4,156.0	0.00	0.00	0.00
14,800.0	89.99	179.90	10,749.4	-4,256.0	7.4	4,256.0	0.00	0.00	0.00
14,900.0	89.99	179.90	10,749.4	-4,356.0	7.6	4,356.0	0.00	0.00	0.00
15,000.0	89.99	179.90	10,749.4	-4,456.0	7.8	4,456.0	0.00	0.00	0.00
15,100.0	89.99	179.90	10,749.4	-4,556.0	7.9	4,556.0	0.00	0.00	0.00
15,200.0	89.99	179.90	10,749.4	-4,656.0	8.1	4,656.0	0.00	0.00	0.00
15,300.0	89.99	179.90	10,749.4	-4,756.0	8.3	4,756.0	0.00	0.00	0.00
15,400.0	89.99	179.90	10,749.4	-4,856.0	8.4	4,856.0	0.00	0.00	0.00
15,500.0	89.99	179.90	10,749.4	-4,956.0	8.6	4,956.0	0.00	0.00	0.00
15,600.0	89.99	179.90	10,749.5	-5,056.0	8.8	5,056.0	0.00	0.00	0.00
15,700.0	89.99	179.90	10,749.5	-5,156.0	9.0	5,156.0	0.00	0.00	0.00
15,800.0	89.99	179.90	10,749.5	-5,256.0	9.1	5,256.0	0.00	0.00	0.00
15,900.0	89.99	179.90	10,749.5	-5,356.0	9.3	5,356.0	0.00	0.00	0.00
16,000.0	89.99	179.90	10,749.5	-5,456.0	9.5	5,456.0	0.00	0.00	0.00
16,100.0	89.99	179.90	10,749.5	-5,556.0	9.7	5,556.0	0.00	0.00	0.00
16,200.0	89.99	179.90	10,749.5	-5,656.0	9.8	5,656.0	0.00	0.00	0.00
16,300.0	89.99	179.90	10,749.5	-5,756.0	10.0	5,756.0	0.00	0.00	0.00
16,400.0	89.99	179.90	10,749.5	-5,856.0	10.2	5,856.0	0.00	0.00	0.00
16,500.0	89.99	179.90	10,749.6	-5,956.0	10.4	5,956.0	0.00	0.00	0.00
16,600.0	89.99	179.90	10,749.6	-6,056.0	10.5	6,056.0	0.00	0.00	0.00
16,700.0	89.99	179.90	10,749.6	-6,156.0	10.7	6,156.0	0.00	0.00	0.00
16,800.0	89.99	179.90	10,749.6	-6,256.0	10.9	6,256.0	0.00	0.00	0.00
16,900.0	89.99	179.90	10,749.6	-6,356.0	11.1	6,356.0	0.00	0.00	0.00
17,000.0	89.99	179.90	10,749.6	-6,456.0	11.2	6,456.0	0.00	0.00	0.00
17,100.0	89.99	179.90	10,749.6	-6,556.0	11.4	6,556.0	0.00	0.00	0.00
17,200.0	89.99	179.90	10,749.6	-6,656.0	11.6	6,656.0	0.00	0.00	0.00
17,300.0	89.99	179.90	10,749.6	-6,756.0	11.8	6,756.0	0.00	0.00	0.00
17,400.0	89.99	179.90	10,749.6	-6,856.0	11.9	6,856.0	0.00	0.00	0.00
17,500.0	89.99	179.90	10,749.7	-6,956.0	12.1	6,956.0	0.00	0.00	0.00
17,600.0	89.99	179.90	10,749.7	-7,056.0	12.3	7,056.0	0.00	0.00	0.00
17,700.0	89.99	179.90	10,749.7	-7,156.0	12.5	7,156.0	0.00	0.00	0.00
17,800.0	89.99	179.90	10,749.7	-7,256.0	12.6	7,256.0	0.00	0.00	0.00
17,900.0	89.99	179.90	10,749.7	-7,356.0	12.8	7,356.0	0.00	0.00	0.00
18,000.0	89.99	179.90	10,749.7	-7,456.0	13.0	7,456.0	0.00	0.00	0.00
18,100.0	89.99	179.90	10,749.7	-7,556.0	13.1	7,556.0	0.00	0.00	0.00
18,200.0	89.99	179.90	10,749.7	-7,656.0	13.3	7,656.0	0.00	0.00	0.00
18,300.0	89.99	179.90	10,749.7	-7,756.0	13.5	7,756.0	0.00	0.00	0.00
18,400.0	89.99	179.90	10,749.8	-7,856.0	13.7	7,856.0	0.00	0.00	0.00
18,500.0	89.99	179.90	10,749.8	-7,956.0	13.8	7,956.0	0.00	0.00	0.00
18,600.0	89.99	179.90	10,749.8	-8,056.0	14.0	8,056.0	0.00	0.00	0.00
18,700.0	89.99	179.90	10,749.8	-8,156.0	14.2	8,156.0	0.00	0.00	0.00
18,800.0	89.99	179.90	10,749.8	-8,256.0	14.4	8,256.0	0.00	0.00	0.00
18,900.0	89.99	179.90	10,749.8	-8,356.0	14.5	8,356.0	0.00	0.00	0.00
19,000.0	89.99	179.90	10,749.8	-8,456.0	14.7	8,456.0	0.00	0.00	0.00
19,100.0	89.99	179.90	10,749.8	-8,556.0	14.9	8,556.0	0.00	0.00	0.00
19,200.0	89.99	179.90	10,749.8	-8,656.0	15.1	8,656.0	0.00	0.00	0.00
19,300.0	89.99	179.90	10,749.9	-8,756.0	15.2	8,756.0	0.00	0.00	0.00
19,400.0	89.99	179.90	10,749.9	-8,856.0	15.4	8,856.0	0.00	0.00	0.00
19,500.0	89.99	179.90	10,749.9	-8,956.0	15.6	8,956.0	0.00	0.00	0.00
19,600.0	89.99	179.90	10,749.9	-9,056.0	15.8	9,056.0	0.00	0.00	0.00
19,700.0	89.99	179.90	10,749.9	-9,156.0	15.9	9,156.0	0.00	0.00	0.00
19,800.0	89.99	179.90	10,749.9	-9,256.0	16.1	9,256.0	0.00	0.00	0.00
19,900.0	89.99	179.90	10,749.9	-9,356.0	16.3	9,356.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Company:	COG Operating, LLC	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site:	Sec 13, T26-S, R28-E	**North Reference:**	Grid
Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
20,000.0	89.99	179.90	10,749.9	-9,456.0	16.5	9,456.0	0.00	0.00	0.00
20,100.0	89.99	179.90	10,749.9	-9,556.0	16.6	9,556.0	0.00	0.00	0.00
20,200.0	89.99	179.90	10,750.0	-9,656.0	16.8	9,656.0	0.00	0.00	0.00
20,300.0	89.99	179.90	10,750.0	-9,755.9	17.0	9,756.0	0.00	0.00	0.00
20,400.0	89.99	179.90	10,750.0	-9,855.9	17.2	9,856.0	0.00	0.00	0.00
20,500.0	89.99	179.90	10,750.0	-9,955.9	17.3	9,956.0	0.00	0.00	0.00
20,600.0	89.99	179.90	10,750.0	-10,055.9	17.5	10,056.0	0.00	0.00	0.00
TD @ 20658.5' MD / 10750.0' TVD									
20,658.5	89.99	179.90	10,750.0	-10,114.4	17.6	10,114.4	0.00	0.00	0.00

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
MFC #801 - LTP	0.00	0.00	0.0	-9,984.4	17.4	371,767.30	593,157.30	32° 1' 18.287 N	104° 1' 57.901 W
- plan misses target center by 9984.4usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Point									
MFC #801 - FTP	0.00	0.00	10,749.0	-120.0	-0.1	381,631.70	593,139.80	32° 2' 55.911 N	104° 1' 57.786 W
- plan misses target center by 119.0usft at 10715.2usft MD (10654.0 TVD, -191.8 N, 0.3 E)									
- Point									
MFC #801 - PBHL	0.00	0.00	10,750.0	-10,114.4	17.6	371,637.30	593,157.50	32° 1' 17.000 N	104° 1' 57.903 W
- plan hits target center									
- Point									

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Company:	COG Operating, LLC	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site:	Sec 13, T26-S, R28-E	**North Reference:**	Grid
Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
498.0	498.0	Rustler			
962.0	962.0	TOS			
2,568.0	2,568.0	BOS (Fletcher)			
2,758.0	2,758.0	LMAR (Top Delaware)			
2,792.0	2,792.0	BLCN			
3,615.0	3,615.0	CYCN			
6,206.0	6,206.0	BYCN			
6,434.0	6,434.0	Bone Sprg (BSGL)			
6,523.0	6,523.0	U Avalon Sh			
7,292.0	7,292.0	L Avalon Sh			
7,310.0	7,310.0	B Avalon Sh			
7,362.0	7,362.0	FBSG_sand			
8,034.0	8,034.0	SBSG_sand			
8,549.0	8,549.0	SBSG_sand_Base			
9,205.0	9,205.0	TBSG_sand			
9,565.0	9,565.0	WFMP			
9,741.0	9,741.0	WFMP A Shale			
10,032.0	10,032.0	WFMP B			
10,306.0	10,306.0	WFMP C			
10,646.3	10,609.0	WFMP D			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
10,271.5	10,271.5	0.0	0.0	Build 12°/100'
11,021.4	10,749.0	-477.4	0.8	EOC @ 89.99° Inc / 179.90° Azm / 10749.0' TVD
20,658.5	10,750.0	-10,114.4	17.6	TD @ 20658.5' MD / 10750.0' TVD

Sec 13, T26-S, R28-E
Momba Federal Com #801H
Q180°** & WT-180°**
Design #1

Company Name: COG Operating, LLC
Momba Federal Com #801H
Eddy County, NM (NAD 27)
Rig: Nomad #21
Created by: Chase Chambers
Date: 10:21, August 29 2018

PROJECT DETAILS: Eddy County, NM (NAD 27)

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

CONCHO QES

WELL DETAILS: Momba Federal Com #801H

Ground Level: 2935.0

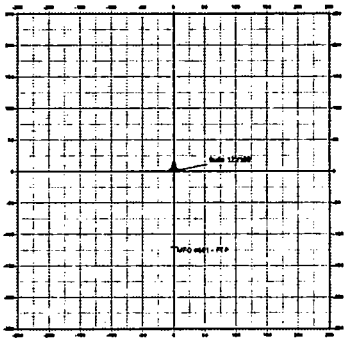
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	381751.70	593139.90	32° 2' 57.098 N	104° 1' 57.721 W

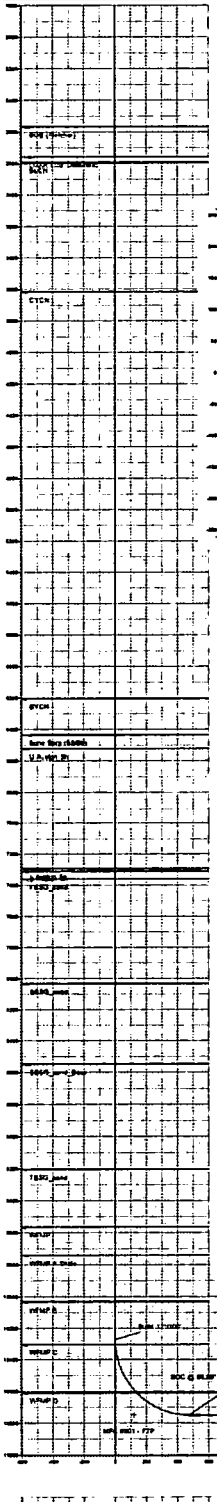
DESIGN TARGET DETAILS

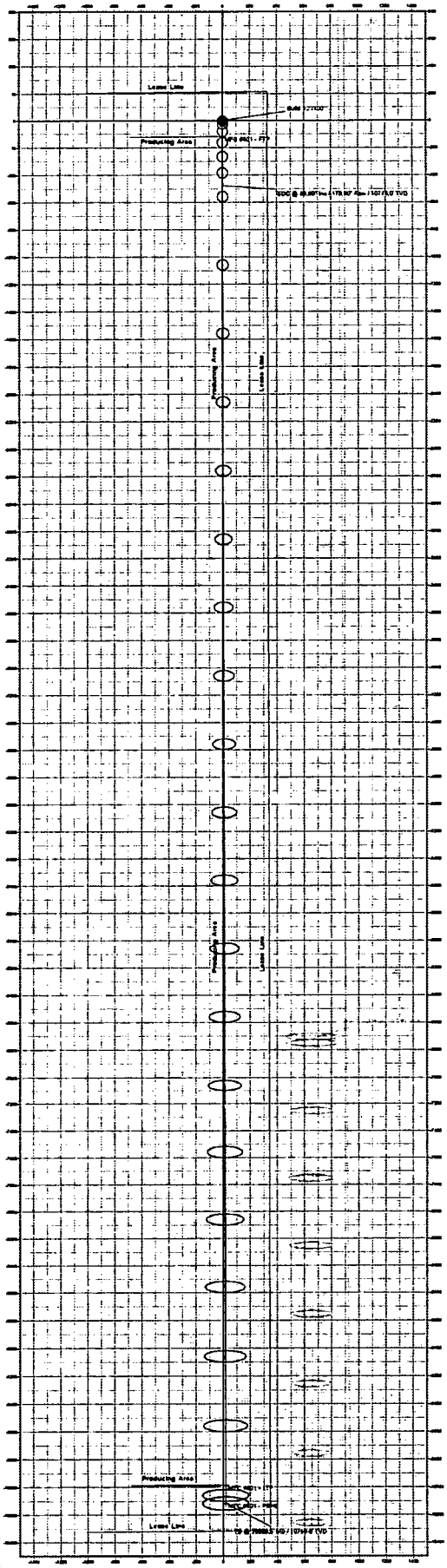
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
MPC #801 - LTP	0.0	-9684.4	17.4	371767.30	593157.30	32° 1' 16.257 N	104° 1' 57.501 W
MPC #801 - FTP	10748.8	-128.8	-0.1	381631.70	593139.80	32° 2' 55.511 N	104° 1' 57.706 W
MPC #801 - PBHL	10758.8	-10114.4	17.5	371637.30	593157.60	32° 1' 17.800 N	104° 1' 57.663 W

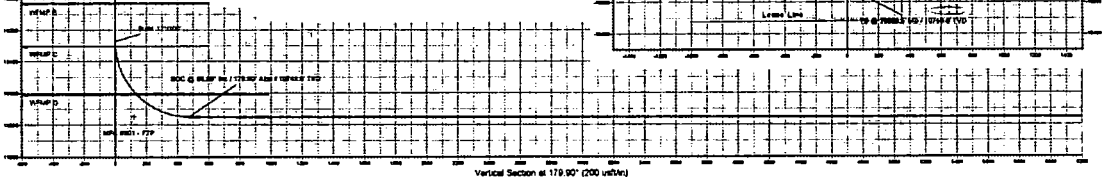
SECTION DETAILS

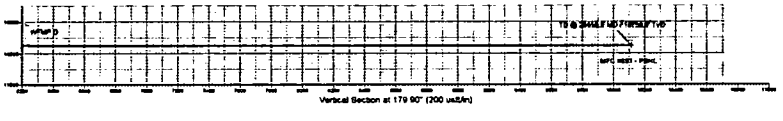
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10271.3	0.00	0.00	10271.3	0.0	0.0	0.00	0.00	0.0	Build 12°/100'
3	11021.4	89.97	179.90	10748.8	-477.4	0.0	12.00	179.90	477.4	EOC @ 89.97° Inc / 179.90° Azm / 10748.8' TVD
4	20658.8	89.97	179.90	10758.8	-10114.4	17.5	0.00	0.00	10114.4	TD @ 20658.8' MD / 10758.8' TVD











CONCHO

COG Operating, LLC

Eddy County, NM (NAD 27)
Sec 13, T26-S, R28-E
Momba Federal Com #801H

Wellbore #1
Design #1

QES Anticollision Report

29 August, 2018

QES
QUINTANA ENERGY SERVICES

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Reference Site:	Sec 13, T26-S, R28-E	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 5,000.0 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 8/29/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,658.5	Design #1 (Wellbore #1)	MWD	OWSG 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
Sec 31, T26-S, R29-E						
Copperhead 31 Fee #20H - Wellbore #1 - Design #1	17,300.0	21,204.6	656.7	339.0	2.067	SF
Copperhead 31 Fee #20H - Wellbore #1 - Design #1	20,659.0	17,845.8	638.3	330.6	2.074	CC, ES

Offset Design Sec 31, T26-S, R29-E - Copperhead 31 Fee #20H - Wellbore #1 - Design #1 — Offset Site Error: 0.0 usft

Survey Program: 0-MWD default — Offset Well Error: 0.0 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)	Separation Factor	Warning
12,400.0	10,749.1	21,245.0	10,694.0	48.5	193.9	-85.14	-6,718.1	666.3	4,907.5	4,818.3	55.029	
12,500.0	10,749.1	21,245.0	10,694.0	49.6	193.9	-85.14	-6,718.1	666.3	4,808.4	4,718.7	53.635	
12,600.0	10,749.1	21,245.0	10,694.0	50.6	193.9	-85.14	-6,718.1	666.3	4,709.3	4,619.2	52.241	
12,700.0	10,749.1	21,245.0	10,694.0	51.7	193.9	-85.14	-6,718.1	666.3	4,610.3	4,519.7	50.848	
12,800.0	10,749.2	21,245.0	10,694.0	52.9	193.9	-85.14	-6,718.1	666.3	4,511.4	4,420.1	49.455	
12,900.0	10,749.2	21,245.0	10,694.0	54.0	193.9	-85.14	-6,718.1	666.3	4,412.5	4,320.7	48.062	
13,000.0	10,749.2	21,245.0	10,694.0	55.2	193.9	-85.14	-6,718.1	666.3	4,313.6	4,221.2	46.671	
13,100.0	10,749.2	21,245.0	10,694.0	56.4	193.9	-85.14	-6,718.1	666.3	4,214.8	4,121.7	45.281	
13,200.0	10,749.2	21,245.0	10,694.0	57.6	193.9	-85.14	-6,718.1	666.3	4,116.0	4,022.3	43.892	
13,300.0	10,749.2	21,245.0	10,694.0	58.9	193.9	-85.14	-6,718.1	666.3	4,017.4	3,922.8	42.506	
13,400.0	10,749.2	21,245.0	10,694.0	60.2	193.9	-85.14	-6,718.1	666.3	3,918.7	3,823.4	41.121	
13,500.0	10,749.2	21,245.0	10,694.0	61.5	193.9	-85.14	-6,718.1	666.3	3,820.2	3,724.1	39.740	
13,600.0	10,749.2	21,245.0	10,694.0	62.8	193.9	-85.14	-6,718.1	666.3	3,721.7	3,624.7	38.361	
13,700.0	10,749.3	21,245.0	10,694.0	64.1	193.9	-85.14	-6,718.1	666.3	3,623.3	3,525.4	36.986	
13,800.0	10,749.3	21,245.0	10,694.0	65.4	193.9	-85.14	-6,718.1	666.3	3,525.0	3,426.1	35.615	
13,900.0	10,749.3	21,245.0	10,694.0	66.8	193.9	-85.14	-6,718.1	666.3	3,426.8	3,326.8	34.249	
14,000.0	10,749.3	21,245.0	10,694.0	68.1	193.9	-85.14	-6,718.1	666.3	3,328.8	3,227.5	32.888	
14,100.0	10,749.3	21,245.0	10,694.0	69.5	193.9	-85.14	-6,718.1	666.3	3,230.8	3,128.3	31.532	
14,200.0	10,749.3	21,245.0	10,694.0	70.9	193.9	-85.14	-6,718.1	666.3	3,132.9	3,029.1	30.184	
14,300.0	10,749.3	21,245.0	10,694.0	72.3	193.9	-85.14	-6,718.1	666.3	3,035.2	2,930.0	28.843	
14,400.0	10,749.3	21,245.0	10,694.0	73.7	193.9	-85.14	-6,718.1	666.3	2,937.7	2,830.9	27.511	
14,500.0	10,749.3	21,245.0	10,694.0	75.1	193.9	-85.14	-6,718.1	666.3	2,840.3	2,731.8	26.188	
14,600.0	10,749.3	21,245.0	10,694.0	76.5	193.9	-85.14	-6,718.1	666.3	2,743.1	2,632.8	24.875	
14,700.0	10,749.4	21,245.0	10,694.0	78.0	193.9	-85.14	-6,718.1	666.3	2,646.1	2,533.9	23.574	
14,800.0	10,749.4	21,245.0	10,694.0	79.4	193.9	-85.14	-6,718.1	666.3	2,549.4	2,435.0	22.287	

