Form 3160-3
(March 2012)

# Carlsbad Field Office
# OCD Hobbs

HOBBS OCD
FEB 06 2017
RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

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

5. Lease Serial No. NMNM120908

6. If Indian, Allotee or Tribe Name

1a. Type of Work: [✓] DRILL [ ] REENTER

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

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

8. Lease Name and Well No. (40143) Windward Federal #9H

2. Name of Operator COG Production LLC. (217955)

9. API Well No. 30-025-43566

3a. Address 2208 West Main Street, Artesia, NM 88210

3b. Phone No. (include area code) 575-748-6940

10. Field and Pool, or Exploratory (97899) WC-025 G-06 S253206M; Bone Spring

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface 210' FNL & 2000' FEL Unit Letter B (NWNE) SHL Sec. 30 - T24S - R32E
At proposed prod. Zone 200' FSL & 2405' FEL Unit Letter O (SWSE) BHL Sec. 31 - T24S - R32E

11. Sec., T.R.M. or Blk and Survey or Area Sec. 30 - T24S - R32E

14. Distance in miles and direction from nearest town or post office* Approximately 20 miles East from Malaga

12. County or Parish Lea County

13. State 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' | 1891.72 | 320 |

| 18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. | 19. Proposed Depth | 20. BLM/BIA Bond No. on file |
|---|---|---|
| SHL: 50' (Prop. Windward 10H) BHL: 5109' | TVD: 9,195' MD: 19,245' | NMB000845 & NMB000860 |

| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) | 22. Approximate date work will start* | 23. Estimated duration |
|---|---|---|
| 3551.0' | 11/1/2016 | 30 days |

## 24. Attachments

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

1. Well plat certified by a registered surveyor.
2. A Drilling Plan
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the authorized officer.

| 25. Signature | Name (Printed/Typed) | Date |
|---|---|---|
| Mayte Reyes | Mayte Reyes | 9-6-2016 |

Title: Regulatory Analyst

| Approved by (Signature) | Name (Printed/Typed) | Date |
|---|---|---|
| Cody Layton | Cody Layton | 1/27/17 |

| Title | Office |
|---|---|
| Acting FIELD MANAGER | BLM-CARLSBAD FIELD OFFICE |

Application approval does not warrant or certify that the applicant holds legan or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations theron.
Conditions of approval, if any, are attached.

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

(Continued on page 2)

APPROVAL FOR TWO YEARS

*(Instructions on page 2)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

KZ 02/06/17

# COG Production, LLC - Windward Federal #9H

## 1. Geologic Formations

| | | | |
|---|---|---|---|
| TVD of target | 9,195' EOL | Pilot hole depth | NA |
| MD at TD: | 19,245' | Deepest expected fresh water: | 550' |

| Formation | Depth (TVD) from KB | Water/Mineral Bearing/ Target Zone? | Hazards* |
|---|---|---|---|
| Quaternary Fill | Surface | Water | |
| Rustler | 712 | Water | |
| Top of Salt | 940 | Salt | |
| Base of Salt | 4350 | Salt | |
| Lamar | 4576 | Salt Water | |
| Bell Canyon | 4603 | Salt Water | |
| Cherry Canyon | 5509 | Oil/Gas | |
| Brushy Canyon | 6893 | Oil/Gas | |
| Bone Spring Lime | 8532 | Oil/Gas | |
| U. Avalon Shale | 8577 | Oil/Gas | |
| L. Avalon Shale | 9038 | Oil/Gas | |
| 1st Bone Spring Sand | 9624 | Oil/Gas | |
| 2nd Bone Spring Sand | X | Oil/Gas | |
| 3rd Bone Spring Sand | X | Oil/Gas | |
| Wolfcamp | X | Oil/Gas | |

## 2. Casing Program

| Hole Size | Casing Interval | | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| | From | To | | | | | | | |
| 17.5" | 0 | 740 | 13.375" | 54.5 | J55 | STC | 3.34 | 1.38 | 12.74 |
| 12.25" | 0 | 4605 | 9.625" | 40 | J55 | LTC | 1.05 | 1.10 | 2.82 |
| 8.75" | 0 | 19,245 | 5.5" | 17 | P110 | LTC | 1.66 | 2.98 | 2.85 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>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

| | 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? | |

### 3. Cementing Program

| Casing | # Sks | Wt. lb/ gal | Yld ft3/ sack | $H_20$ gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| Surf. | 250 | 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. | 880 | 12.7 | 2.0 | 9.6 | 16 | Lead: 35:65:6 C Blend |
| | 250 | 14.8 | 1.34 | 6.34 | 8 | Tail: Class C + 2% CaCl |
| 5.5 Prod | 640 | 11.9 | 2.5 | 19 | 72 | Lead: 50:50:10 H Blend |
| | 2690 | 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 | 4,105' | 25% OH in Lateral (KOP to EOL) – 40% OH in Vertical |

## 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" | 2M | Annular | x | 2000 psi |
| | | | Blind Ram | | 2M |
| | | | Pipe Ram | | |
| | | | Double Ram | | |
| | | | Other* | | |
| 8-3/4" | 13-5/8" | 3M | Annular | x | 50% testing pressure |
| | | | Blind Ram | x | 3M |
| | | | 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.<br>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 | Saturated Brine | 10 - 10.2 | 28-34 | N/C |
| 9-5/8" Int shoe | Lateral TD | Cut Brine | 8.6 - 9.4 | 28-34 | N/C |

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 | 4495 psi at 9195' TVD |
| Abnormal Temperature | NO 150 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.

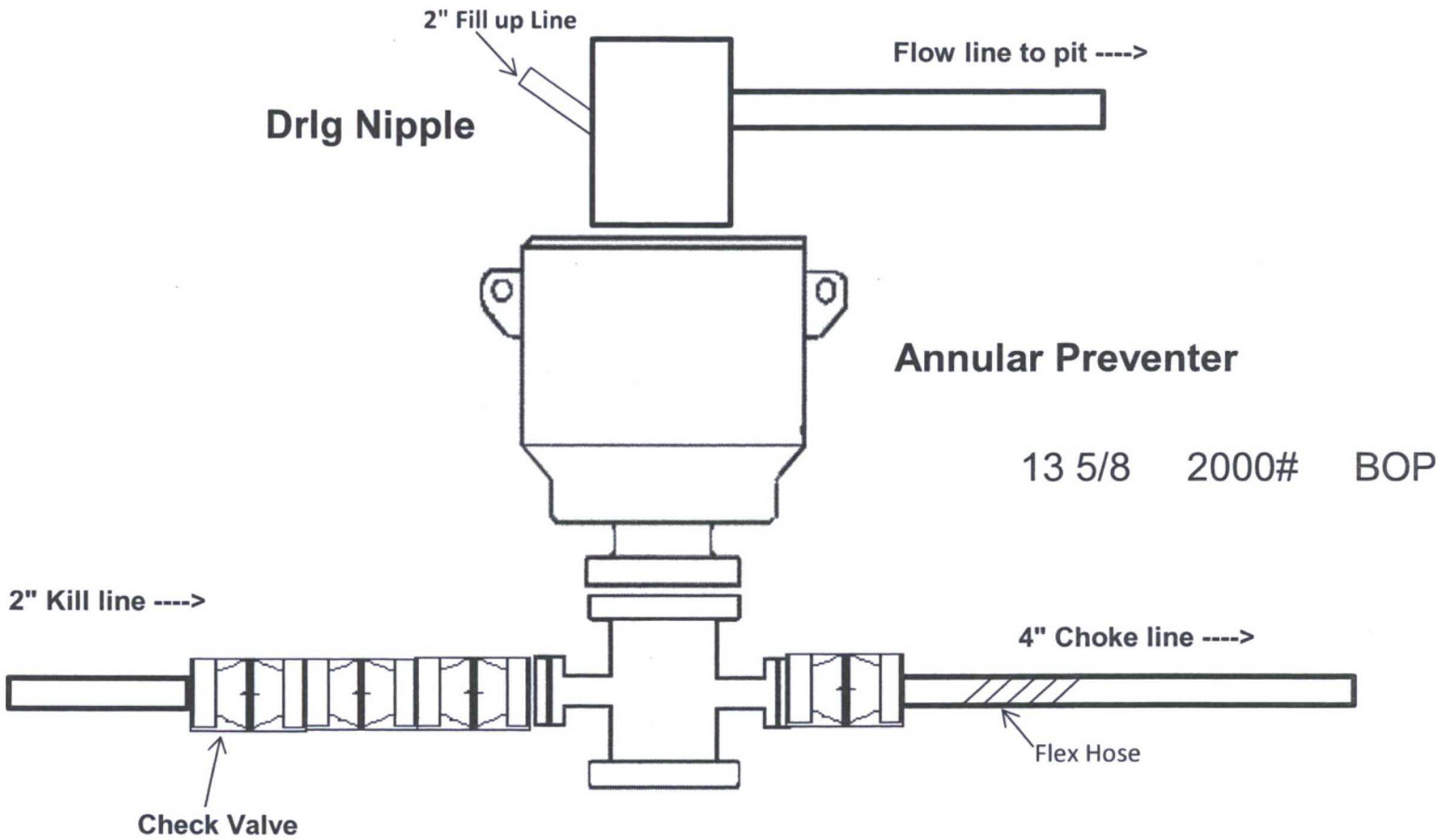
| Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM. | |
|---|---|
| N | H2S is present |
| Y | H2S Plan attached |