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:**	Well Momba Federal Com #801H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Reference Site:	Sec 13, T26-S, R28-E	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 31, T26-S, R29-E - Copperhead 31 Fee #20H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 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)	Separation Factor	Warning
14,900.0	10,749.4	21,245.0	10,694.0	80.9	193.9	-85.14	-6,718.1	666.3	2,452.9	2,336.2	21.014	
15,000.0	10,749.4	21,245.0	10,694.0	82.3	193.9	-85.14	-6,718.1	666.3	2,356.7	2,237.4	19.757	
15,100.0	10,749.4	21,245.0	10,694.0	83.8	193.9	-85.14	-6,718.1	666.3	2,260.8	2,138.8	18.519	
15,200.0	10,749.4	21,245.0	10,694.0	85.3	193.9	-85.14	-6,718.1	666.3	2,165.3	2,040.2	17.300	
15,300.0	10,749.4	21,245.0	10,694.0	86.7	193.9	-85.14	-6,718.1	666.3	2,070.3	1,941.7	16.104	
15,400.0	10,749.4	21,245.0	10,694.0	88.2	193.9	-85.14	-6,718.1	666.3	1,975.7	1,843.4	14.932	
15,500.0	10,749.4	21,245.0	10,694.0	89.7	193.9	-85.14	-6,718.1	666.3	1,881.7	1,745.2	13.788	
15,600.0	10,749.5	21,245.0	10,694.0	91.2	193.9	-85.14	-6,718.1	666.3	1,788.3	1,647.2	12.674	
15,700.0	10,749.5	21,245.0	10,694.0	92.7	193.9	-85.14	-6,718.1	666.3	1,695.7	1,549.4	11.593	
15,800.0	10,749.5	21,245.0	10,694.0	94.2	193.9	-85.14	-6,718.1	666.3	1,604.0	1,451.9	10.549	
15,900.0	10,749.5	21,245.0	10,694.0	95.7	193.9	-85.14	-6,718.1	666.3	1,513.3	1,354.8	9.545	
16,000.0	10,749.5	21,245.0	10,694.0	97.3	193.9	-85.14	-6,718.1	666.3	1,423.9	1,258.0	8.585	
16,100.0	10,749.5	21,245.0	10,694.0	98.8	193.9	-85.14	-6,718.1	666.3	1,336.0	1,161.9	7.673	
16,200.0	10,749.5	21,245.0	10,694.0	100.3	193.9	-85.14	-6,718.1	666.3	1,249.9	1,066.5	6.815	
16,300.0	10,749.5	21,245.0	10,694.0	101.8	193.9	-85.14	-6,718.1	666.3	1,166.0	972.1	6.013	
16,400.0	10,749.5	21,245.0	10,694.0	103.4	193.9	-85.14	-6,718.1	666.3	1,084.8	879.1	5.273	
16,500.0	10,749.6	21,245.0	10,694.0	104.9	193.9	-85.14	-6,718.1	666.3	1,007.1	788.1	4.599	
16,600.0	10,749.6	21,245.0	10,694.0	106.4	193.9	-85.14	-6,718.1	666.3	933.6	699.9	3.995	
16,700.0	10,749.6	21,245.0	10,694.0	108.0	193.9	-85.14	-6,718.1	666.3	865.4	615.8	3.467	
16,800.0	10,749.6	21,245.0	10,694.0	109.5	193.9	-85.14	-6,718.1	666.3	803.9	537.6	3.018	
16,900.0	10,749.6	21,245.0	10,694.0	111.1	193.9	-85.14	-6,718.1	666.3	750.7	467.7	2.652	
17,000.0	10,749.6	21,245.0	10,694.0	112.6	193.9	-85.14	-6,718.1	666.3	707.8	409.5	2.373	
17,100.0	10,749.6	21,245.0	10,694.0	114.2	193.9	-85.14	-6,718.1	666.3	677.0	366.7	2.182	
17,200.0	10,749.6	21,245.0	10,694.0	115.8	193.9	-85.14	-6,718.1	666.3	660.0	343.0	2.082	
17,300.0	10,749.6	21,204.6	10,693.7	117.3	193.2	-85.11	-6,758.5	666.1	656.7	339.0	2.067 SF	
17,400.0	10,749.6	21,104.6	10,692.9	118.9	191.3	-85.04	-6,858.5	665.7	656.2	338.7	2.067	
17,500.0	10,749.7	21,004.6	10,692.2	120.4	189.5	-84.97	-6,958.5	665.2	655.6	338.5	2.067	
17,600.0	10,749.7	20,904.6	10,691.4	122.0	187.7	-84.90	-7,058.5	664.7	655.1	338.3	2.068	
17,700.0	10,749.7	20,804.6	10,690.6	123.6	185.9	-84.82	-7,158.5	664.3	654.5	338.0	2.068	
17,800.0	10,749.7	20,704.6	10,689.9	125.1	184.1	-84.75	-7,258.5	663.8	653.9	337.8	2.068	
17,900.0	10,749.7	20,604.6	10,689.1	126.7	182.3	-84.68	-7,358.5	663.3	653.4	337.5	2.069	
18,000.0	10,749.7	20,504.6	10,688.4	128.3	180.5	-84.61	-7,458.5	662.9	652.8	337.3	2.069	
18,100.0	10,749.7	20,404.6	10,687.6	129.9	178.7	-84.53	-7,558.5	662.4	652.2	337.0	2.069	
18,200.0	10,749.7	20,304.6	10,686.8	131.5	176.9	-84.46	-7,658.5	662.0	651.7	336.8	2.069	
18,300.0	10,749.7	20,204.6	10,686.1	133.0	175.1	-84.39	-7,758.5	661.5	651.1	336.5	2.070	
18,400.0	10,749.8	20,104.6	10,685.3	134.6	173.3	-84.31	-7,858.4	661.0	650.6	336.3	2.070	
18,500.0	10,749.8	20,004.6	10,684.5	136.2	171.5	-84.24	-7,958.4	660.6	650.0	336.0	2.070	
18,600.0	10,749.8	19,904.7	10,683.8	137.8	169.7	-84.17	-8,058.4	660.1	649.5	335.8	2.070	
18,700.0	10,749.8	19,804.7	10,683.0	139.4	167.9	-84.09	-8,158.4	659.7	648.9	335.5	2.071	
18,800.0	10,749.8	19,704.7	10,682.2	141.0	166.1	-84.02	-8,258.4	659.2	648.4	335.3	2.071	
18,900.0	10,749.8	19,604.7	10,681.5	142.6	164.3	-83.95	-8,358.4	658.7	647.8	335.0	2.071	
19,000.0	10,749.8	19,504.7	10,680.7	144.1	162.5	-83.87	-8,458.4	658.3	647.3	334.8	2.071	
19,100.0	10,749.8	19,404.7	10,680.0	145.7	160.7	-83.80	-8,558.4	657.8	646.7	334.5	2.072	
19,200.0	10,749.8	19,304.7	10,679.2	147.3	158.9	-83.72	-8,658.4	657.3	646.2	334.3	2.072	
19,300.0	10,749.9	19,204.7	10,678.4	148.9	157.1	-83.65	-8,758.4	656.9	645.6	334.0	2.072	
19,400.0	10,749.9	19,104.7	10,677.7	150.5	155.2	-83.57	-8,858.4	656.4	645.1	333.8	2.072	
19,500.0	10,749.9	19,004.7	10,676.9	152.1	153.4	-83.50	-8,958.3	656.0	644.5	333.5	2.072	
19,600.0	10,749.9	18,904.7	10,676.1	153.7	151.6	-83.42	-9,058.3	655.5	644.0	333.3	2.073	
19,700.0	10,749.9	18,804.7	10,675.4	155.3	149.8	-83.35	-9,158.3	655.0	643.4	333.0	2.073	
19,800.0	10,749.9	18,704.7	10,674.6	156.9	148.0	-83.27	-9,258.3	654.6	642.9	332.8	2.073	
19,900.0	10,749.9	18,604.7	10,673.9	158.5	146.2	-83.20	-9,358.3	654.1	642.4	332.5	2.073	
20,000.0	10,749.9	18,504.7	10,673.1	160.1	144.5	-83.12	-9,458.3	653.7	641.8	332.3	2.073	

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:**	Well Momba Federal Com #801H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Reference Site:	Sec 13, T26-S, R28-E	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 31, T26-S, R29-E - Copperhead 31 Fee #20H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

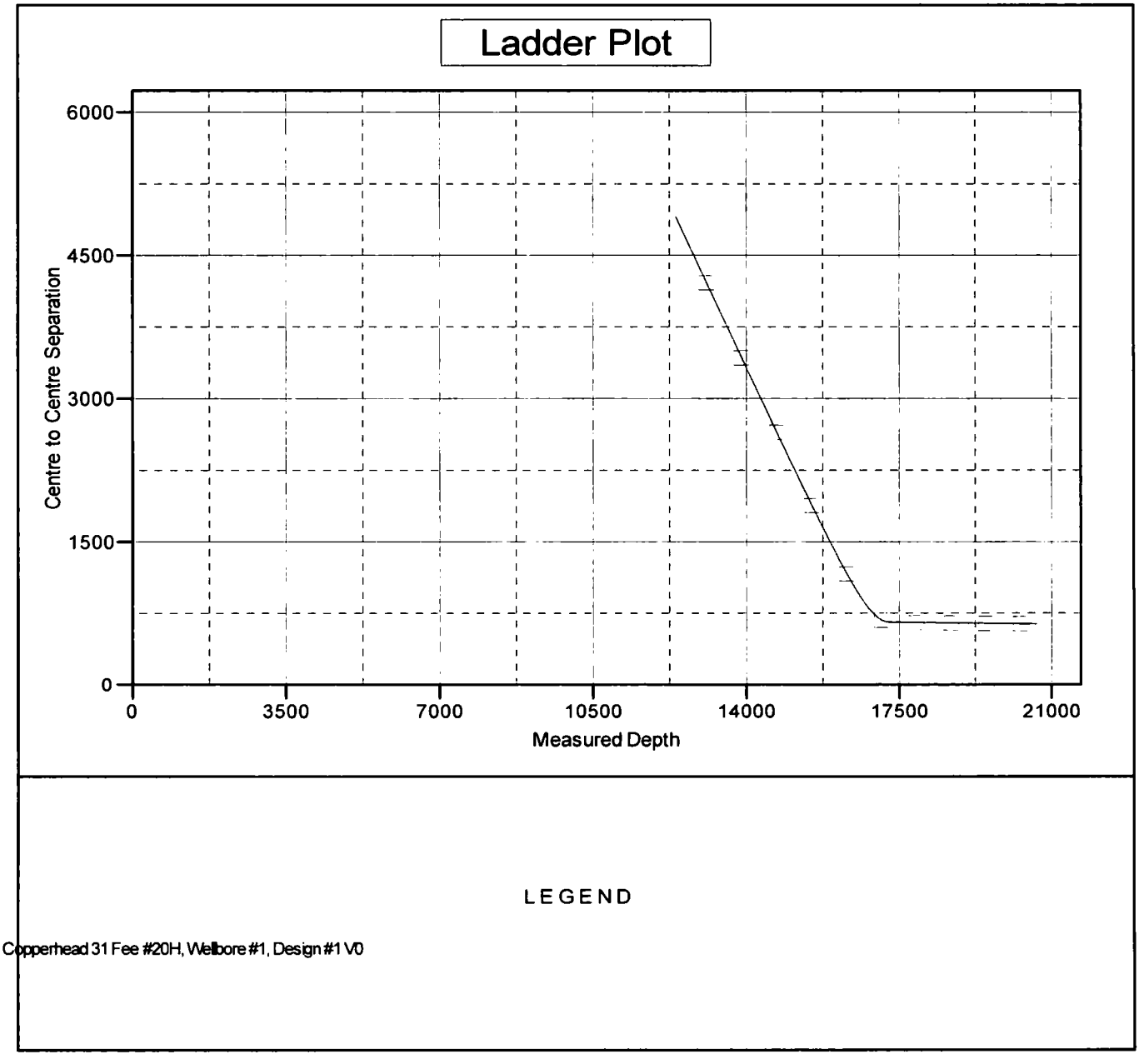
Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

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)	Separation Factor	Warning
20,100.0	10,749.9	18,404.7	10,672.3	161.7	142.7	-83.05	-9,558.3	653.2	641.3	332.0	2.073	
20,200.0	10,750.0	18,304.7	10,671.6	163.3	140.9	-82.97	-9,658.3	652.7	640.8	331.7	2.074	
20,300.0	10,750.0	18,204.7	10,670.8	164.9	139.1	-82.90	-9,758.3	652.3	640.2	331.5	2.074	
20,400.0	10,750.0	18,104.7	10,670.0	166.6	137.3	-82.82	-9,858.3	651.8	639.7	331.2	2.074	
20,500.0	10,750.0	18,004.7	10,669.3	168.2	135.5	-82.75	-9,958.3	651.4	639.1	331.0	2.074	
20,600.0	10,750.0	17,904.8	10,668.5	169.8	133.7	-82.67	-10,058.2	650.9	638.6	330.7	2.074	
20,659.0	10,750.0	17,845.8	10,668.1	170.7	132.6	-82.62	-10,117.2	650.6	638.3	330.6	2.074	CC, ES

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:**	Well Momba Federal Com #801H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Reference Site:	Sec 13, T26-S, R28-E	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

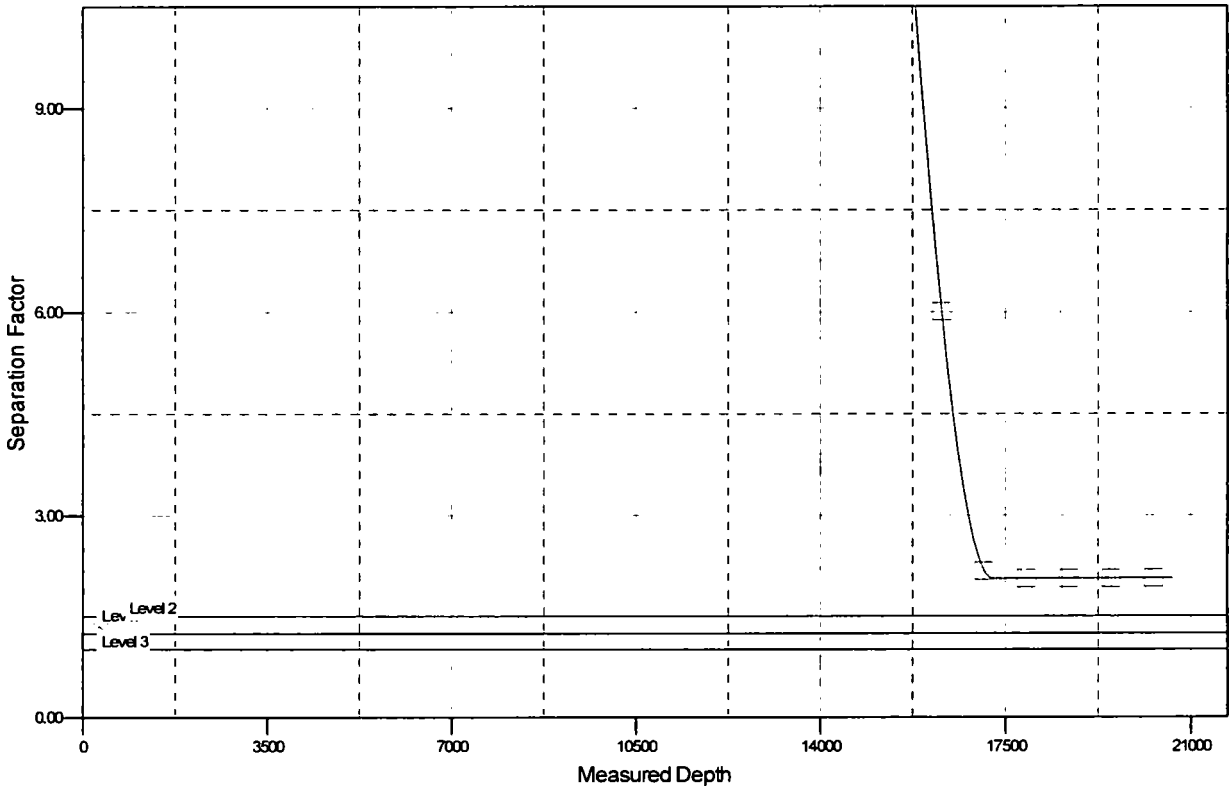
Reference Depths are relative to RKB @ 2964.0usft (Noram #21)	Coordinates are relative to: Momba Federal Com #801H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.16°



Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well Momba Federal Com #801H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	RKB @ 2964.0usft (Noram #21)
Reference Site:	Sec 13, T26-S, R28-E	**MD Reference:**	RKB @ 2964.0usft (Noram #21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Momba Federal Com #801H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to RKB @ 2964.0usft (Noram #21)	Coordinates are relative to: Momba Federal Com #801H
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°

Separation Factor Plot



LEGEND

Copperhead 31 Fee #20H, Wellbore #1, Design #1 V0

COG Operating, LLC - Momba Federal Com 801H

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

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	130	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter.	750	12.7	2.0	9.6	16	Lead: 35:65:6 C Blend
	250	16.4	1.34	6.34	8	Tail: Class H
5.5 Prod	1560	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	2760	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results
Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0'	50%
1st Intermediate	0'	50%
Production	0'	30% OH in Lateral (KOP to EOL) – 40% OH in Vertical

COG Operating, LLC - Momba Federal Com 801H

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	3000
			Blind Ram	x	3M
			Pipe Ram	x	
			Double Ram		
			Other*		
8-3/4"	13-5/8"	5M	Annular	x	50% testing pressure
			Blind Ram	x	5M
			Pipe Ram	x	
			Double Ram		
			Other*		

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.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	N Are anchors required by manufacturer?
N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.6 - 8.8	28-34	N/C
Surf csg	9-5/8" Int shoe	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
9-5/8" Int shoe	Lateral TD	OBM	9.6 - 10.5	35-45	<20

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

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

6. Logging and Testing Procedures

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

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5870 psi at 10749' TVD
Abnormal Temperature	NO 165 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

8. Other Facets of Operation

N	Is it a walking operation?
N	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan

APD ID: 10400033681 **Submission Date:** 09/05/2018

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Momba_801H_Exist_Rd_20180831092630.pdf

Existing Road Purpose: ACCESS **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:

COG_Momba_801H_Maps_Plats_20180831092701.pdf

New road type: TWO-TRACK

Length: 584.2 Feet **Width (ft.):** 30

Max slope (%): 33 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

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? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Blading

Access other construction information: No turnouts are planned. Re-routing access road around proposed well location.

Access miscellaneous information:

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

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: None necessary.

Road Drainage Control Structures (DCS) description: None needed.

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:

COG_Momba_801H_1_Mile_Data_20180831092749.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: A tank battery and facilities will be constructed as shown on the Production Facility Layout. The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: INTERMEDIATE/PRODUCTION CASING **Water source type:** OTHER

Describe type: Brine Water

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: COMMERCIAL

Water source transport method: TRUCKING

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 30000 **Source volume (acre-feet):** 3.866793

Source volume (gal): 1260000

Water source use type: STIMULATION, SURFACE CASING **Water source type:** OTHER

Describe type: Fresh Water

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: PRIVATE

Water source transport method: PIPELINE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 450000 **Source volume (acre-feet):** 58.001892

Source volume (gal): 18900000

Water source and transportation map:

COG_Momba_801H_Fresh_H2O_20180905090742.pdf
COG_Momba_801H_Brine_H2O_20180905090756.pdf

Water source comments: Fresh water will be obtained from GWWS water well located in Section 14, T26S, R28E. Brine water will be obtained from the Malaga I Brine station, located in Section 2, T21S, R25E.
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.):**

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from Concho SRO caliche pit located in Section 17, T26S, R28E Phone 575-748-6940.
Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil and water during drilling and completion operations

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling waste will be stored safely and disposed of properly

Safe containmant attachment:

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

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 250 gallons

Waste disposal frequency : Weekly

Safe containment description: Waste will be properly contained and disposed of properly at a state approved disposal facility
Safe containmant attachment:

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

Disposal location description: Trucked to an approved disposal facility

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations

Amount of waste: 125 pounds

Waste disposal frequency : Weekly

Safe containment description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

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

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

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

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Roll off cuttings containers on tracks

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

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

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

WCuttings area liner

Cuttings area liner specifications and installation description

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Momba_801H_Prod_Facil_20180831094830.pdf

Comments: A tank battery and facilities will be constructed as shown on the Production Facility Layout. The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:**

Multiple Well Pad Number:

Recontouring attachment:

Drainage/Erosion control construction: Approximately 400' of straw waddles will be placed on the East, South and the West sides of the location to reduce sediment impacts to fragile/sensitive soils.
Drainage/Erosion control reclamation: Reclaim the west 80'

Well pad proposed disturbance (acres): 3.67
Road proposed disturbance (acres): 0.19
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 0
Other proposed disturbance (acres): 0
Total proposed disturbance: 3.86

Well pad interim reclamation (acres): 0.15
Road interim reclamation (acres): 0.19
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0
Total interim reclamation: 0.34

Well pad long term disturbance (acres): 2.94
Road long term disturbance (acres): 0.19
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres): 0
Other long term disturbance (acres): 0
Total long term disturbance: 3.13

Disturbance Comments:

Reconstruction method: New construction of pad.

Topsoil redistribution: Reclaim the west 80'

Soil treatment: None

Existing Vegetation at the well pad: Shinnery Oak/Mesquite grassland

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

Operator Name: COG OPERATING LLC

Well Name: MOMBA FEDERAL COM **Well Number:** 801H

First Name: Gerald **Last Name:** Herrera

Phone: (432)260-7399 **Email:** gherrera@concho.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

COG_Momba_801H_Closed_Loop_20180831092931.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

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

Section 12 - Other Information

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

ROW Type(s):

ROW Applications

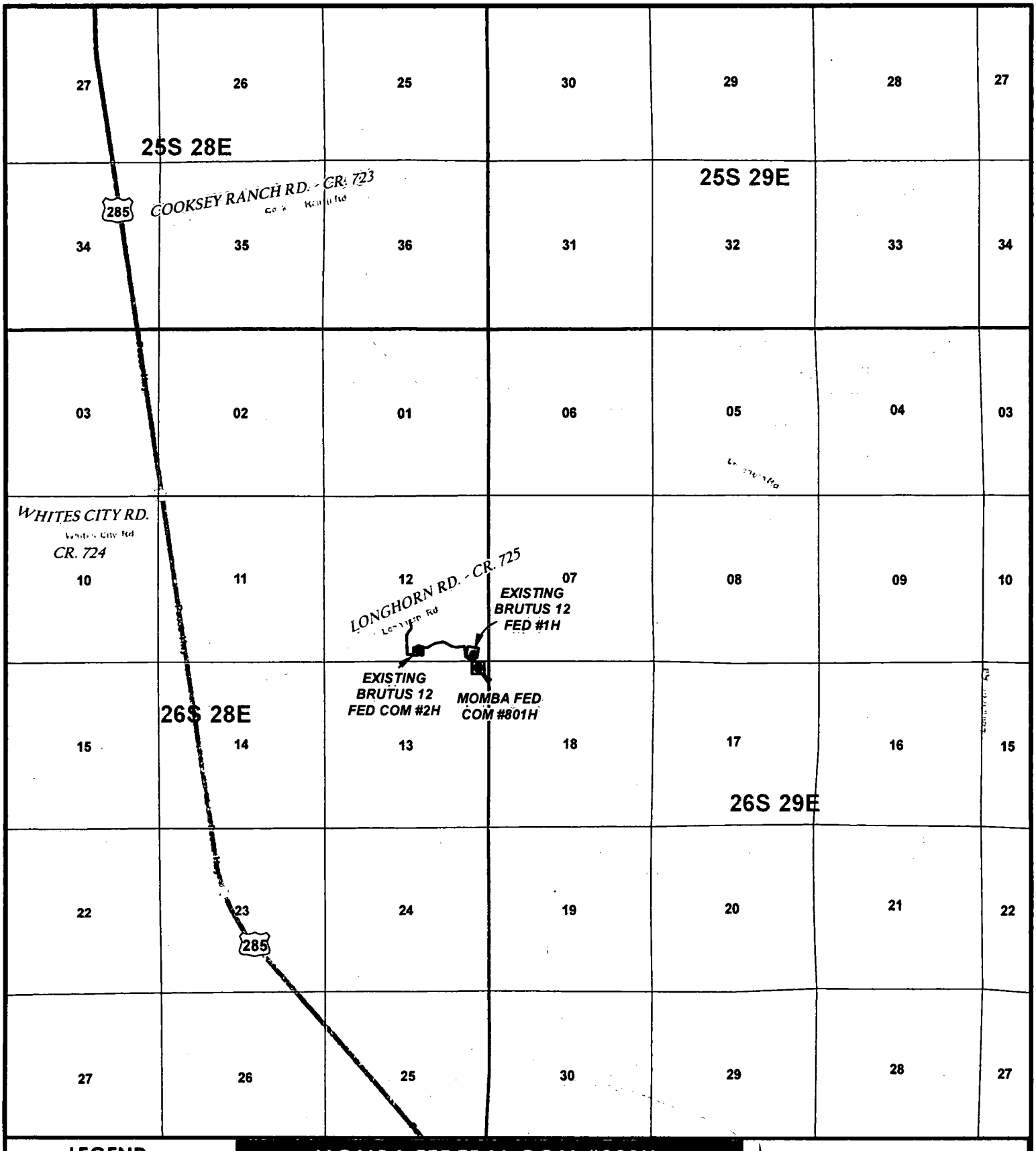
SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Onsite completed on 7/27/2018 by Gerald Herrera (COG); Rand French (COG) and Jeff Robertson (BLM).

Other SUPO Attachment

COG_Momba_801H_Cert._20180831094255.pdf
COG_Momba_801H_Exist_Rd_20190115161629.pdf
COG_Momba_801H_Fresh_H2O_20190115161642.pdf
COG_Momba_801H_Maps_Plats_20190115161704.pdf
COG_Momba_801H_1_Mile_Data_20190116065102.pdf
COG_Momba_801H_Brine_H2O_20190116065120.pdf
COG_Momba_801H_C102_20190116065132.pdf



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 7,500 10,000 FEET

0 0.275 0.55 1.1 Miles

1 IN = 4,000 FT

LOCATION MAP VICINITY 8/2/2018 S.P.

N

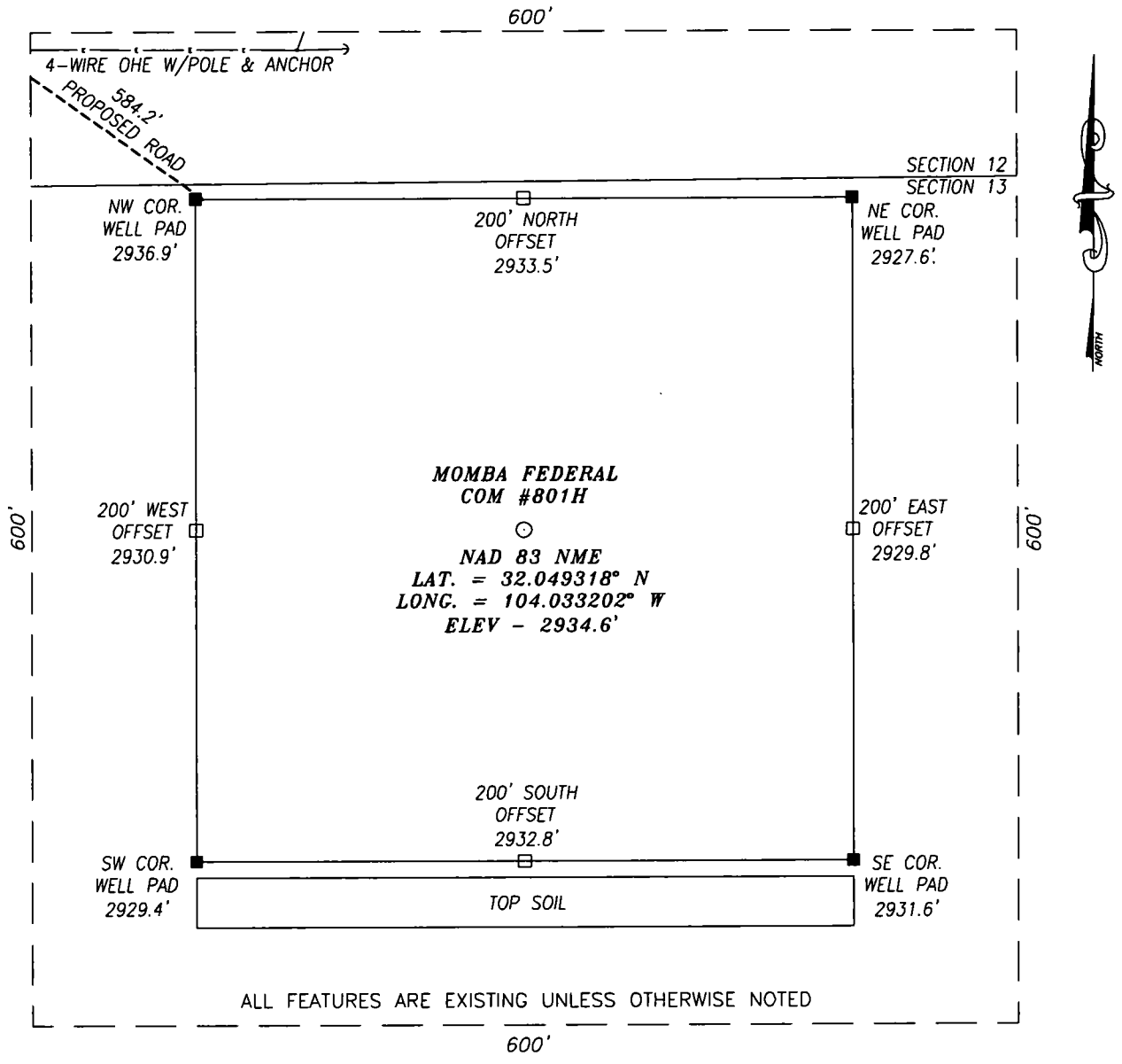
CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
TEXAS FIRM NO. 10194089
c.harcrow@harcrowsurveying.com

SECTION 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION:

FROM THE INTERSECTION OF U.S. HWY. 285 & LONGHORN RD. - CR. 725, GO NORTHEASTERLY ON LONGHORN RD. FOR APPROX. 1.4 MI.; THEN GO RIGHT (SOUTHERLY) ON MEANDERING CALICHE RD. FOR APPROX. 0.2 MI.; THEN GO LEFT (EASTERLY) ON MEANDERING CALICHE RD., THRU. THE "BRUTUS 12 FED COM #2H" WELLPAD, FOR APPROX. 0.4 MI. TO THE BEGINNING OF THE PROPOSED ROAD LYING ON THE RIGHT SIDE (SOUTH SIDE) OF ROAD; THE PROPOSED LIES APPROX. 800 FEET SOUTHEASTERLY.

CERTIFICATION

I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

CHAD HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 8/7/18

CHAD HARCROW N.M.P.S. NO. 17777 DATE

HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158 FAX: (575) 746-2158
Texas Firm No. 10194089
c.harcrow@harcrowsurveying.com

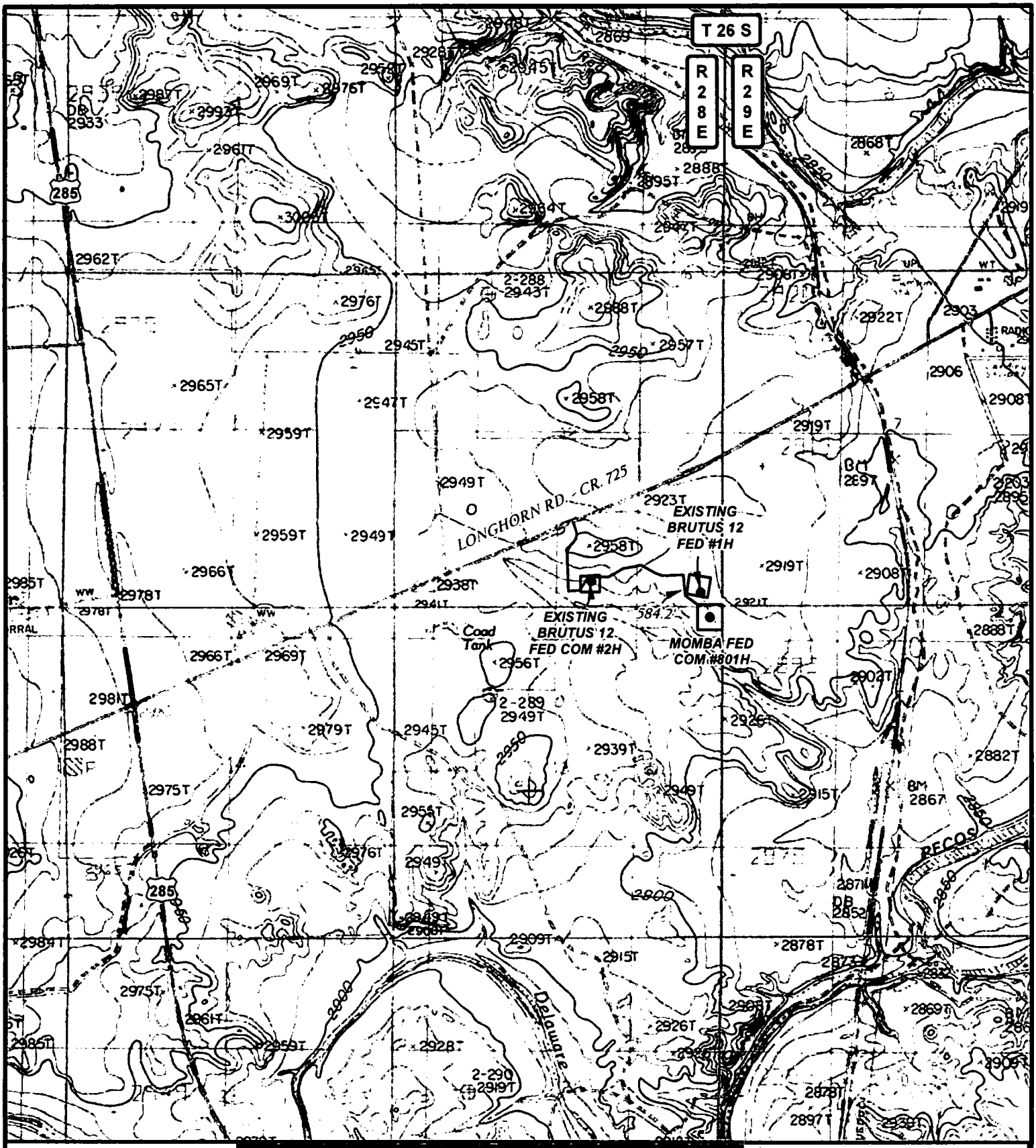
100 0 100 200 Feet

Scale: 1"=100'

COG OPERATING, LLC

MOMBA FEDERAL COM #801H
LOCATED 210 FEET FROM THE NORTH LINE AND 330 FEET FROM THE EAST LINE OF SECTION 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

SURVEY DATE: JULY 27, 2018		600S
DRAFTING DATE: AUGUST 2, 2018		PAGE: 1 OF 1
APPROVED BY: CH	DRAWN BY: SP	FILE: 18-856



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

LOCATION MAP TOPO 8/2/2018 S.P.

N

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COG OPERATING, LLC

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PH: (575) 746-2158 FAX: (575) 746-2158
TEXAS FIRM NO. 10194089
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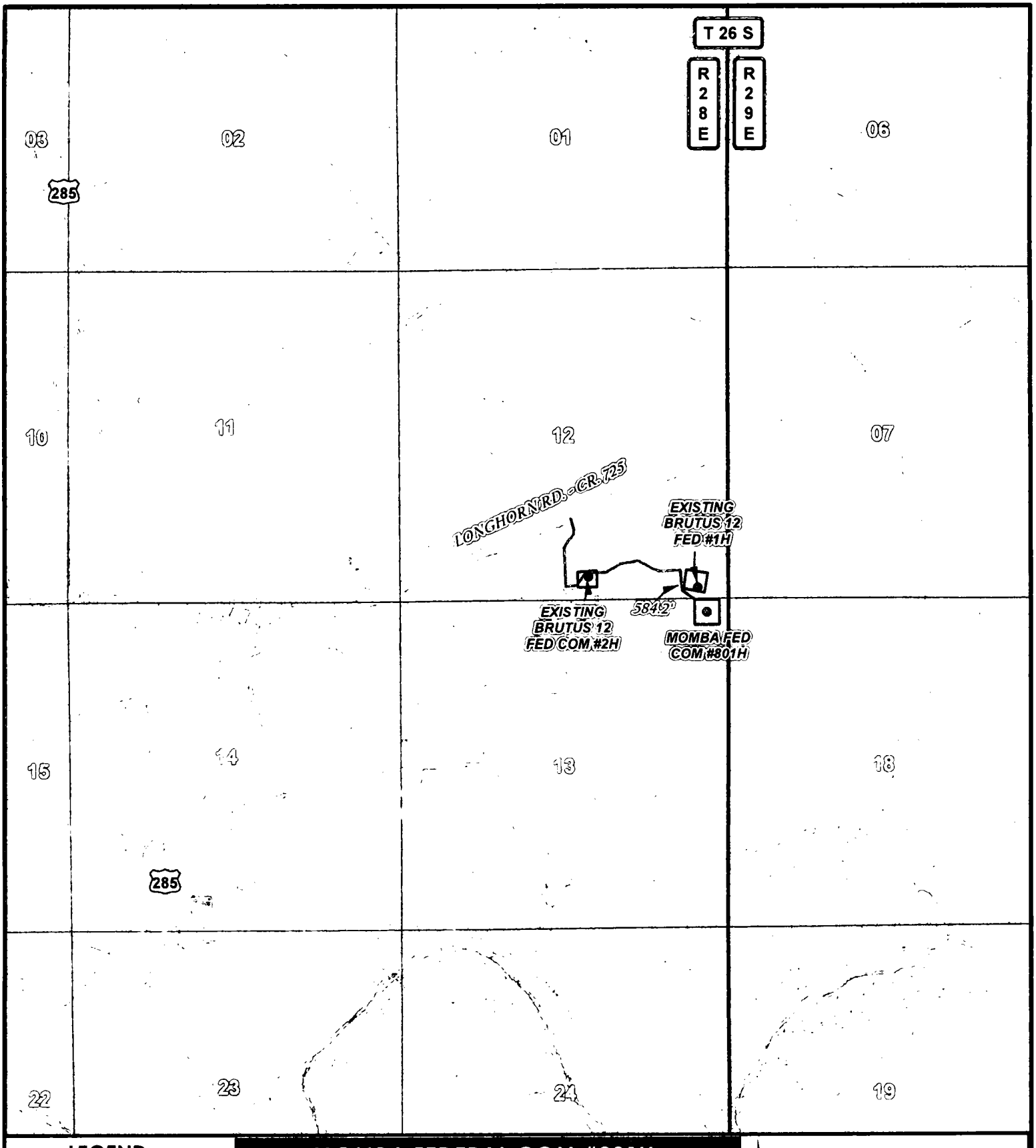

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles

1 IN = 2,000 FT

LOCATION MAP IMAGERY 8/2/2018 S.P.

N

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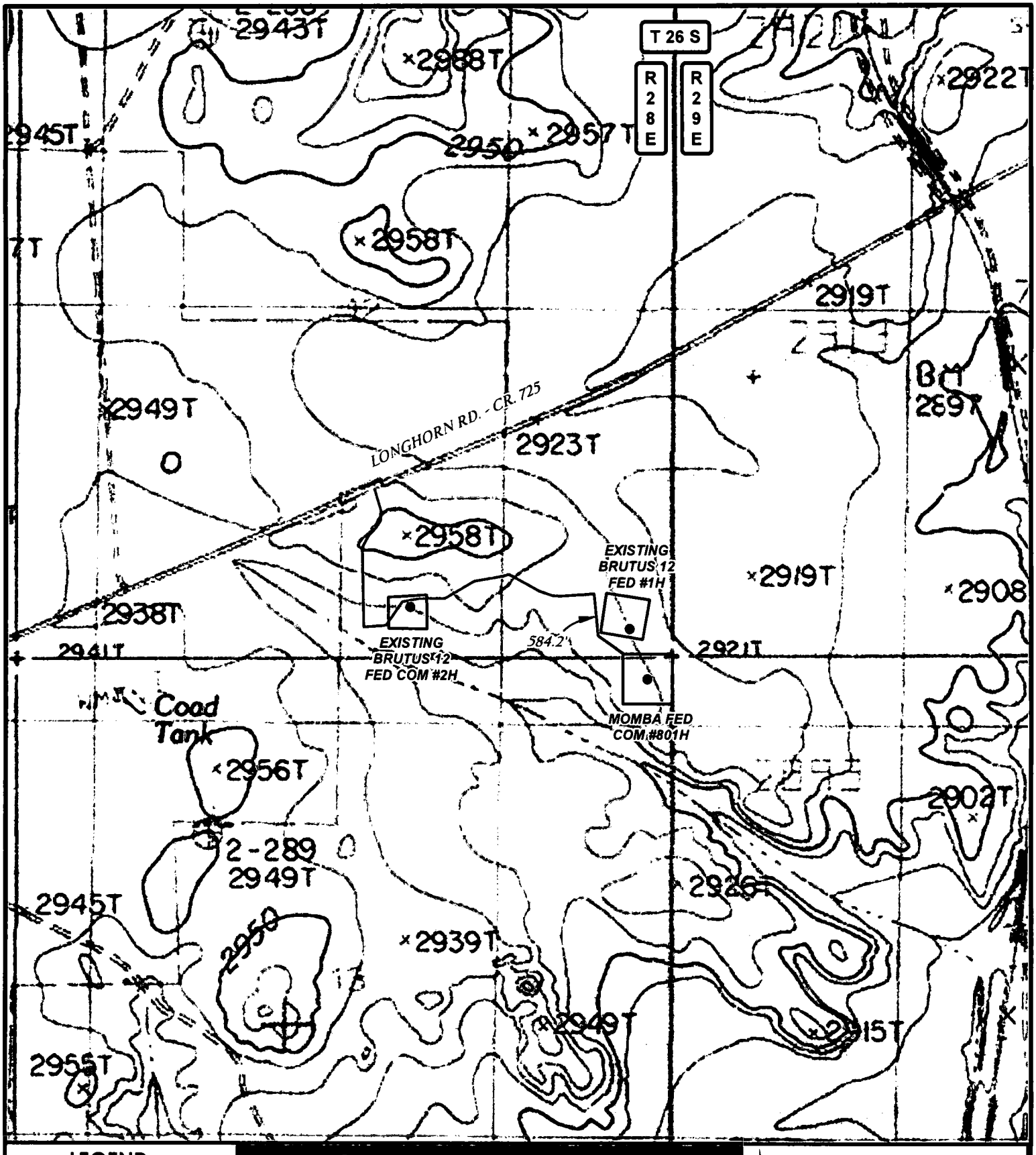

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 FEET

0 0.05 0.1 0.2 Miles 1 IN = 1,000 FT

LOCATION MAP | TOPO ROAD | 8/2/2018 | S.P.

N

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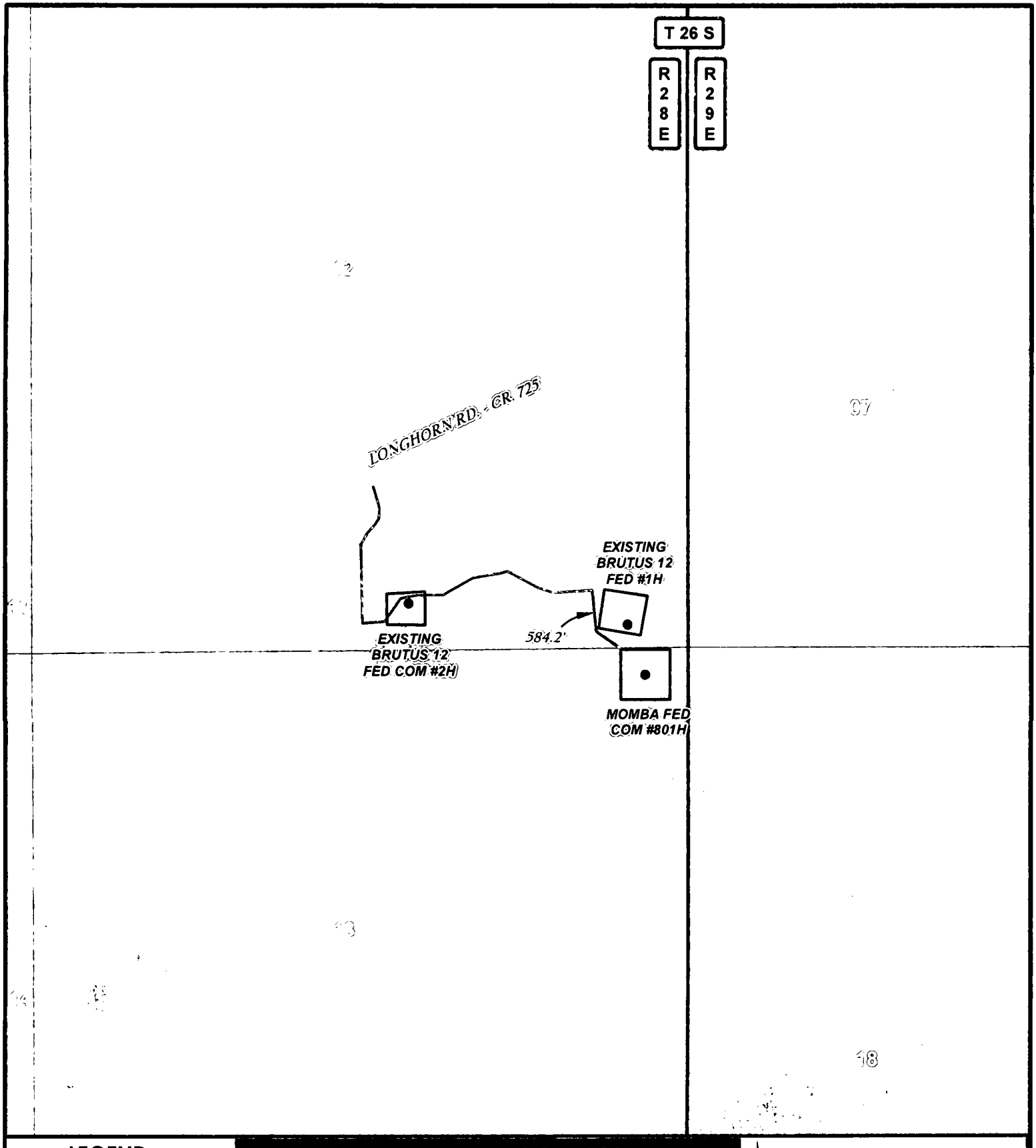

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 FEET

0 0.05 0.1 0.2 Miles

1 IN = 1,000 FT

LOCATION MAP | IMAGERY ROAD | 8/2/2018 | S.P.