## 8. Other Facets of Operation

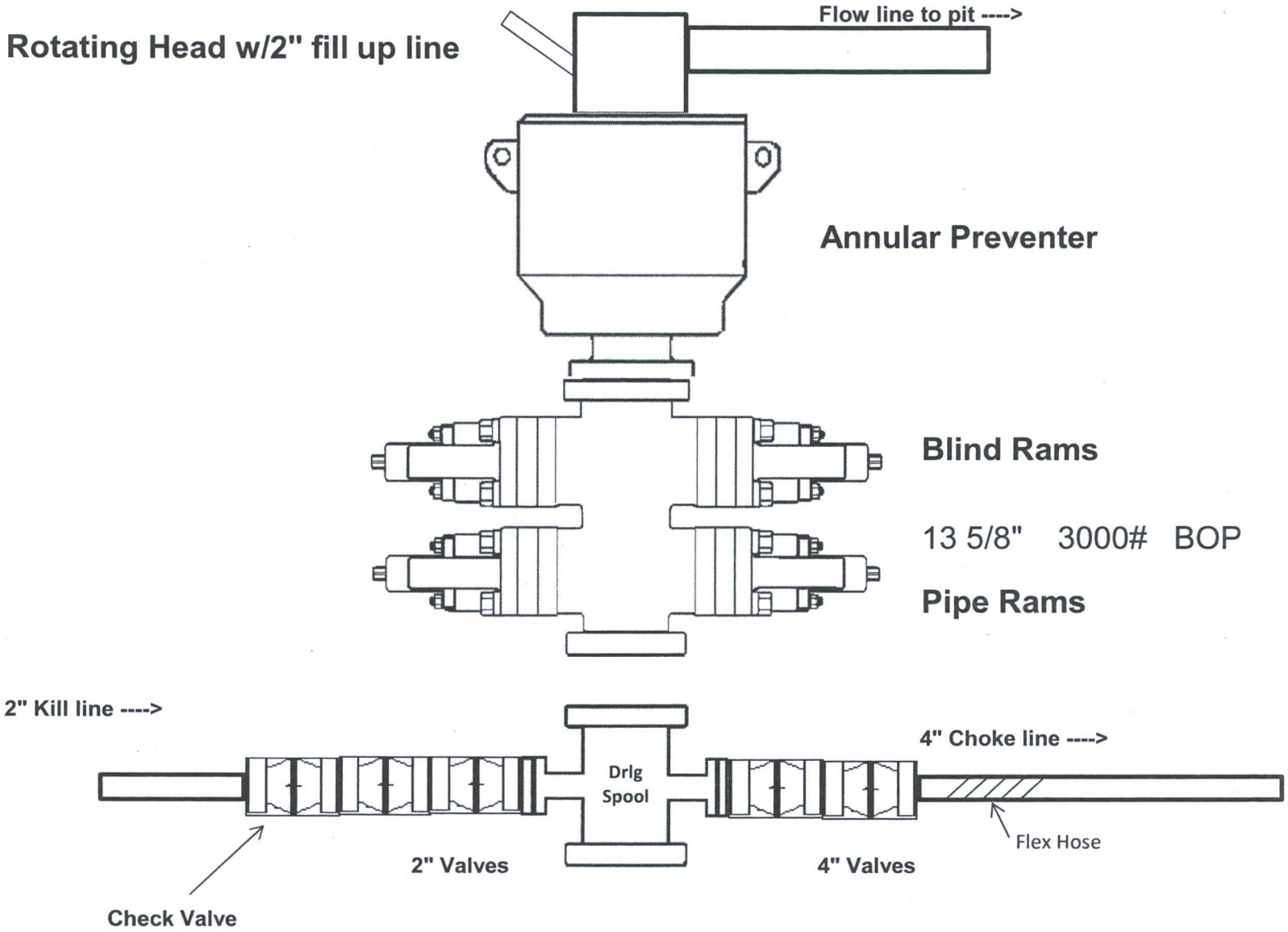
| | |
|---|---|
| N | Is it a walking operation? |
| N | Is casing pre-set? |