N

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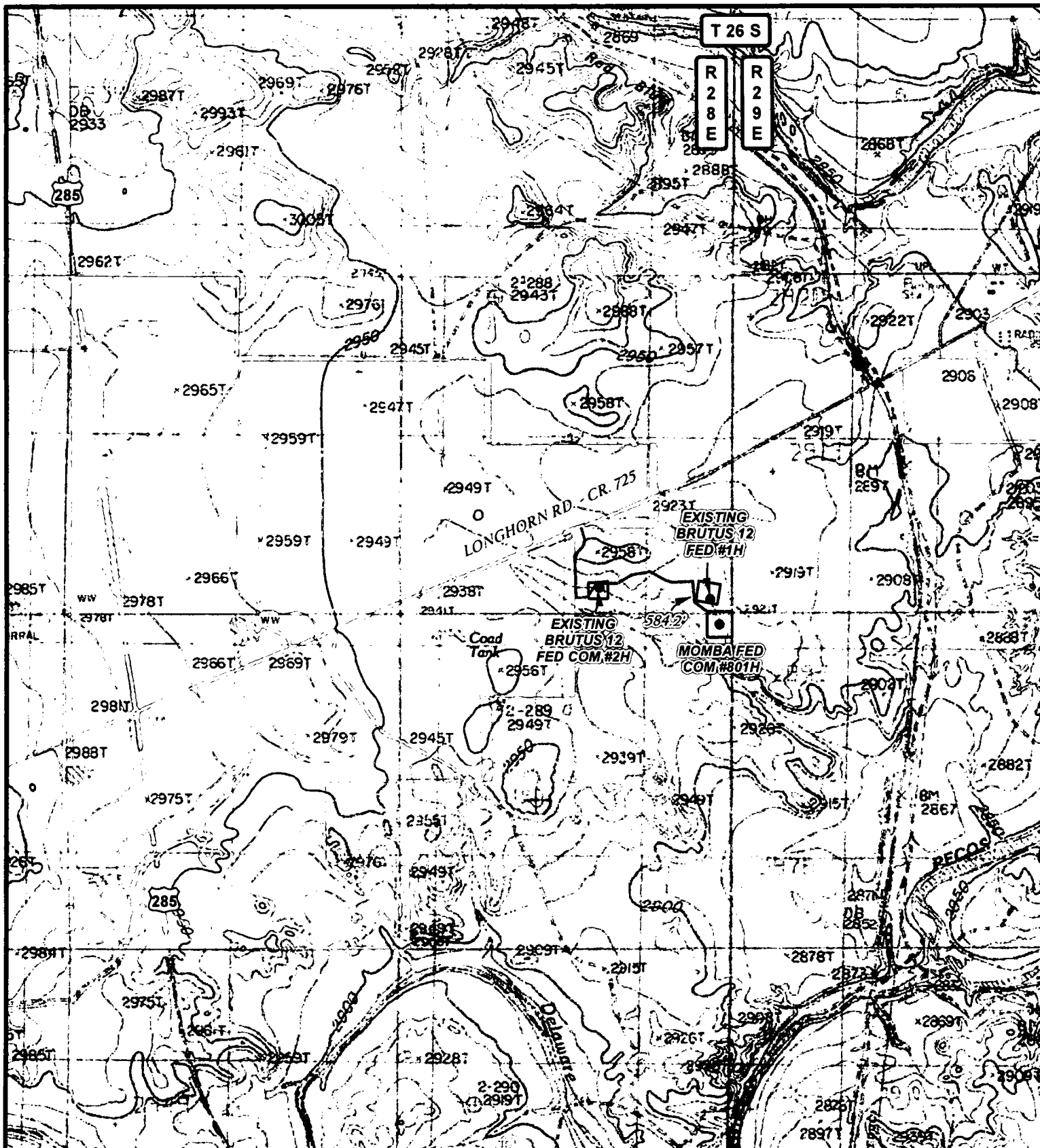

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- PRIVATE
- STATE OF NM
- US BLM

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

LOCATION MAP | LAND STATUS | 8/2/2018 | S.P.

N

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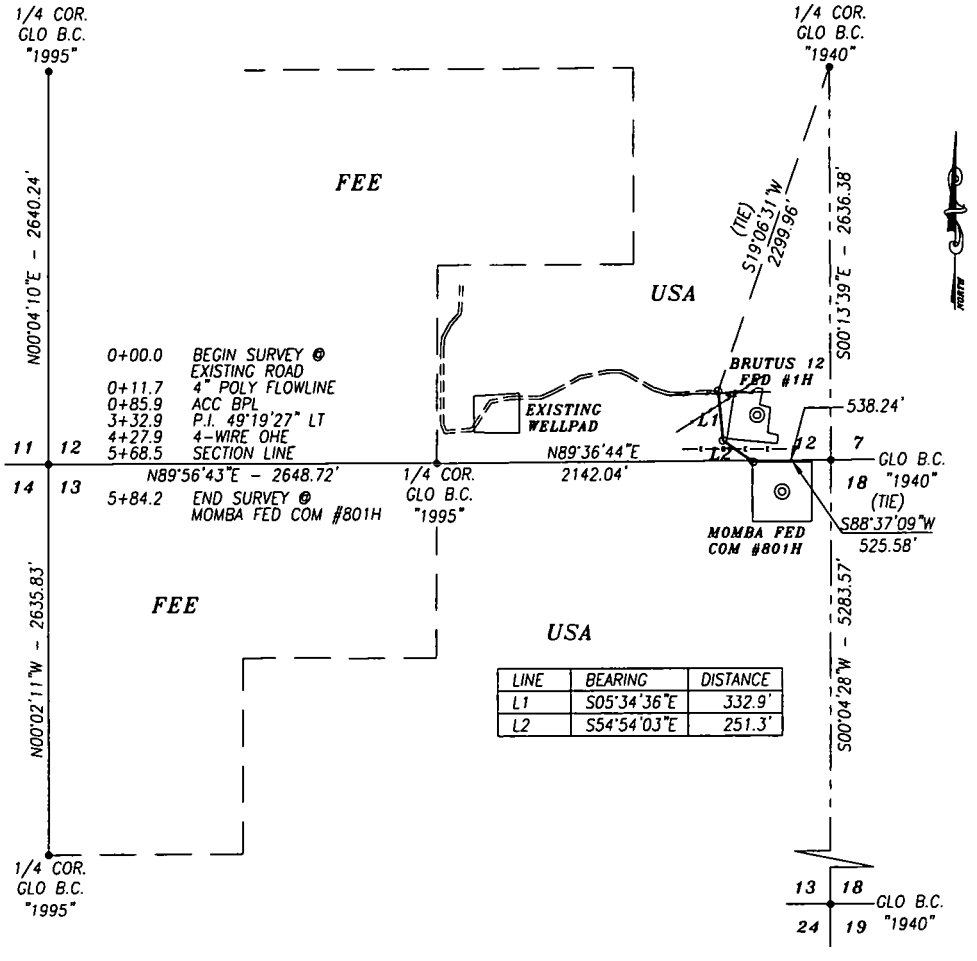
PH: (575) 746-2158 FAX: (575) 746-2158
TEXAS FIRM NO. 10194089
c.harcrow@harcrowsurveying.com

ACCESS ROAD PLAT
COG OPERATING, LLC.

A PROPOSED ACCESS ROAD FROM AN EXISTING ROAD TO
THE MOMBA FEDERAL COM #801H IN
SECTIONS 12 & 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



LINE	BEARING	DISTANCE
L1	S05°34'36"E	332.9'
L2	S54°54'03"E	251.3'

DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE AND 584.2 FEET OR 35.41 RODS OR 0.111 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 12 & 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

BASIS OF BEARING:
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

CERTIFICATION
I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

CHAD L. HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 8/7/18
CHAD HARCROW N.M.P.S. NO. 17777 DATE

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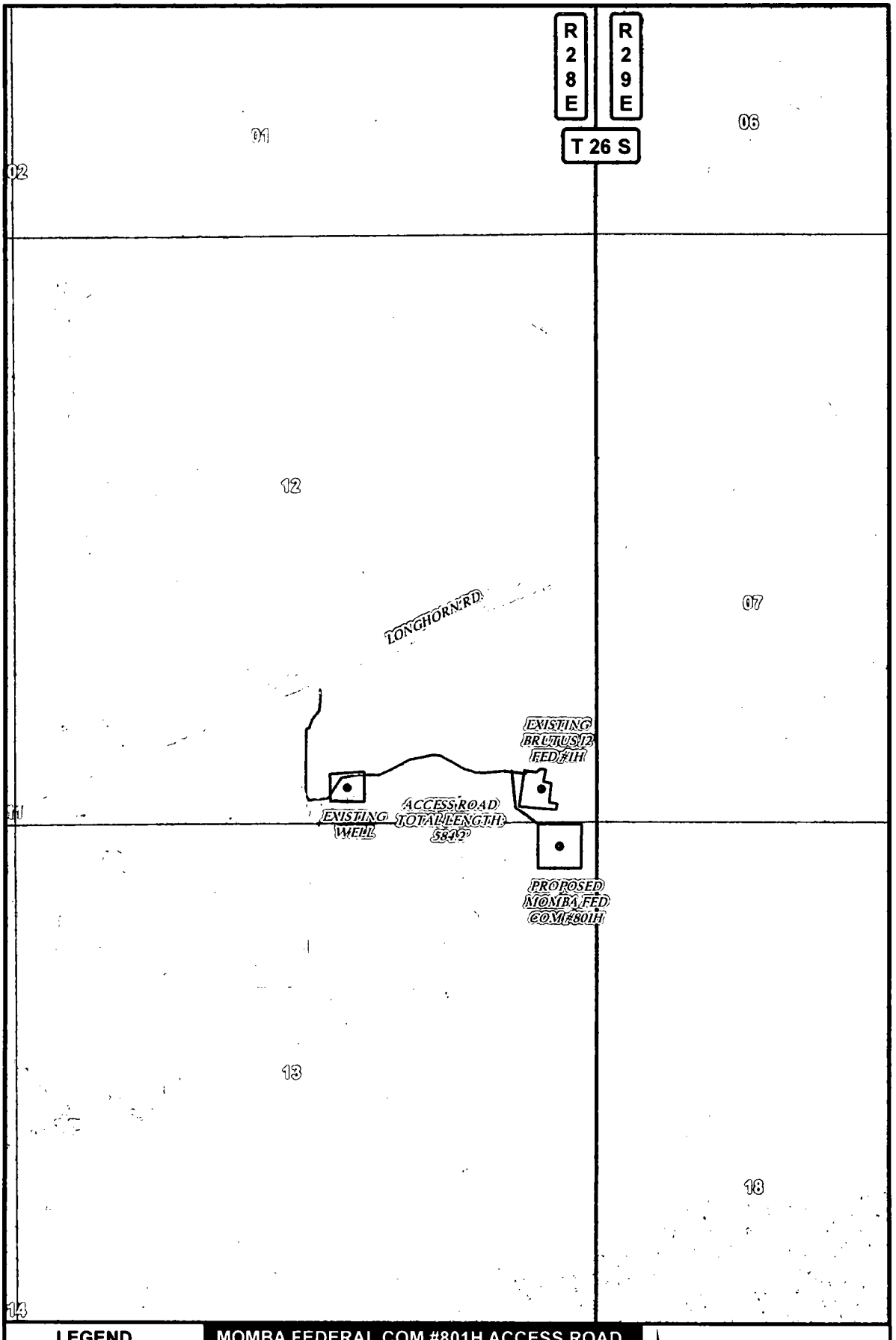
1000 0 1000 2000 FEET
SCALE: 1"=1000'

COG OPERATING, LLC.

SURVEY OF A PROPOSED ACCESS ROAD LOCATED IN SECTIONS 12 & 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO

SURVEY DATE: JULY 27, 2018		
DRAFTING DATE: JULY 31, 2018		PAGE 1 OF 1
APPROVED BY: CH	DRAWN BY: JH	FILE: 18-892



LEGEND

- WELL
- WELLPAD
- ACCESS ROAD
- EXIST. ROAD

MOMBA FEDERAL COM #801H ACCESS ROAD

SECTIONS: 12 & 13	TOWNSHIP: 26 S.	RANGE: 28 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 18-892		LEASE: MOMBA FED COM

0 2,500 FEET

0 0.075 0.15 0.3 Miles

1 IN = 1,000 FT

ACCESS ROAD MAP | IMAGERY | 7/31/2018 | J.H.

N

CONCHO

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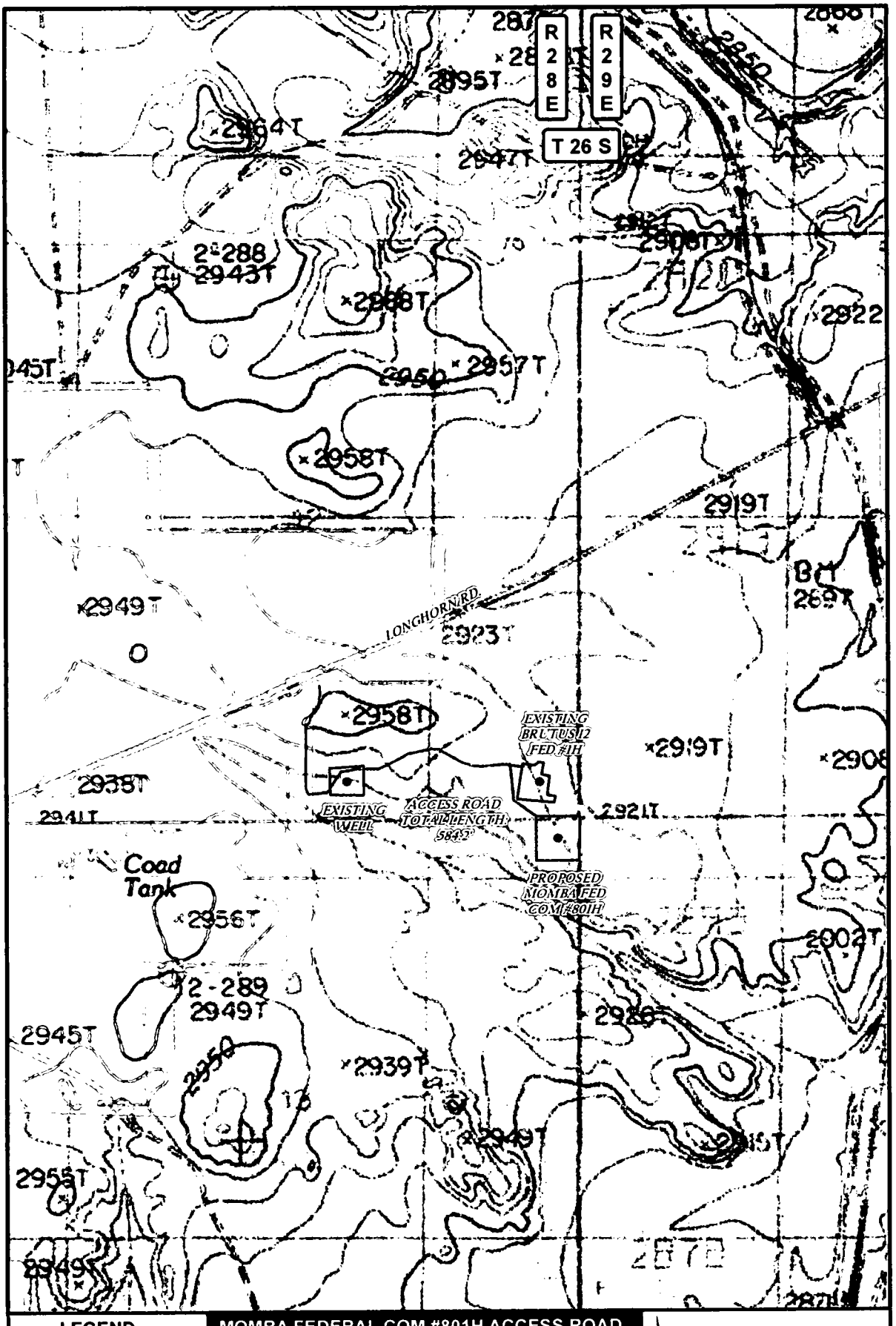

LEGEND

- WELL
- WELLPAD
- ACCESS ROAD
- EXIST. ROAD
- PRIVATE
- STATE OF NM
- US BLM

MOMBA FEDERAL COM #801H ACCESS ROAD

SECTIONS: 12 & 13	TOWNSHIP: 26 S.	RANGE: 28 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 18-892		LEASE: MOMBA FED COM

0 2,500 FEET

0 0.075 0.15 0.3 Miles

1 IN = 1,000 FT

ACCESS ROAD MAP | LAND STATUS | 7/31/2018 | J.H.

N

CONCHO

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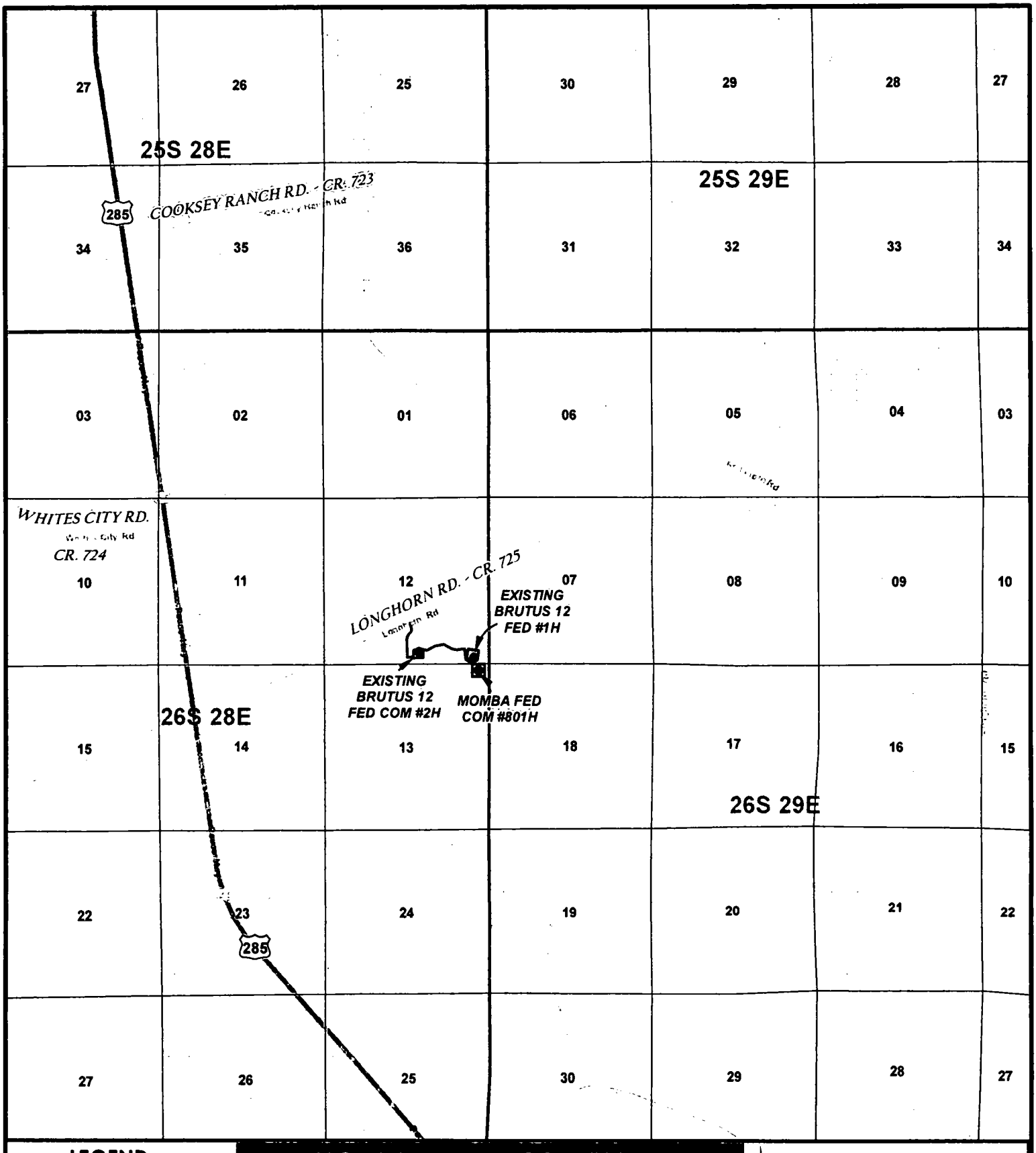

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 7,500 10,000 FEET

0 0.275 0.55 1.1 Miles

1 IN = 4,000 FT

LOCATION MAP VICINITY 8/2/2018 S.P.

N

CONCHO

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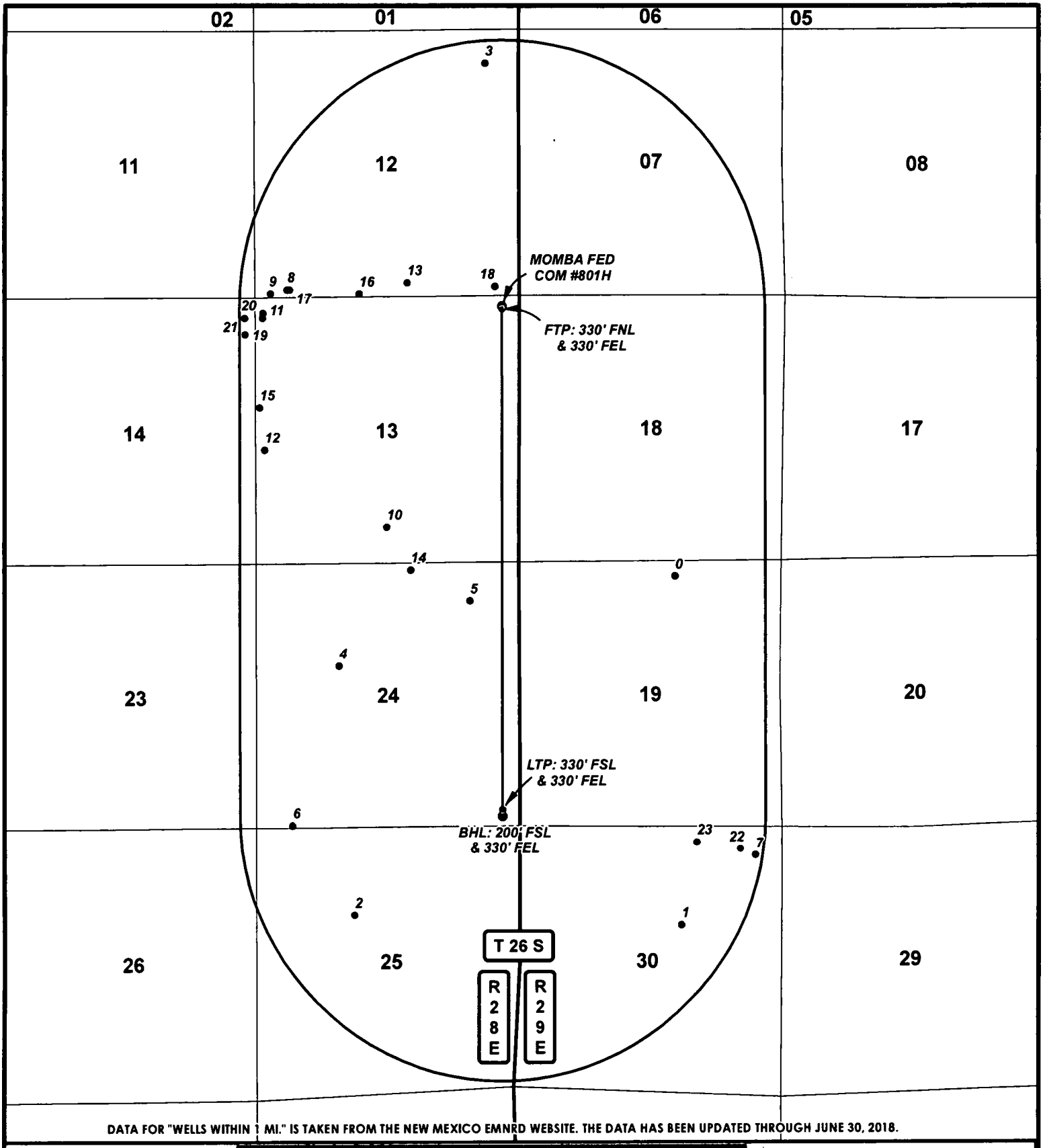

DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH JUNE 30, 2018.

LEGEND

- WELL
- BOTTOMHOLE
- WELLS WITHIN 1 MI.
- 1 MI. BUFFER

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.175 0.35 0.7 Miles

1 IN = 2,500 FT

1 MILE MAP 8/2/2018 S.P.

N

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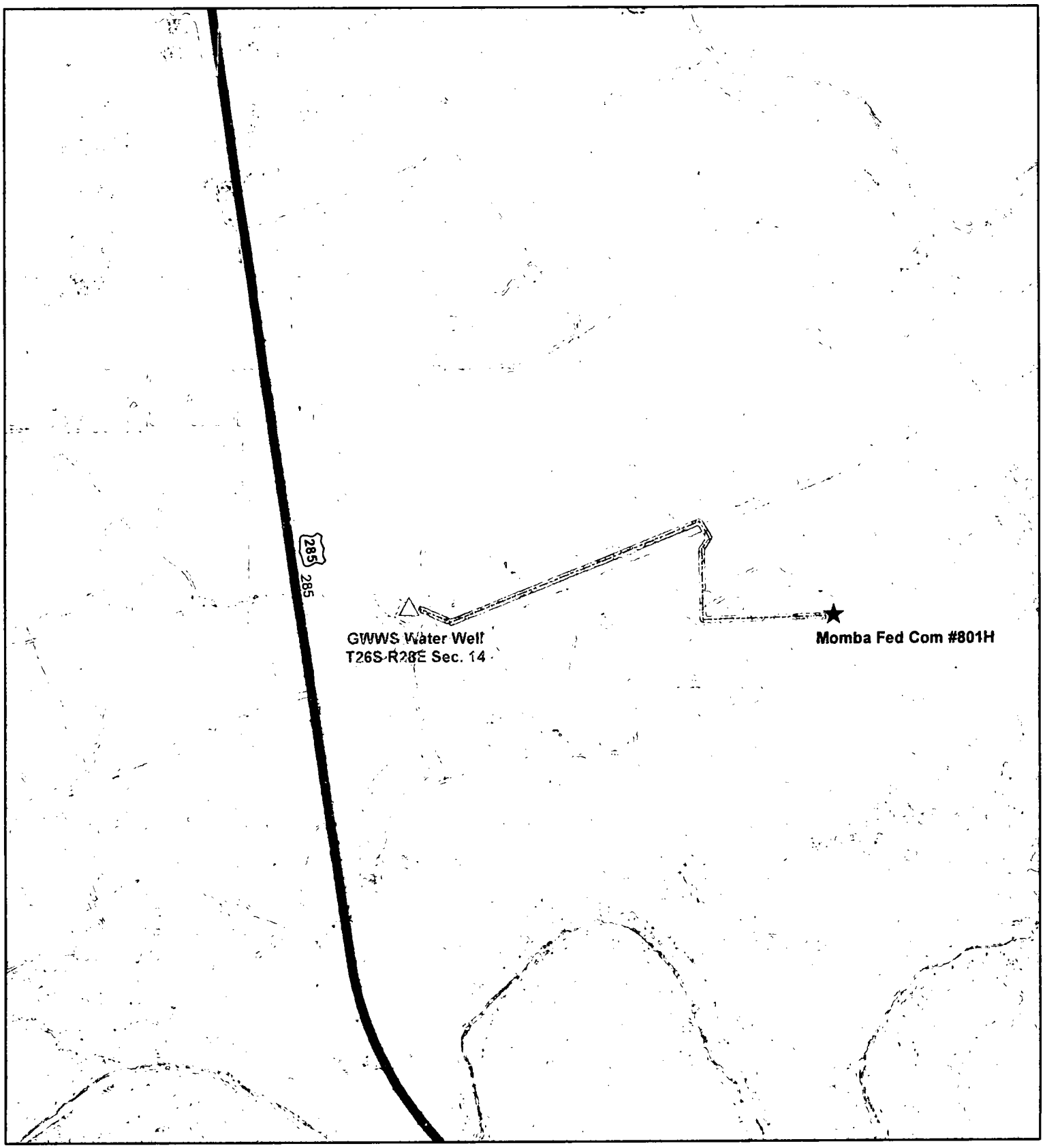
c.harcrow@harcrowsurveying.com

MOMBA FEDERAL COM #801H 1 MILE WELLS (18-8S6)

0	CLARK BAKER 001	SIGNAL OIL & GAS	3001503737	19	26.0S	29E	300 N	2096 E	32.034576	-104.022007 Plugged
1	PERKINS 001	ORLA PETCO INC	3001523849	30	26.0S	29E	1980 N	1980 E	32.015457	-104.021637 Plugged
2	MOBIL FEDERAL 001	DAMCO ENERGY CORP	3001523940	25	26.0S	28E	1780 N	1980 W	32.01606	-104.04287 Plugged
3	FEDERAL 11 001	OXY USA INC	3001524100	12	26.0S	28E	660 N	660 E	32.062558	-104.034261 Plugged
4	DELAWARE FEDERAL 001	TXO PRODUCTION CORP	3001525336	24	26.0S	28E	2030 N	1650 W	32.02974	-104.043839 Plugged
5	MOMBA 24 FEDERAL COM 001H	COG PRODUCTION, LLC	3001537049	24	26.0S	28E	660 N	990 E	32.033282	-104.035329 Active
6	COTTONMOUTH 24 FEDERAL COM 001H	COG PRODUCTION, LLC	3001538507	24	26.0S	28E	105 S	745 W	32.021032	-104.046868 New (Not drilled or compl)
7	COPPERHEAD 30 FEE 001H	COG PRODUCTION, LLC	3001539542	30	26.0S	29E	480 N	480 E	32.019311	-104.016856 New (Not drilled or compl)
8	DELAWARE RANCH 12 FEE 001H	MEWBOURNE OIL CO	3001539558	12	26.0S	28E	230 S	660 W	32.050252	-104.047164 New (Not drilled or compl)
9	DELAWARE RANCH 12 FEE 002C	MEWBOURNE OIL CO	3001539559	12	26.0S	28E	151 S	331 W	32.050038	-104.048232 New (Not drilled or compl)
10	COTTONMOUTH 13 FEDERAL COM 001H	COG PRODUCTION, LLC	3001539734	13	26.0S	28E	810 S	2630 W	32.037318	-104.040713 New (Not drilled or compl)
11	DELAWARE RANCH 13 FEDERAL COM 001H	MEWBOURNE OIL CO	3001539901	13	26.0S	28E	330 N	170 W	32.048717	-104.048752 New (Not drilled or compl)
12	BABY BUDDAH 13 FEDERAL 001H	COG PRODUCTION, LLC	3001540735	13	26.0S	28E	2350 S	190 W	32.041544	-104.048649 New (Not drilled or compl)
13	BRUTUS 12 FEDERAL COM 002H	COG PRODUCTION, LLC	3001540823	12	26.0S	28E	370 S	2260 E	32.050616	-104.039369 New (Not drilled or compl)
14	MOMBA 24 FEDERAL COM 003H	COG PRODUCTION, LLC	3001540946	24	26.0S	28E	43 N	2180 E	32.034975	-104.039172 New (Not drilled or compl)
15	DELAWARE RANCH 13 EH FED COM 001H	MEWBOURNE OIL CO	3001541271	13	26.0S	28E	2100 N	95 W	32.043852	-104.048969 New (Not drilled or compl)
16	DELAWARE RANCH 12 NC FEDERAL COM 001H	MEWBOURNE OIL CO	3001541719	12	26.0S	28E	150 S	2100 W	32.05002	-104.042495 New (Not drilled or compl)
17	DELAWARE RANCH 12 MD FEDERAL COM 001H	MEWBOURNE OIL CO	3001542081	12	26.0S	28E	230 S	710 W	32.050252	-104.047002 New (Not drilled or compl)
18	BRUTUS 12 FEDERAL 001H	COG PRODUCTION, LLC	3001542609	12	26.0S	28E	300 S	500 E	32.050409	-104.03366 New (Not drilled or compl)
19	DELAWARE RANCH 13 B2DA FEDERAL COM 001H	MEWBOURNE OIL CO	3001543185	14	26.0S	28E	660 N	185 E	32.047818	-104.049898 New (Not drilled or compl)
20	DELAWARE RANCH 12 B2MD FEDERAL COM 002H	MEWBOURNE OIL CO	3001543471	13	26.0S	28E	230 N	180 W	32.048992	-104.048721 New (Not drilled or compl)
21	DELAWARE RANCH 13 W2DA FEDERAL COM 002H	MEWBOURNE OIL CO	3001543492	14	26.0S	28E	330 N	185 E	32.048725	-104.049903 New (Not drilled or compl)
22	COPPERHEAD 31 FEDERAL COM 003H	COG PRODUCTION, LLC	3001543924	30	26.0S	29E	349 N	773 E	32.019673	-104.017804 New (Not drilled or compl)
23	COPPERHEAD 31 FEDERAL COM 021H	COG PRODUCTION, LLC	3001544118	30	26.0S	29E	210 N	1650 E	32.020061	-104.020646 New (Not drilled or compl)



CONCHO

Momba Fed Com #801H
Water Transfer Route

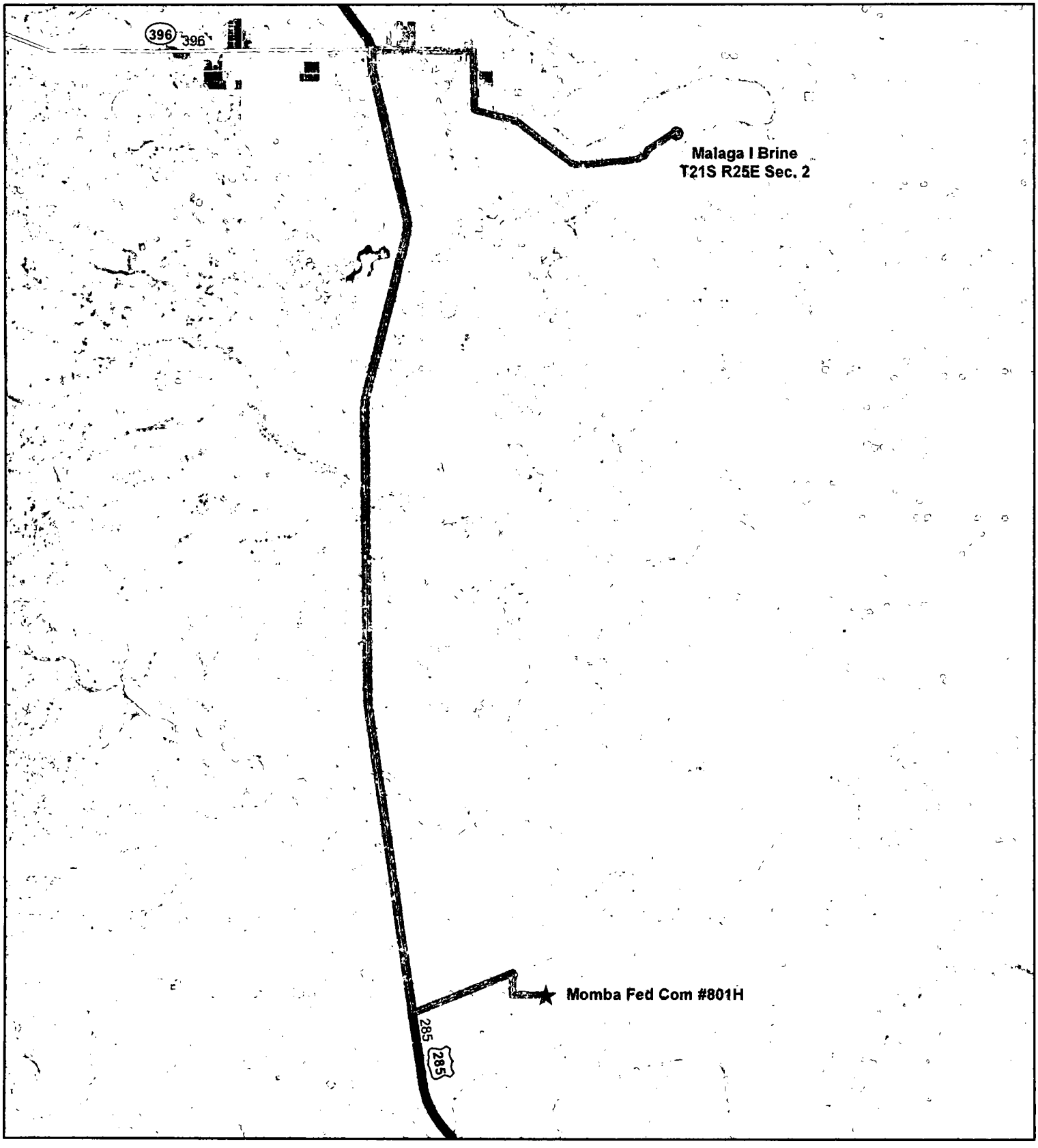
Date: 9/5/2018
Author: Whytnie McDonald
State: New Mexico
County: Eddy
Disclaimer: This is not a legal survey document

Map Legend

Route

N
W E
S

0 0.175 0.35 0.7 1.05 1.4
Miles



CONCHO

Momba Fed Com #801H
To Malaga I Brine

Date: 9/5/2018
Author: Whitnie McDonald
State: New Mexico
County: Eddy

Disclaimer: This is not a legal survey document

Map Legend

Route

0 0.5 1 2 3 4 Miles

N
W E
S

CONCHO

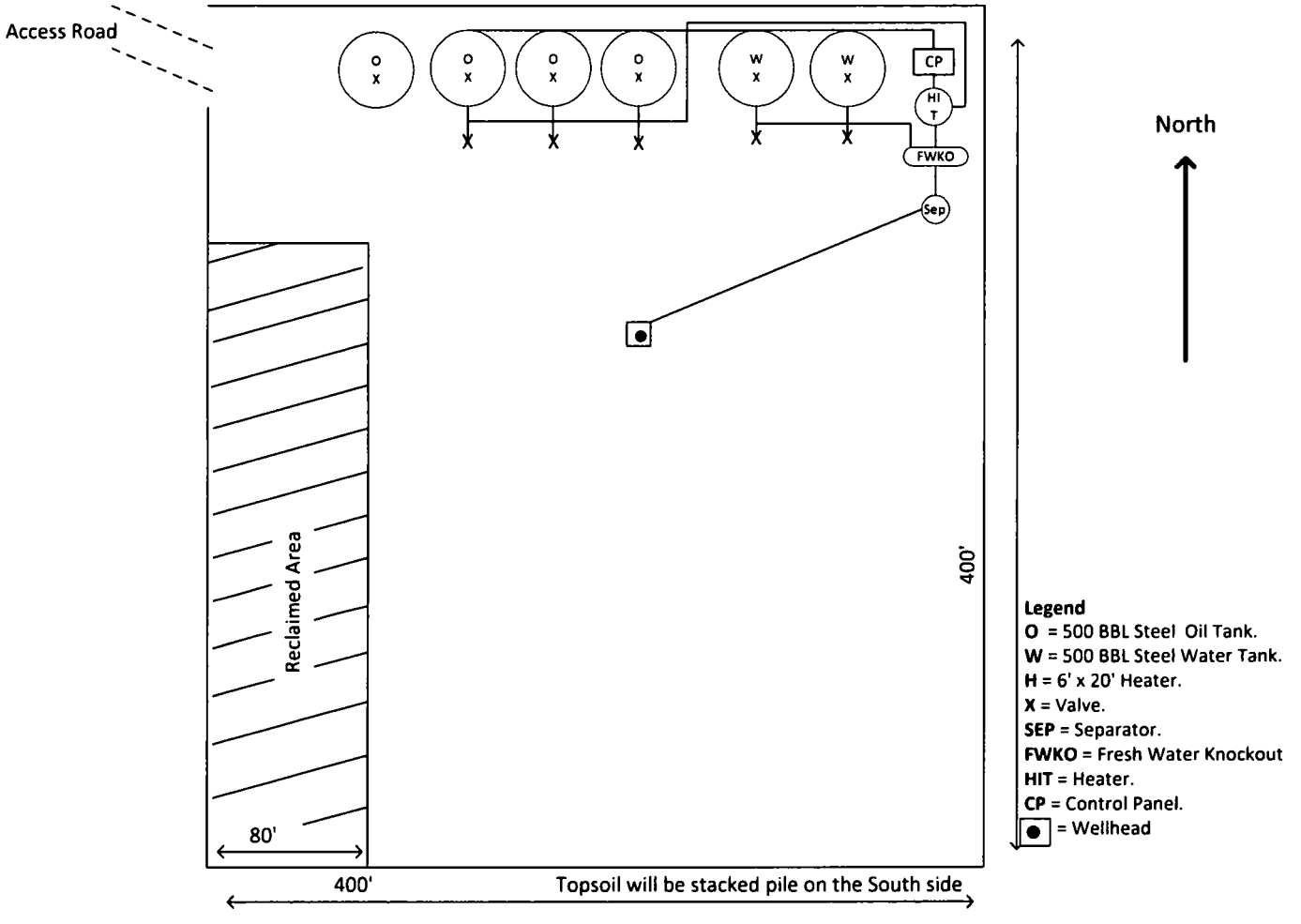
COG Operating LLC
2208 West Main Street
Artesia, NM 88210

Well Site Layout

Production Facility Layout

Momba Federal Com 801H
Section 13 - 26S - 28E

Exhibit 3



Legend
O = 500 BBL Steel Oil Tank.
W = 500 BBL Steel Water Tank.
H = 6' x 20' Heater.
X = Valve.
SEP = Separator.
FWKO = Fresh Water Knockout
HIT = Heater.
CP = Control Panel.
= Wellhead