| | |
|---|---|
| x | H2S Plan. |
| x | BOP & Choke Schematics. |
| x | Directional Plan |

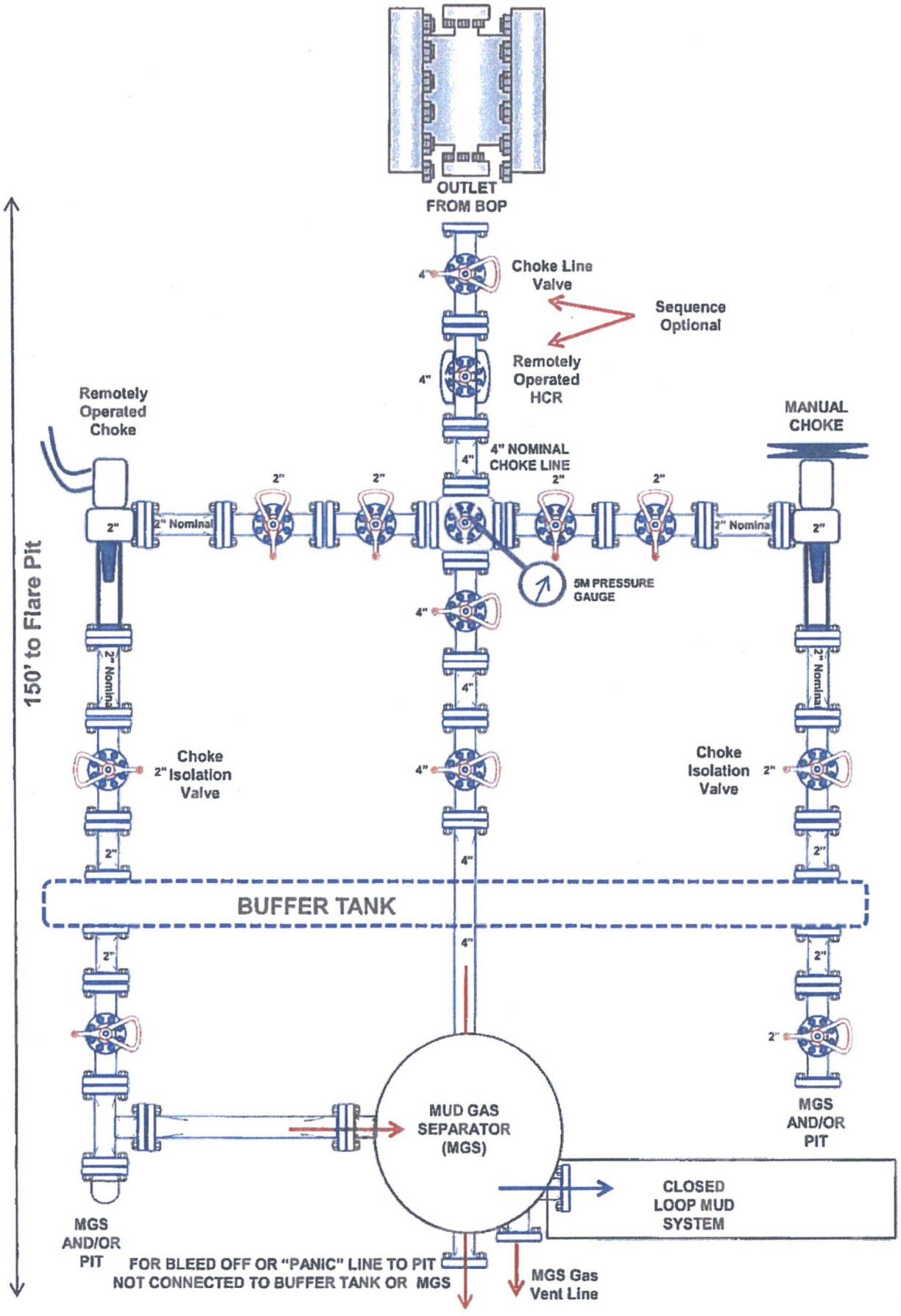
# 2,000 psi BOP Schematic



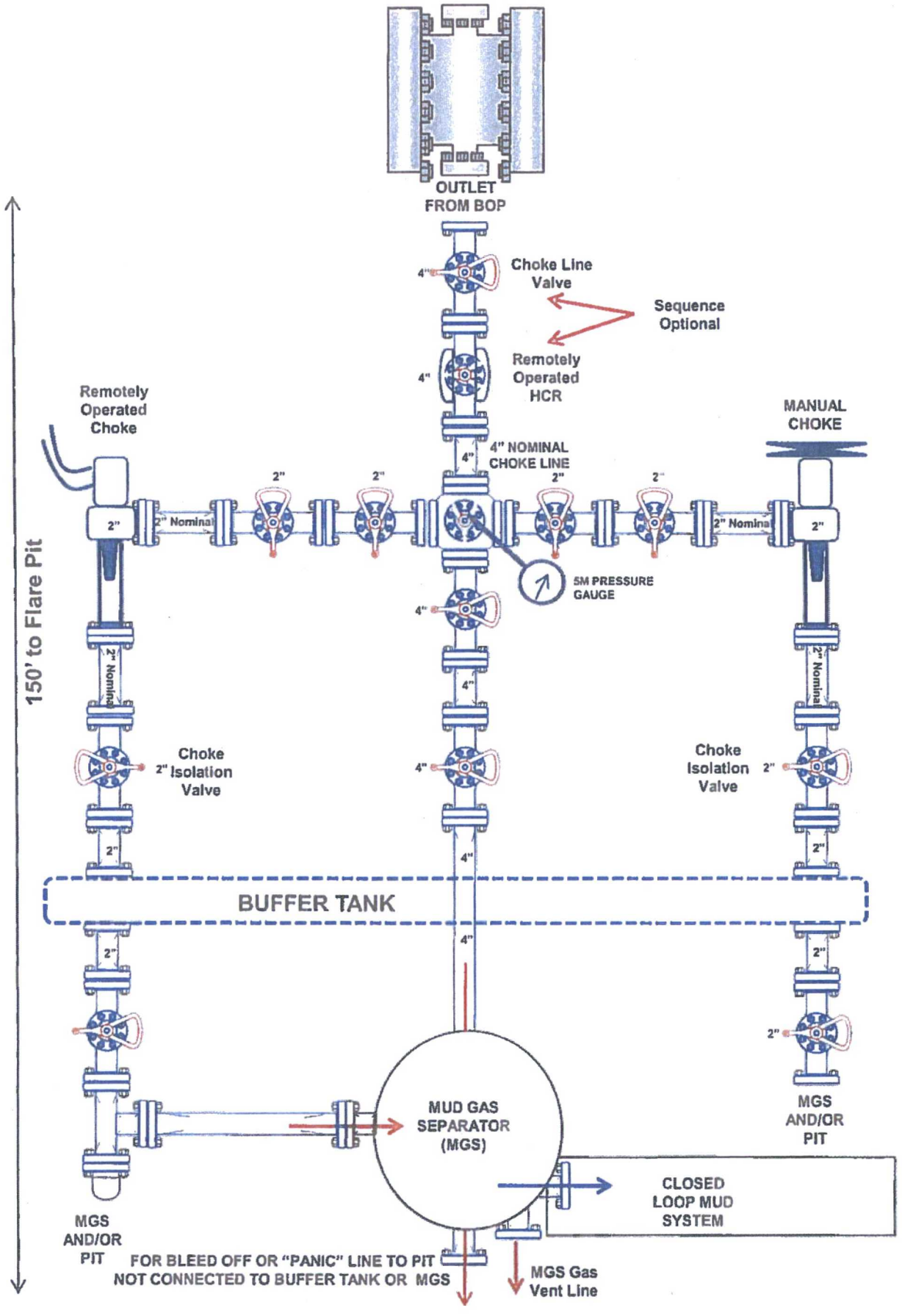
# 3,000 psi BOP Schematic

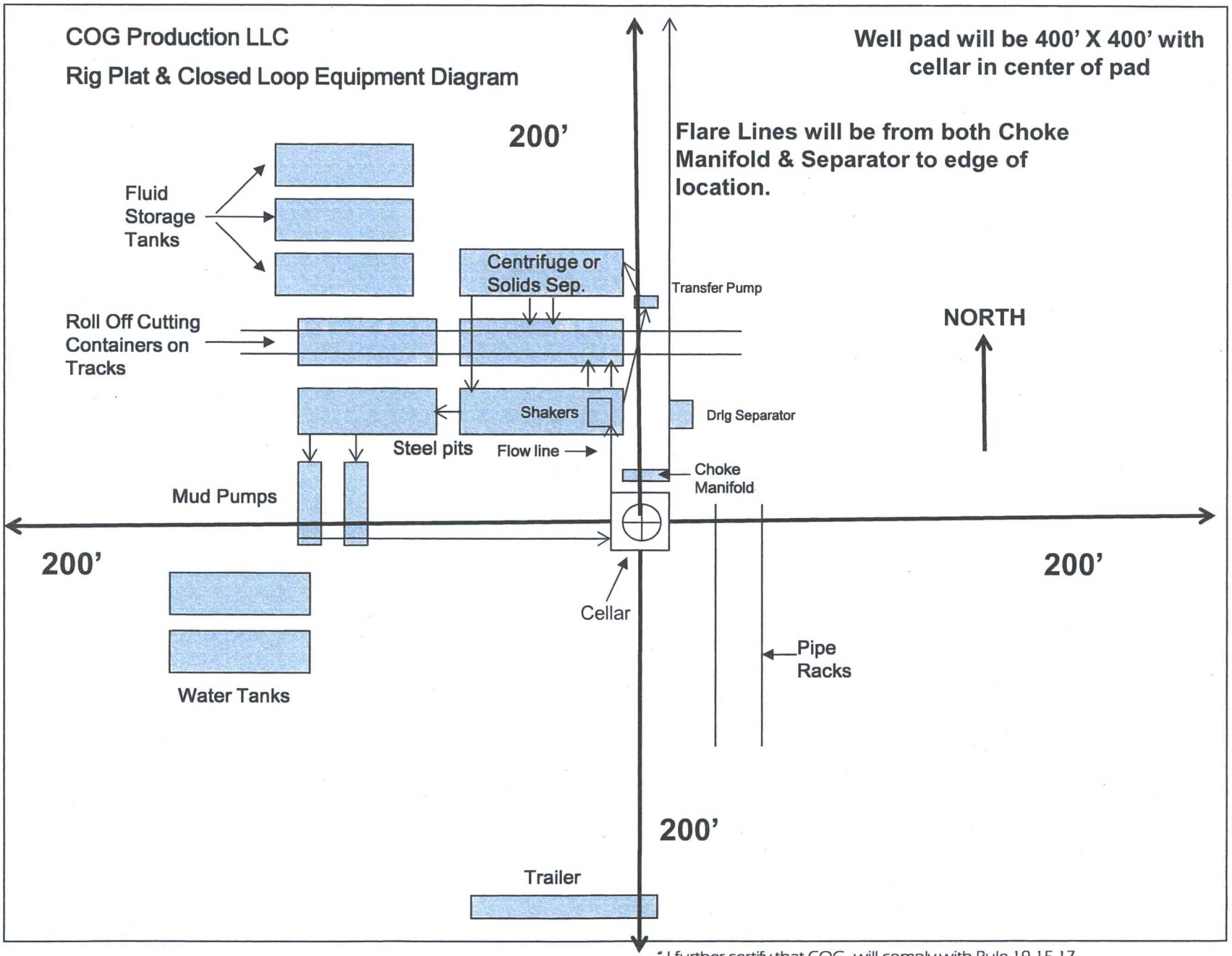


# 2M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



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






"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

Midwest Hose
& Specialty, Inc.