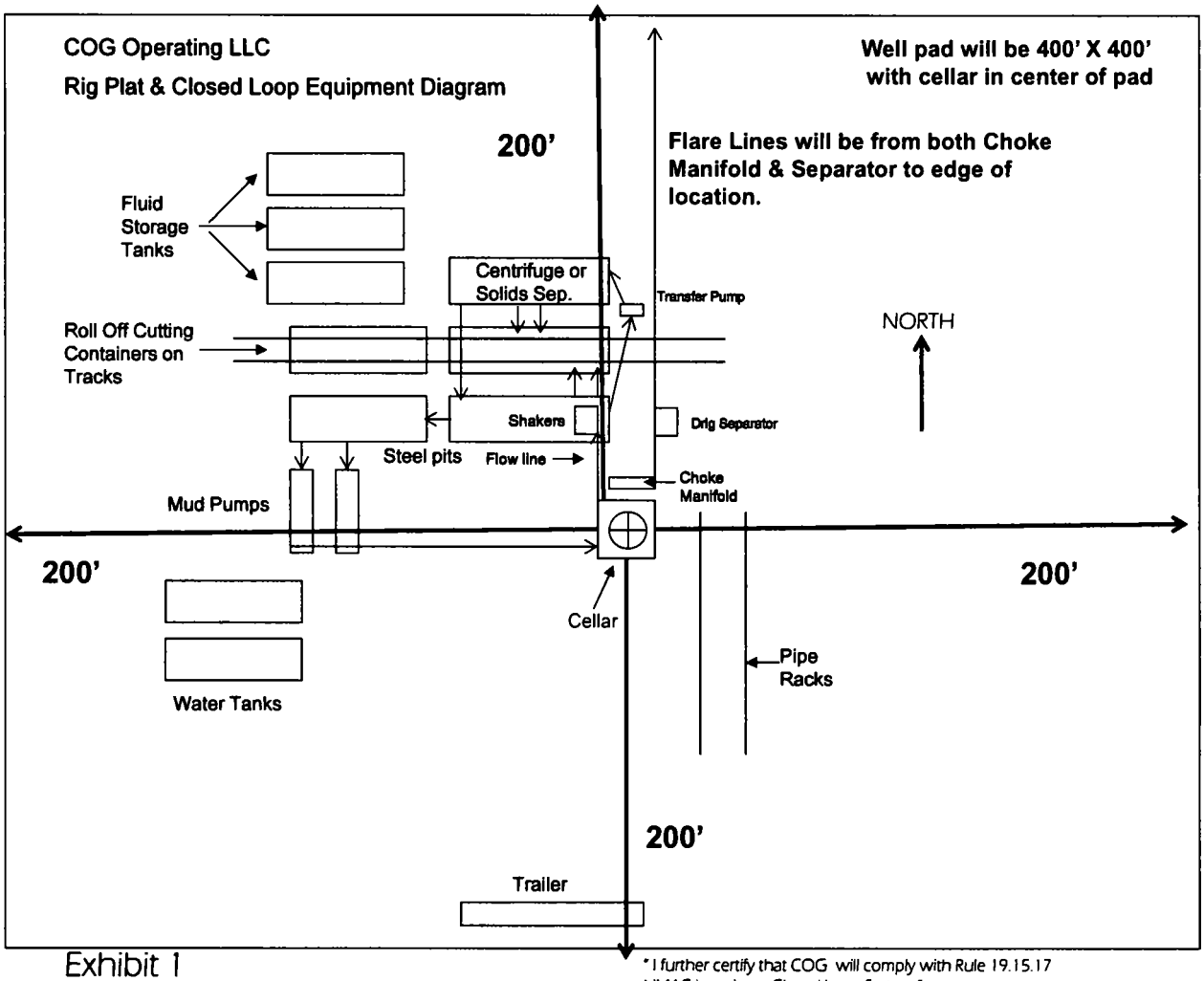


Exhibit 1

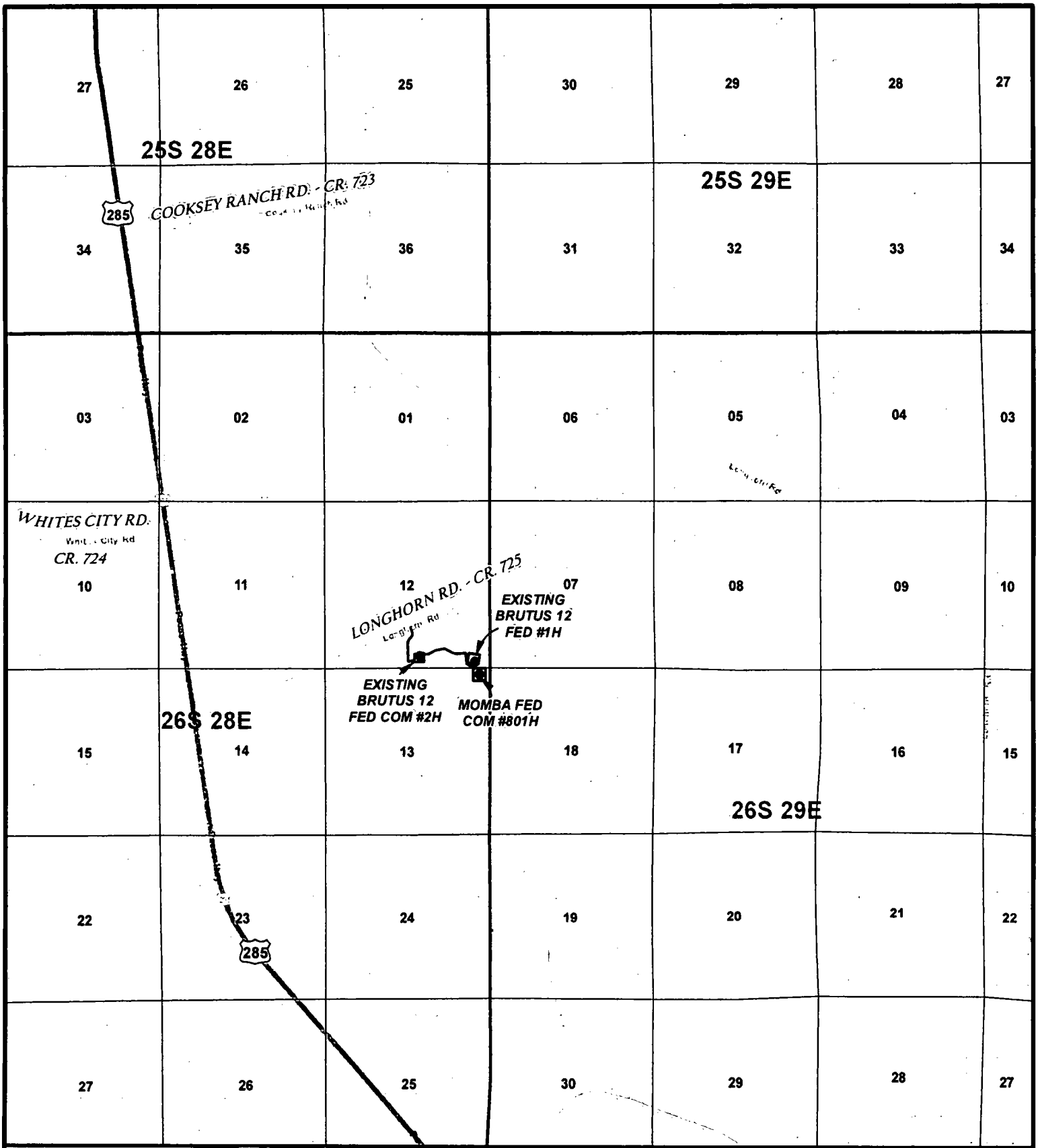
"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

OPERATOR CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently 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 COG Operating LLC, 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. Executed this 31st day of August, 2017.

Signed: Mayte Reyes

Printed Name: Mayte Reyes
Position: Regulatory Analyst
Address: 2208 W. Main Street, Artesia, NM 88210
Telephone: (575) 748-6945
E-mail: mreyes1@concho.com
Field Representative (if not above signatory): Rand French
Telephone: (575) 748-6940. E-mail: rfrench@concho.com



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 7,500 10,000 FEET

0 0.275 0.55 1.1 Miles

1 IN = 4,000 FT

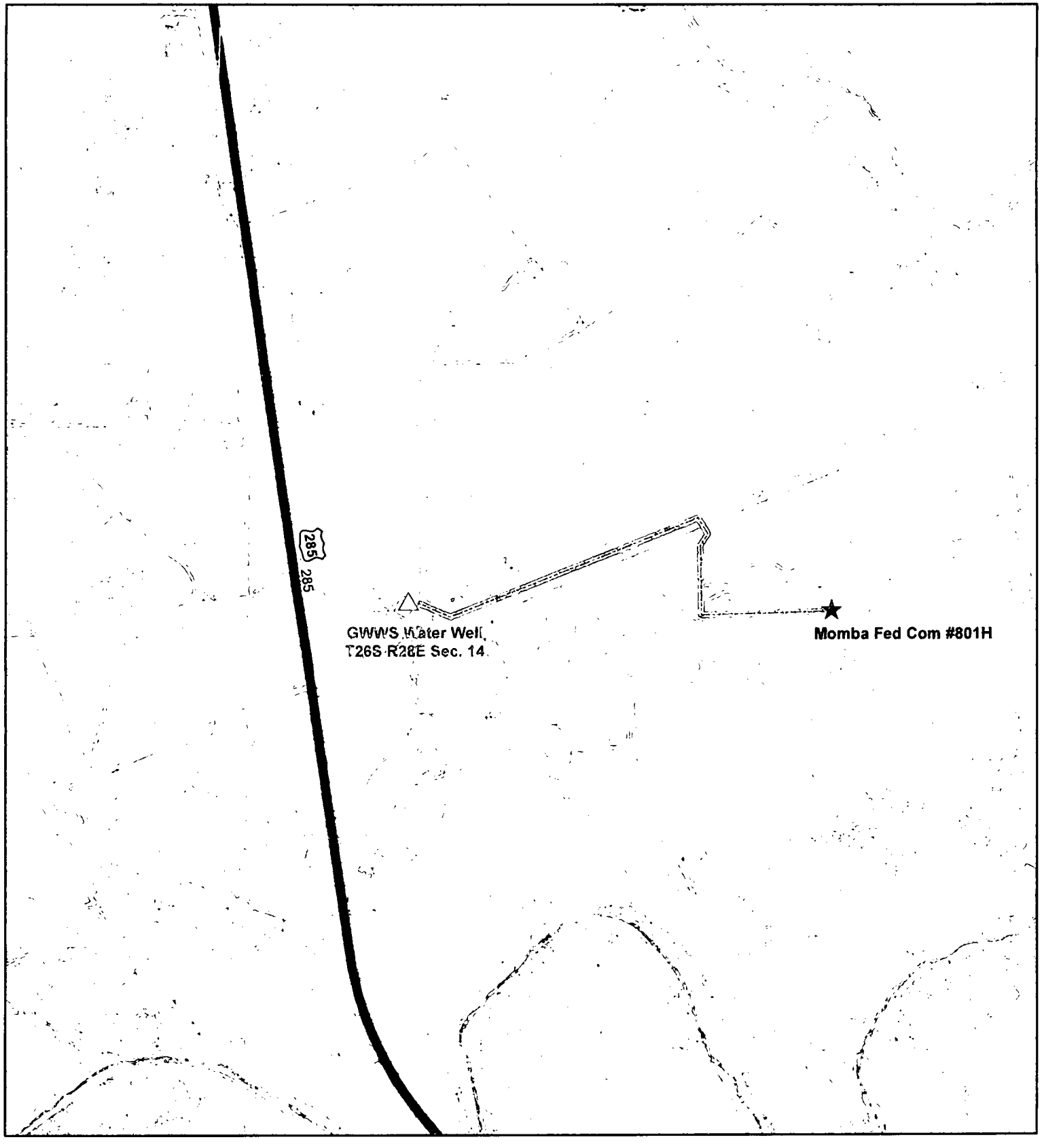
LOCATION MAP VICINITY 8/2/2018 S.P.

N

CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
TEXAS FIRM NO. 10194089
c.harcrow@harcrowsurveying.com



CONOCO

Momba Fed Com #801H
Water Transfer Route

Date 9/5/2018
Author Whynnie McDonald
State New Mexico
County Eddy
Disclaimer: This is not a legal survey document

Map Legend

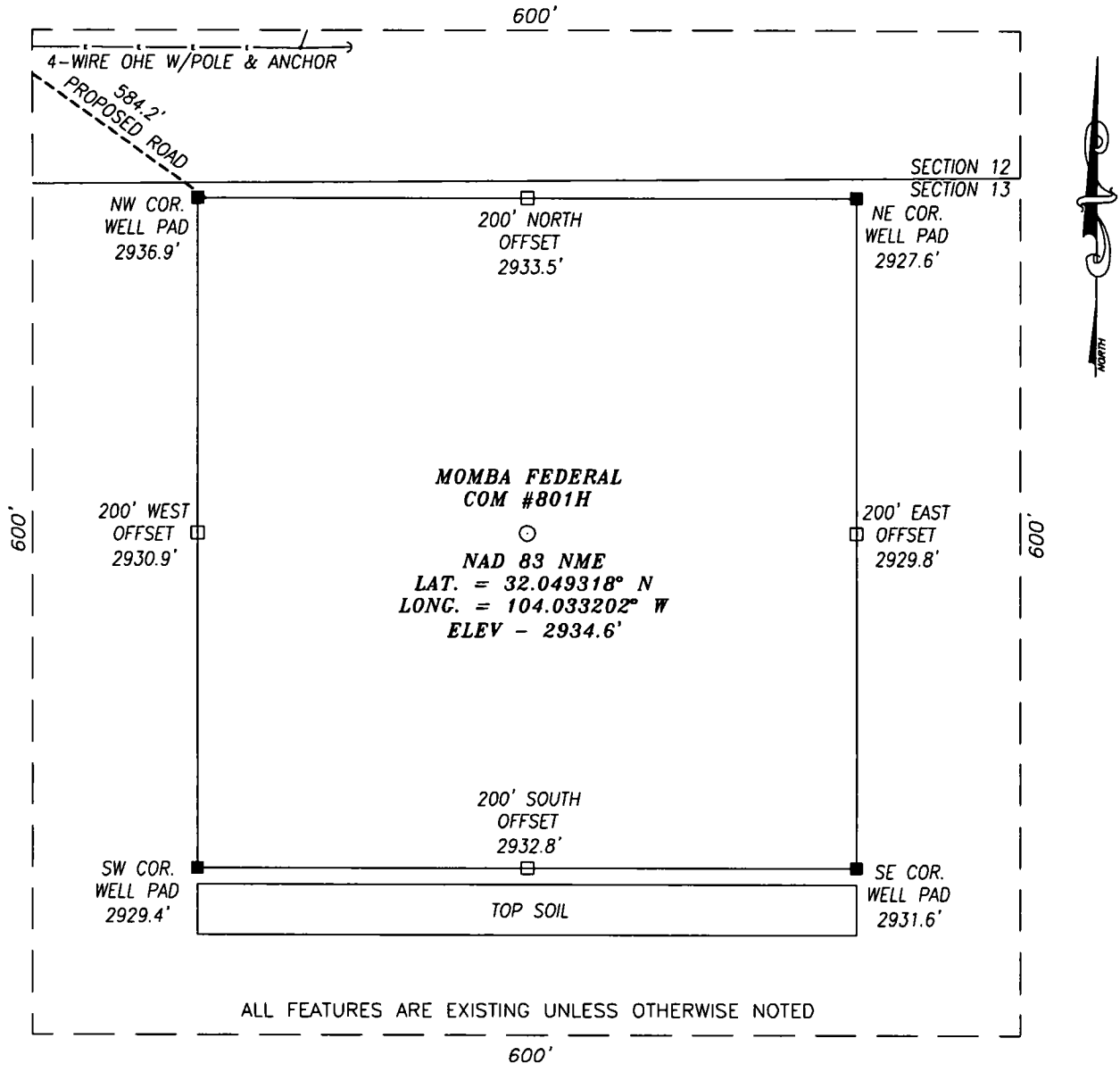
Route

N
W E
S

0 0.175 0.35 0.7 1.05 1.4
Miles

SECTION 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION:

FROM THE INTERSECTION OF U.S. HWY. 285 & LONGHORN RD. - CR. 725, GO NORTHEASTERLY ON LONGHORN RD. FOR APPROX. 1.4 MI.; THEN GO RIGHT (SOUTHERLY) ON MEANDERING CALICHE RD. FOR APPROX. 0.2 MI.; THEN GO LEFT (EASTERLY) ON MEANDERING CALICHE RD., THRU. THE "BRUTUS 12 FED COM #2H" WELLPAD, FOR APPROX. 0.4 MI. TO THE BEGINNING OF THE PROPOSED ROAD LYING ON THE RIGHT SIDE (SOUTH SIDE) OF ROAD; THE PROPOSED LIES APPROX. 800 FEET SOUTHEASTERLY.

CERTIFICATION

I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

CHAD HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 8/7/18

CHAD HARCROW N.M.P.S. NO. 17777 DATE

HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158 FAX: (575) 746-2158
Texas Firm No. 10194089
c.harcrow@harcrowsurveying.com

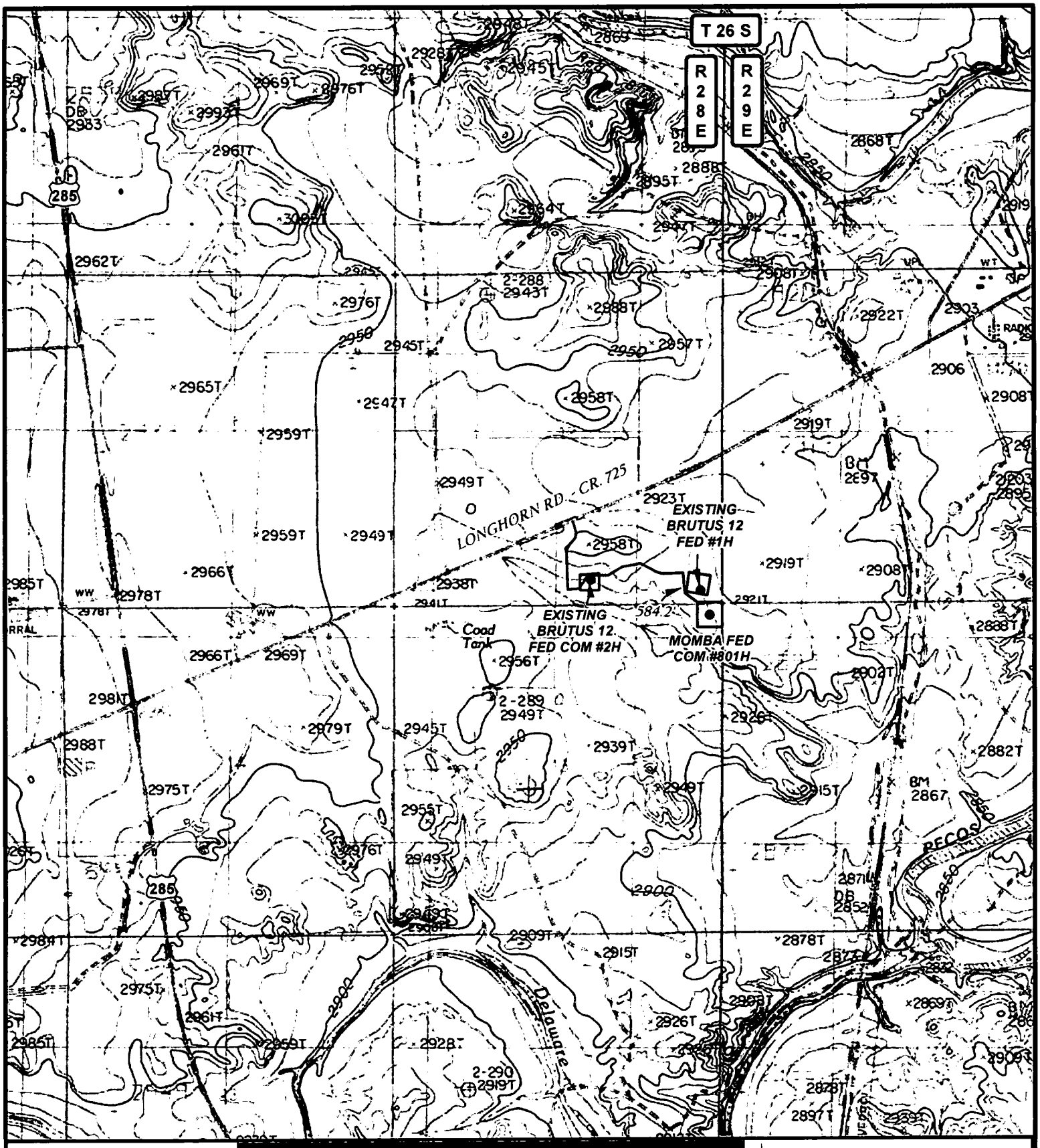
100 0 100 200 Feet

Scale: 1"=100'

COG OPERATING, LLC

MOMBA FEDERAL COM #801H
LOCATED 210 FEET FROM THE NORTH LINE AND 330 FEET FROM THE EAST LINE OF SECTION 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

SURVEY DATE: JULY 27, 2018		600S
DRAFTING DATE: AUGUST 2, 2018		PAGE: 1 OF 1
APPROVED BY: CH	DRAWN BY: SP	FILE: 18-856



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles

1 IN = 2,000 FT

LOCATION MAP | TOPO | 8/2/2018 | S.P.

N

CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
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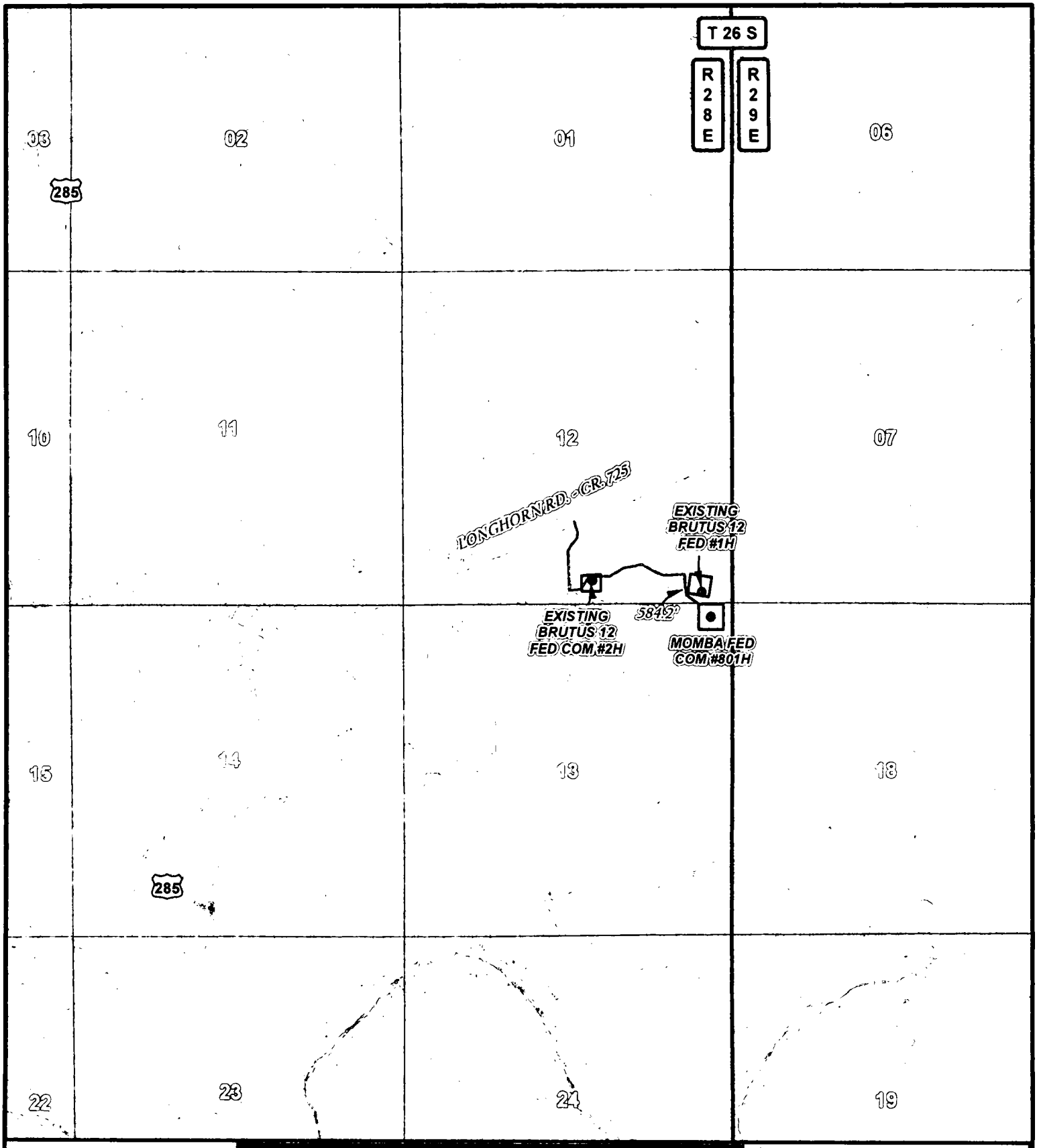

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles

1 IN = 2,000 FT

LOCATION MAP IMAGERY 8/2/2018 S.P.

N

CONCHO

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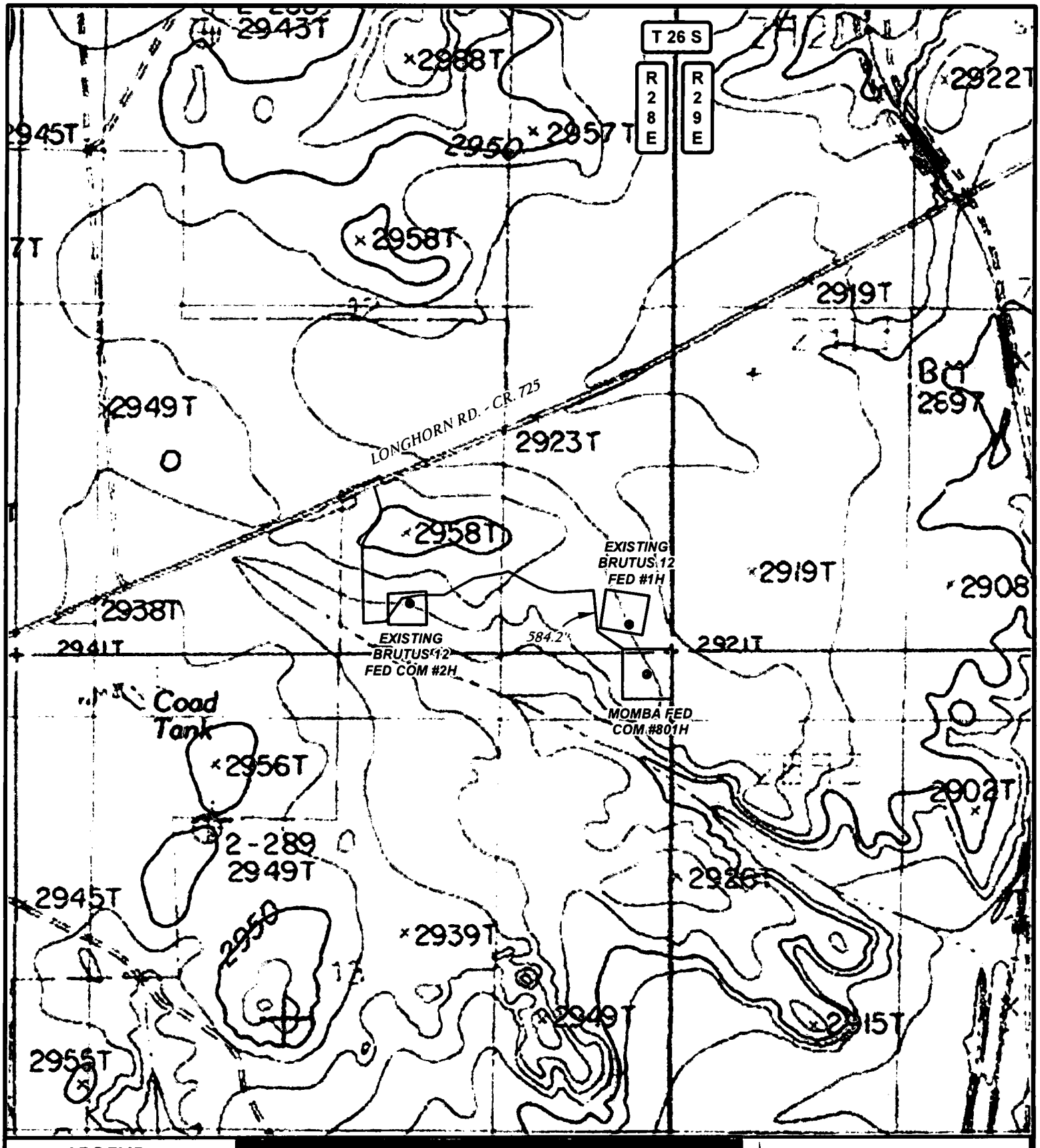

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 FEET

0 0.05 0.1 0.2 Miles

1 IN = 1,000 FT

LOCATION MAP | TOPO ROAD | 8/2/2018 | S.P.

N

CONCHO

COG OPERATING, LLC

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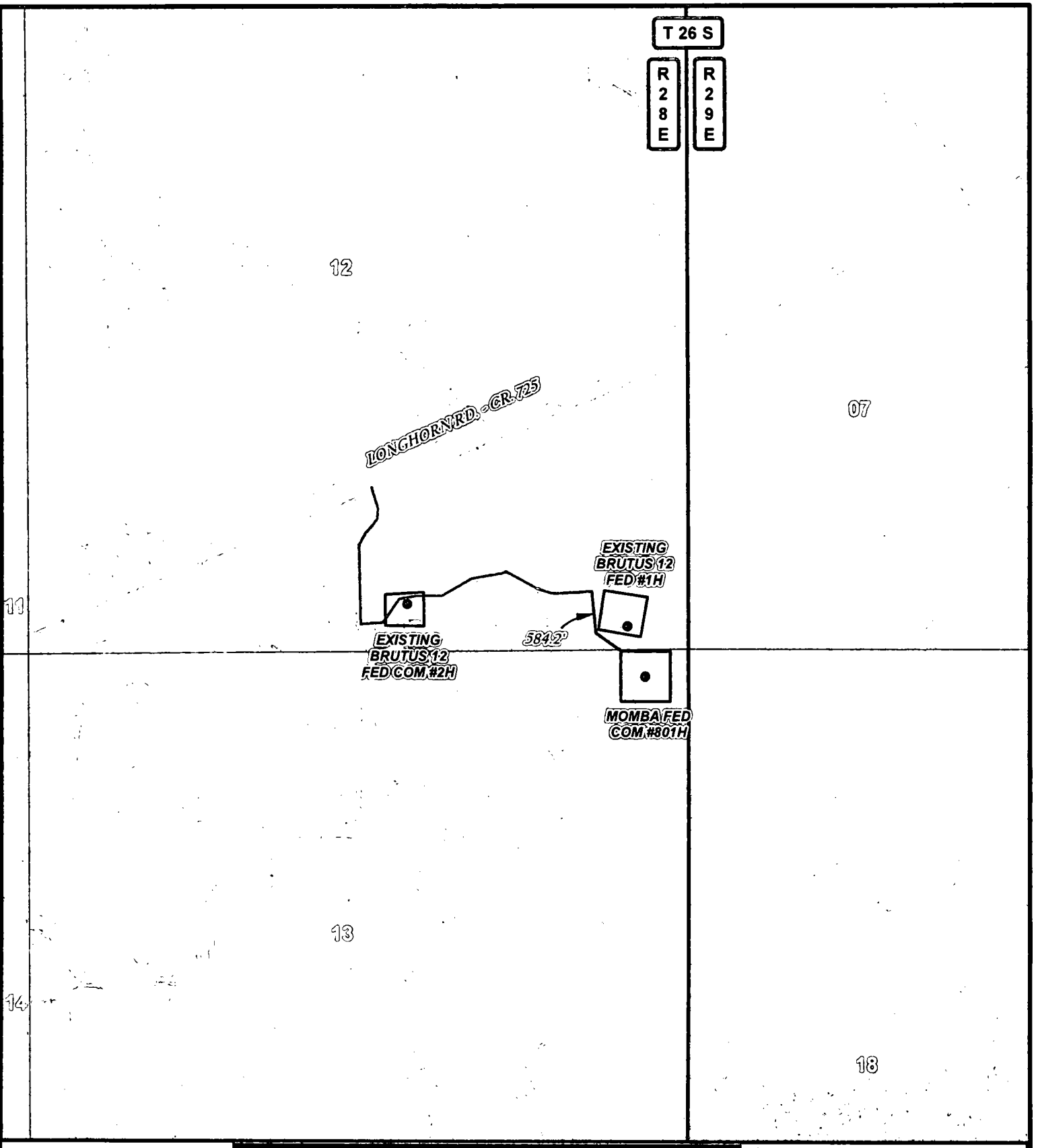
c.harcrow@harcrowsurveying.com



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 FEET

0 0.05 0.1 0.2 Miles

1 IN = 1,000 FT

LOCATION MAP | IMAGERY ROAD | 8/2/2018 | S.P.

N

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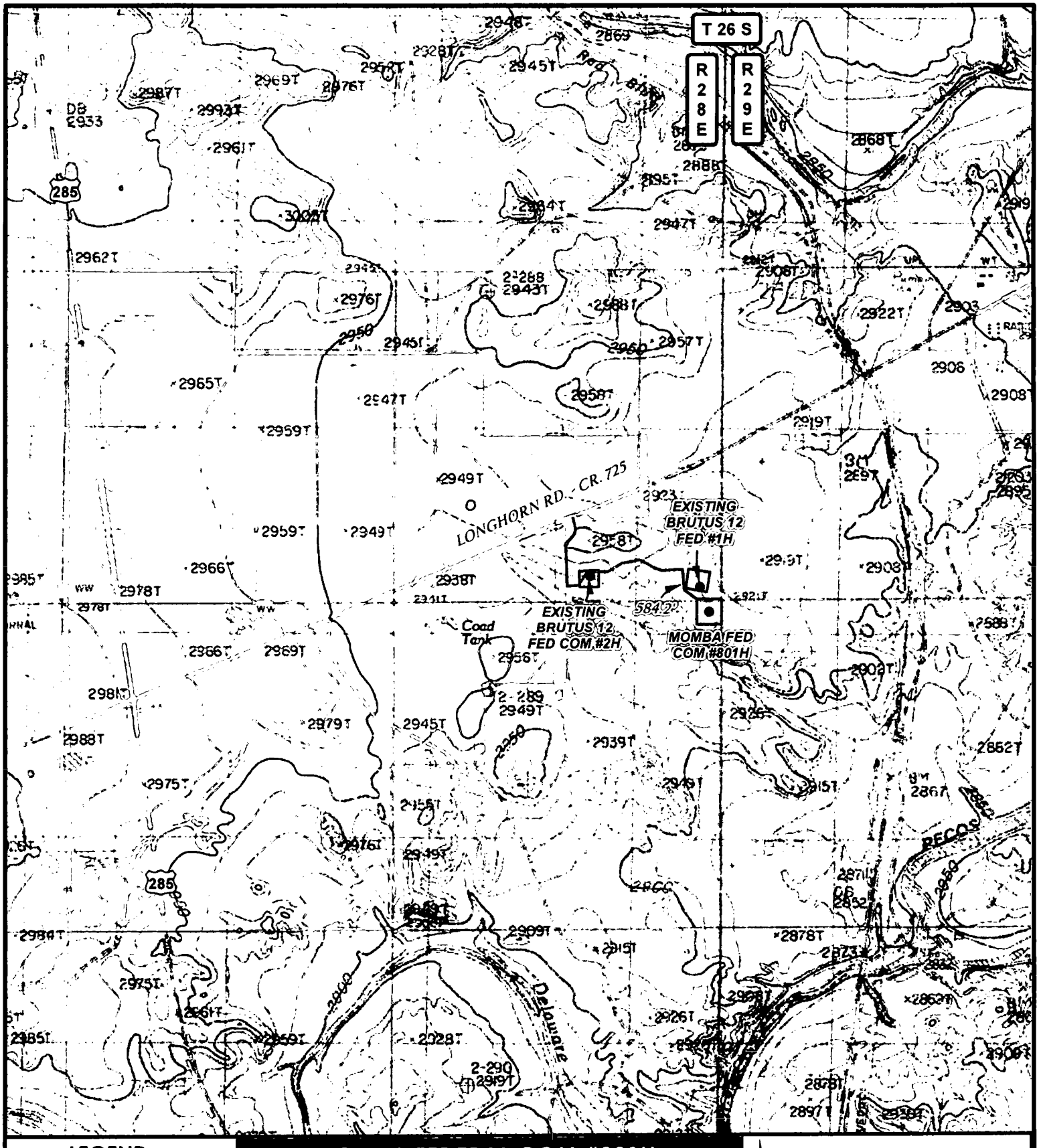


LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- PRIVATE
- STATE OF NM
- US BLM

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles

1 IN = 2,000 FT

LOCATION MAP | LAND STATUS | 8/2/2018 | S.P.

N

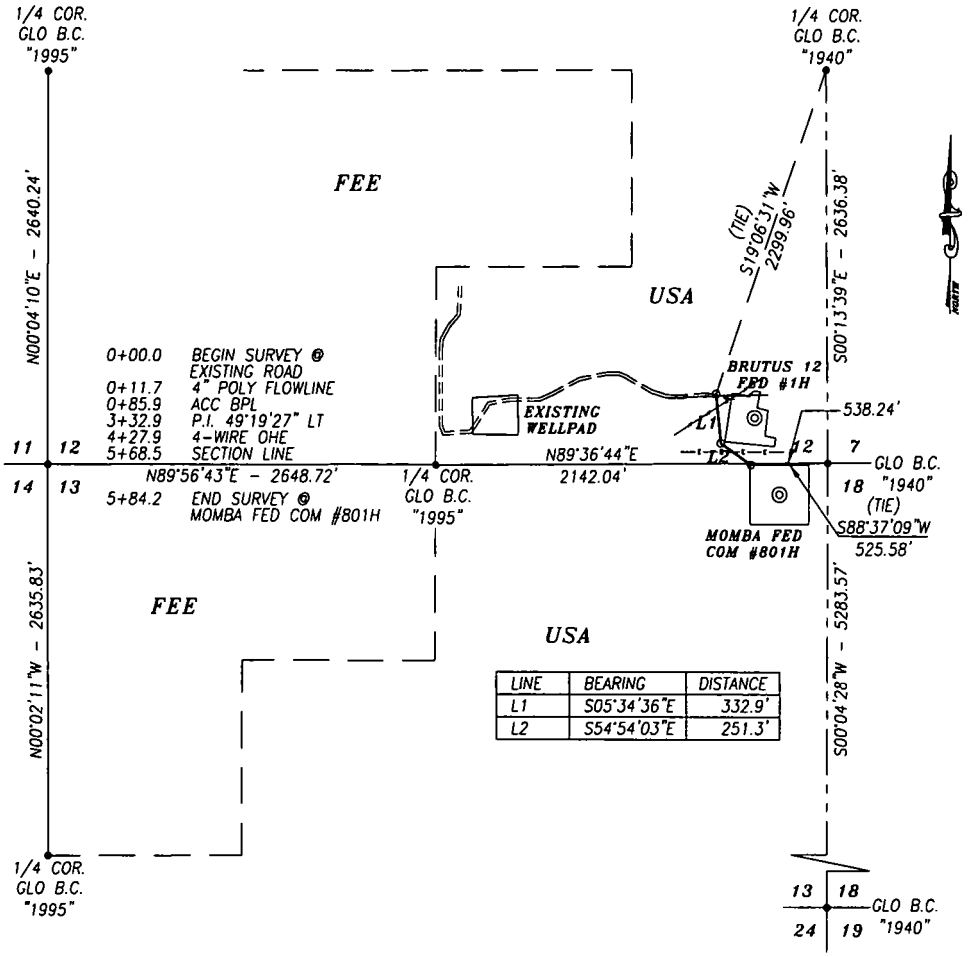
CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
TEXAS FIRM NO. 10194089
c.harcrow@harcrowsurveying.com

ACCESS ROAD PLAT
COG OPERATING, LLC.

A PROPOSED ACCESS ROAD FROM AN EXISTING ROAD TO
THE MOMBA FEDERAL COM #801H IN
SECTIONS 12 & 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



LINE	BEARING	DISTANCE
L1	S05°34'36"E	332.9'
L2	S54°54'03"E	251.3'

DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE AND 584.2 FEET OR 35.41 RODS OR 0.111 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 12 & 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

BASIS OF BEARING:
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

CERTIFICATION
I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

CHAD L. HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow — 8/7/18
CHAD HARCROW N.M.P.S. NO. 17777 — DATE

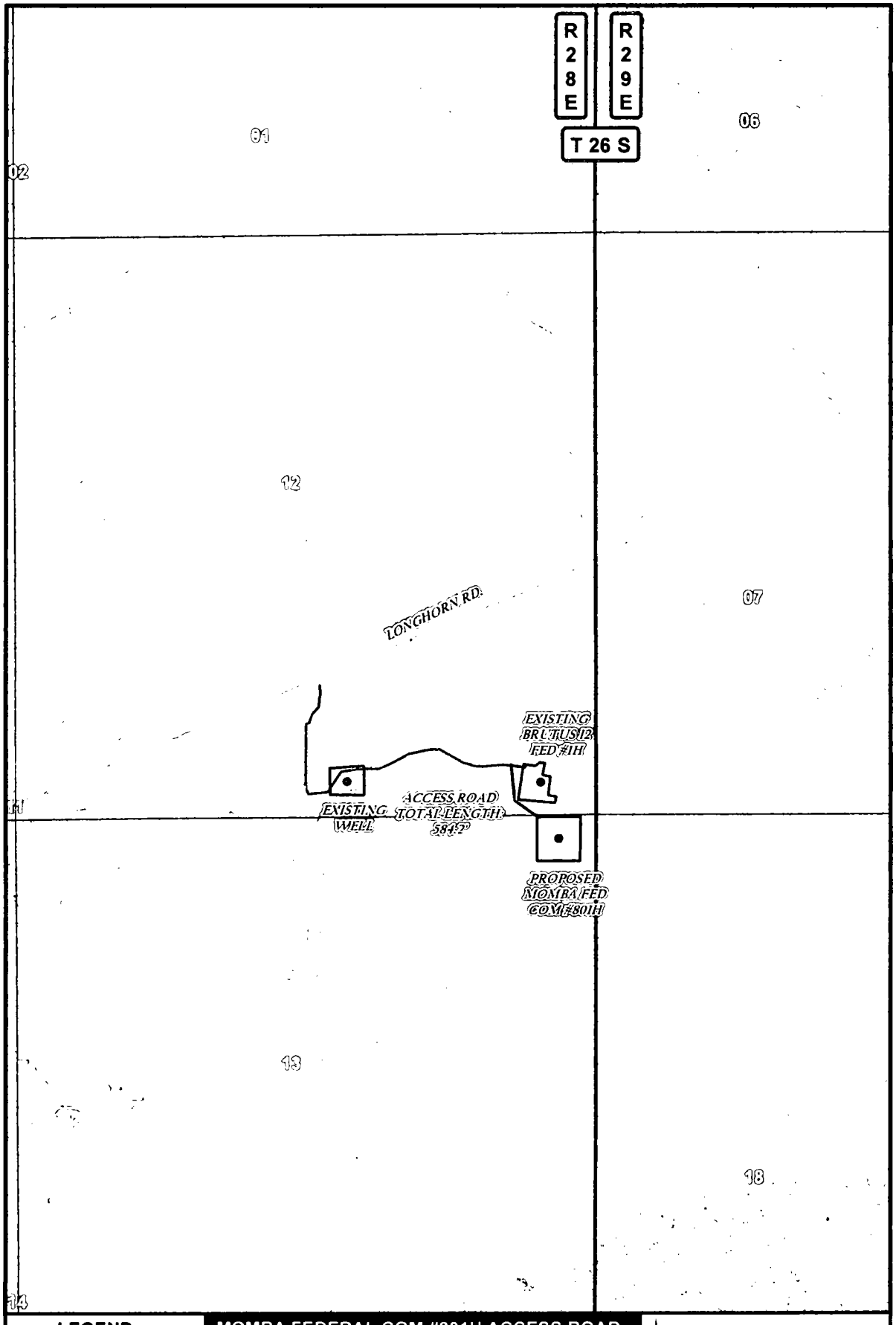
HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158 FAX: (575) 746-2158
Texas Firm No. 10194089
c.harcrow@harcrowsurveying.com

1000 0 1000 2000 FEET
SCALE: 1"=1000'

COG OPERATING, LLC.

SURVEY OF A PROPOSED ACCESS ROAD LOCATED IN SECTIONS 12 & 13, TOWNSHIP 26 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO

SURVEY DATE: JULY 27, 2018	
DRAFTING DATE: JULY 31, 2018	PAGE 1 OF 1
APPROVED BY: CH / DRAWN BY: JH	FILE: 18-892



LEGEND

- WELL
- WELLPAD
- ACCESS ROAD
- EXIST. ROAD

MOMBA FEDERAL COM #801H ACCESS ROAD

SECTIONS: 12 & 13	TOWNSHIP: 26 S.	RANGE: 28 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 18-892		LEASE: MOMBA FED COM

0 2,500 FEET

0 0.075 0.15 0.3 Miles

1 IN = 1,000 FT

ACCESS ROAD MAP | IMAGERY | 7/31/2018 | J.H.

N

CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
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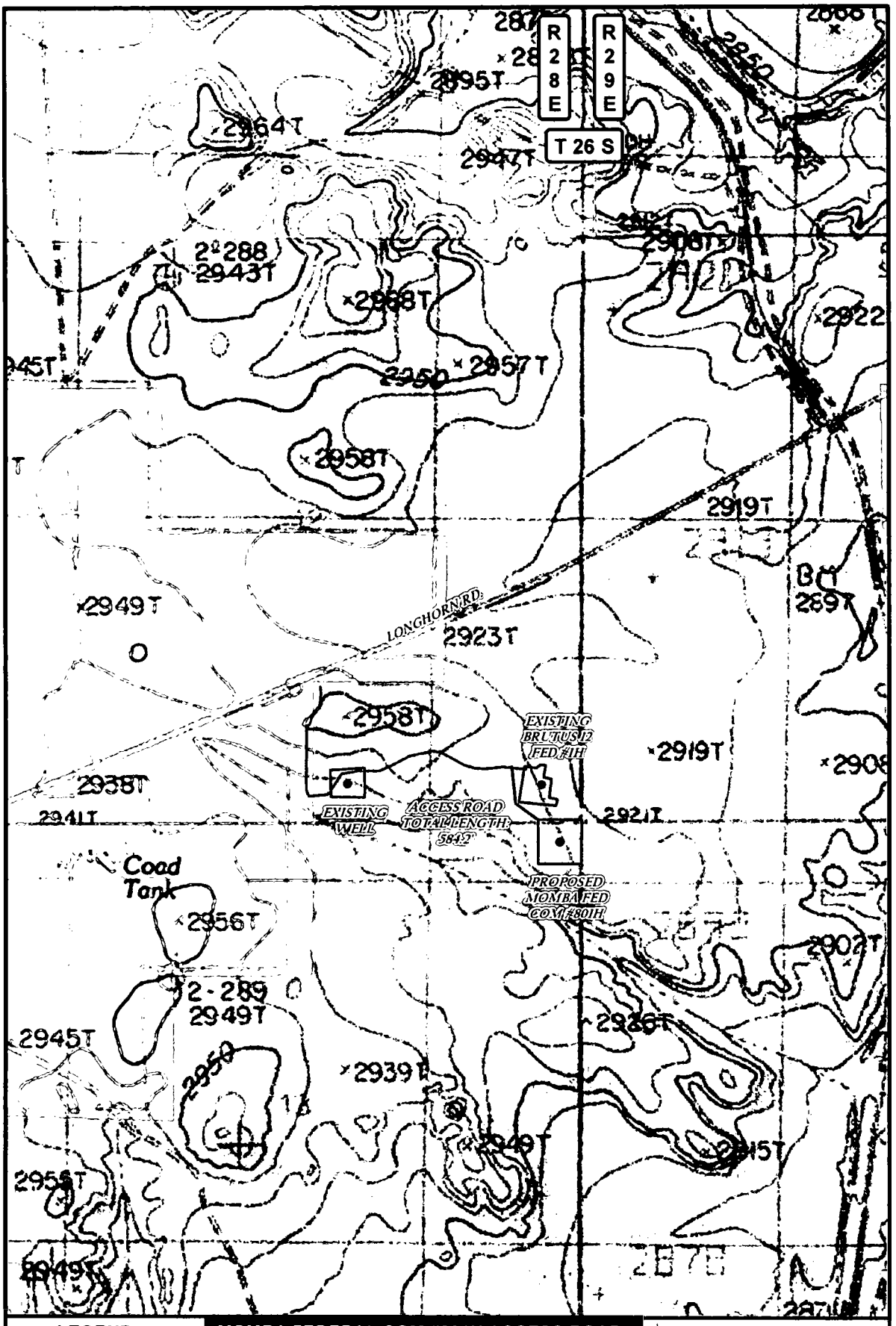

LEGEND

- WELL
- WELLPAD
- ACCESS ROAD
- EXIST. ROAD
- PRIVATE
- STATE OF NM
- US BLM

MOMBA FEDERAL COM #801H ACCESS ROAD

SECTIONS: 12 & 13	TOWNSHIP: 26 S.	RANGE: 28 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 18-892		LEASE: MOMBA FED COM

0 2,500 FEET

0 0.075 0.15 0.3 Miles

1 IN = 1,000 FT

ACCESS ROAD MAP | LAND STATUS | 7/31/2018 | J.H.