# *Internal Hydrostatic Test Certificate*

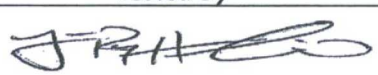
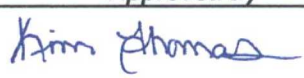
| General Information | | Hose Specifications | |
|---|---|---|---|
| *Customer* | **Hobbs** | *Hose Assembly Type* | **Rotary/Vibrator** |
| *MWH Sales Representative* | **Ryan Rynolds** | *Certification* | **API 7K/FSL Level 2** |
| *Date Assembled* | **11/19/2015** | *Hose Grade* | **D** |
| *Location Assembled* | **OKC** | *Hose Working Pressure* | **5000** |
| *Sales Order #* | **271739** | *Hose Lot # and Date Code* | **11834 11/14** |
| *Customer Purchase Order #* | **302337** | *Hose I.D. (Inches)* | **3.5"** |
| *Assembly Serial # (Pick Ticket #)* | **326000** | *Hose O.D. (Inches)* | **4.89"** |
| *Hose Assembly Length* | **25'** | *Armor (yes/no)* | No |

## Fittings

| End A | | End B | |
|---|---|---|---|
| *Stem (Part and Revision #)* | **R3.5X64WB** | *Stem (Part and Revision #)* | **R3.5X64WB** |
| *Stem (Heat #)* | **A144783** | *Stem (Heat #)* | **A144783** |
| *Ferrule (Part and Revision #)* | **RF3.5** | *Ferrule (Part and Revision #)* | **RF3.5** |
| *Ferrule (Heat #)* | **J1628** | *Ferrule (Heat #)* | **J1628** |
| *Connection . Flange Hammer Union Part* | **4-1/16 5000** | *Connection (Part #)* | **4-1/16 5000** |
| *Connection (Heat #)* | **14032501** | *Connection (Heat #)* | **1404H321** |
| *Nut (Part #)* | **N/A** | *Nut (Part #)* | **N/A** |
| *Nut (Heat #)* | **N/A** | *Nut (Heat #)* | **N/A** |