N

CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
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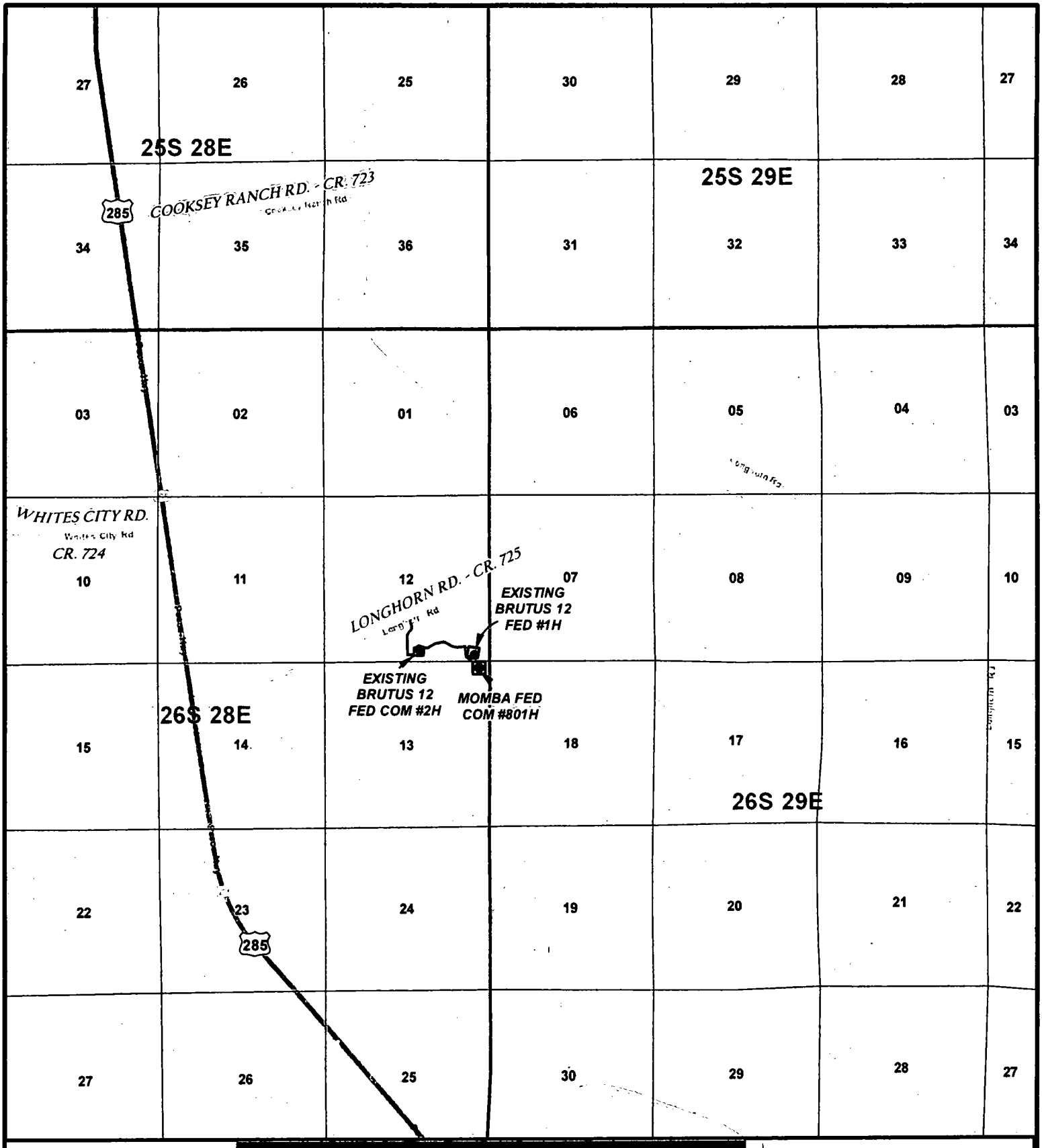

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 7,500 10,000 FEET

0 0.275 0.55 1.1 Miles

1 IN = 4,000 FT

LOCATION MAP VICINITY 8/2/2018 S.P.

N

CONCHO

COG OPERATING, LLC

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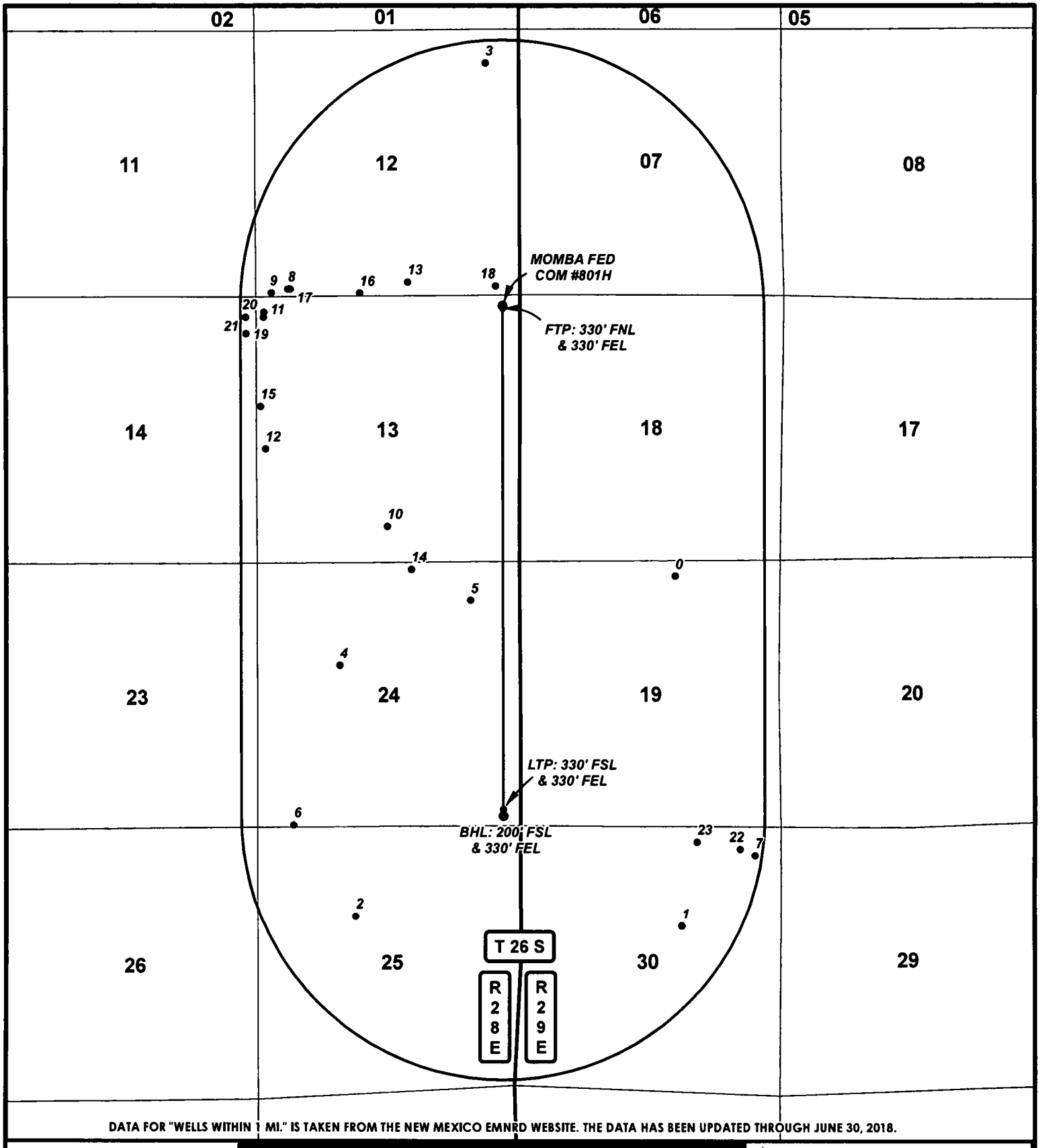
c.harcrow@harcrowsurveying.com



DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH JUNE 30, 2018.

LEGEND

- WELL
- BOTTOMHOLE
- WELLS WITHIN 1 MI.
- 1 MI. BUFFER

MOMBA FEDERAL COM #801H

SEC: 13	TWP: 26 S.	RGE: 28 E.	ELEVATION: 2934.6'
STATE: NEW MEXICO		COUNTY: EDDY	210' FNL & 330' FEL
W.O. # 18-856	LEASE: MOMBA FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.175 0.35 0.7 Miles

1 IN = 2,500 FT

1 MILE MAP | 8/2/2018 | S.P.

N

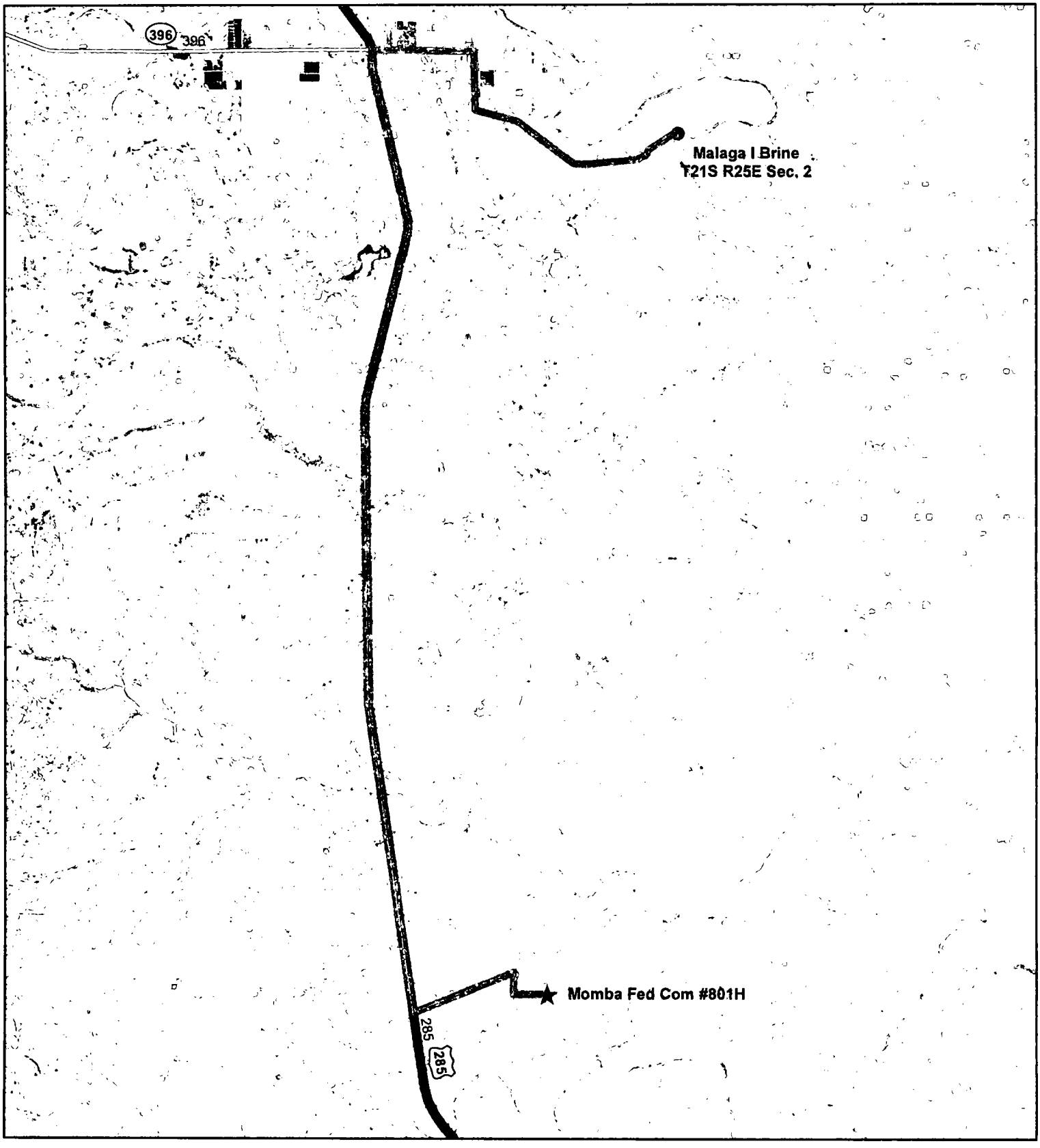
CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
TEXAS FIRM NO. 10194089
c.harcrow@harcrowsurveying.com

MOMBA FEDERAL COM #801H 1 MILE WELLS (18-856)

FID	WELL_NAME	OPERATOR	API	SECTION	TOWNSHIP	RANGE	FTG_NS	NS_CD	FTG_EW	EW_CD	LATITUDE	LONGITUDE	COMPL_STAT
0	CLARK BAKER 001	SIGNAL OIL & GAS	3001503737	19	26.0S	29E	300	N	2096	E	32.034576	-104.022007	Plugged
1	PERKINS 001	ORLA PETCO INC	3001523849	30	26.0S	29E	1980	N	1980	E	32.015457	-104.021637	Plugged
2	MOBIL FEDERAL 001	DAMCO ENERGY CORP	3001523940	25	26.0S	28E	1780	N	1980	W	32.01606	-104.04287	Plugged
3	FEDERAL 11 001	OXY USA INC	3001524100	12	26.0S	28E	660	N	660	E	32.062558	-104.034261	Plugged
4	DELAWARE FEDERAL 001	TXO PRODUCTION CORP	3001525336	24	26.0S	28E	2030	N	1650	W	32.02974	-104.043839	Plugged
5	MOMBA 24 FEDERAL COM 001H	COG PRODUCTION, LLC	3001537049	24	26.0S	28E	660	N	990	E	32.033282	-104.035329	Active
6	COTTONMOUTH 24 FEDERAL COM 001H	COG PRODUCTION, LLC	3001538507	24	26.0S	28E	105	S	745	W	32.021032	-104.046868	New (Not drilled or compl)
7	COPPERHEAD 30 FEE 001H	COG PRODUCTION, LLC	3001539542	30	26.0S	29E	480	N	480	E	32.019311	-104.016856	New (Not drilled or compl)
8	DELAWARE RANCH 12 FEE 001H	MEWBOURNE OIL CO	3001539558	12	26.0S	28E	230	S	660	W	32.050252	-104.047164	New (Not drilled or compl)
9	DELAWARE RANCH 12 FEE 002C	MEWBOURNE OIL CO	3001539559	12	26.0S	28E	151	S	331	W	32.050038	-104.048232	New (Not drilled or compl)
10	COTTONMOUTH 13 FEDERAL COM 001H	COG PRODUCTION, LLC	3001539734	13	26.0S	28E	810	S	2630	W	32.037318	-104.040713	New (Not drilled or compl)
11	DELAWARE RANCH 13 FEDERAL COM 001H	MEWBOURNE OIL CO	3001539901	13	26.0S	28E	330	N	170	W	32.048717	-104.048752	New (Not drilled or compl)
12	BABY BUDDAH 13 FEDERAL 001H	COG PRODUCTION, LLC	3001540735	13	26.0S	28E	2350	S	190	W	32.041544	-104.048649	New (Not drilled or compl)
13	BRUTUS 12 FEDERAL COM 002H	COG PRODUCTION, LLC	3001540823	12	26.0S	28E	370	S	2260	E	32.050616	-104.039369	New (Not drilled or compl)
14	MOMBA 24 FEDERAL COM 003H	COG PRODUCTION, LLC	3001540946	24	26.0S	28E	43	N	2180	E	32.034975	-104.039172	New (Not drilled or compl)
15	DELAWARE RANCH 13 EH FED COM 001H	MEWBOURNE OIL CO	3001541271	13	26.0S	28E	2100	N	95	W	32.043852	-104.048969	New (Not drilled or compl)
16	DELAWARE RANCH 12 NC FEDERAL COM 001H	MEWBOURNE OIL CO	3001541719	12	26.0S	28E	150	S	2100	W	32.05002	-104.042495	New (Not drilled or compl)
17	DELAWARE RANCH 12 MD FEDERAL COM 001H	MEWBOURNE OIL CO	3001542081	12	26.0S	28E	230	S	710	W	32.050252	-104.047002	New (Not drilled or compl)
18	BRUTUS 12 FEDERAL 001H	COG PRODUCTION, LLC	3001542609	12	26.0S	28E	300	S	500	E	32.050409	-104.03366	New (Not drilled or compl)
19	DELAWARE RANCH 13 B2DA FEDERAL COM 001H	MEWBOURNE OIL CO	3001543185	14	26.0S	28E	660	N	185	E	32.047818	-104.049898	New (Not drilled or compl)
20	DELAWARE RANCH 12 B2MD FEDERAL COM 002H	MEWBOURNE OIL CO	3001543471	13	26.0S	28E	230	N	180	W	32.048992	-104.048721	New (Not drilled or compl)
21	DELAWARE RANCH 13 W2DA FEDERAL COM 002H	MEWBOURNE OIL CO	3001543492	14	26.0S	28E	330	N	185	E	32.048725	-104.049903	New (Not drilled or compl)
22	COPPERHEAD 31 FEDERAL COM 003H	COG PRODUCTION, LLC	3001543924	30	26.0S	29E	349	N	773	E	32.019673	-104.017804	New (Not drilled or compl)
23	COPPERHEAD 31 FEDERAL COM 021H	COG PRODUCTION, LLC	3001544118	30	26.0S	29E	210	N	1650	E	32.020061	-104.020646	New (Not drilled or compl)



CONCHO

Momba Fed Com #801H
To Malaga I Brine

Date 9/5/2018
Author Whitnie McDonald
State New Mexico
County Eddy

Disclaimer: This is not a legal survey document

Map Legend

Route

0 0.5 1 2 3 4 Miles

N
W E
S

RECEIVED

FEB 1 2 2019

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 RD., 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, New Mexico 87505

DISTRICT II-ARTESIA O.C.D.

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015		Wildcat; Wolfcamp

Property Code	Property Name	Well Number
	MOMBA FEDERAL COM	801H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	2934.6'

Surface Location

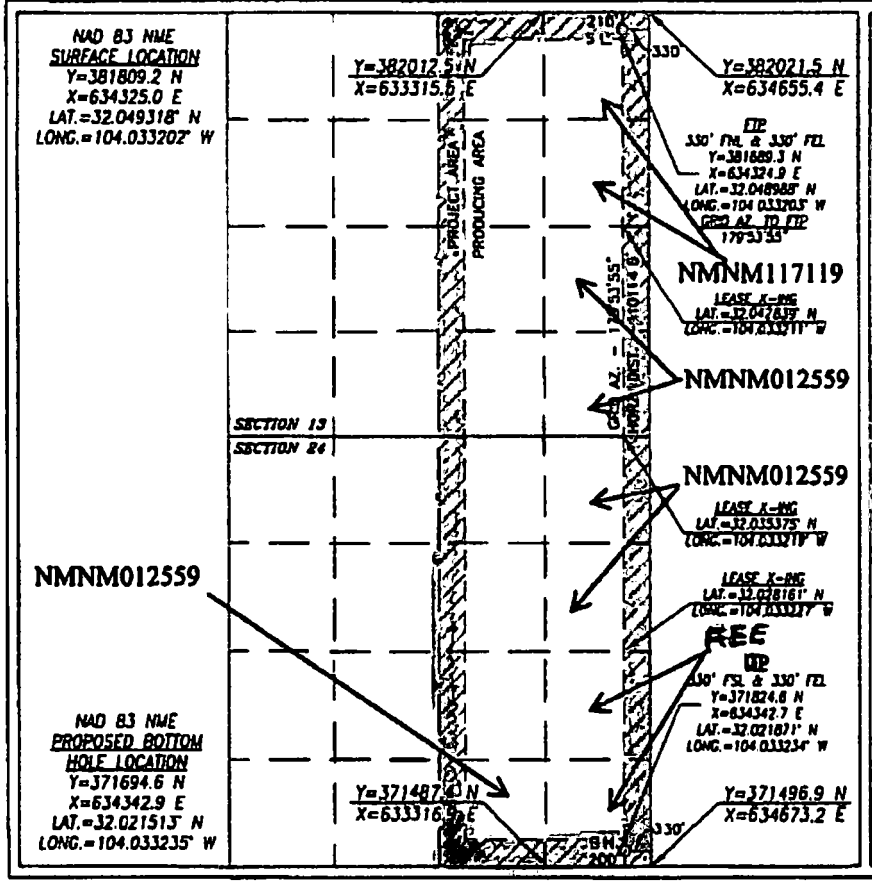
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	13	26-S	28-E		210	NORTH	330	EAST	EDDY

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
P	24	26-S	28-E		200	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
640			

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



OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date 9-4-18

Mayte Reyes
Printed Name

mreyes1@concho.com
E-mail Address

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.

JULY 27, 2018
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

8/7/18

Certificate No. CHAD HARCROW 17777

W.O. # 18-856 DRAWN BY: SP

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

02/05/2019

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: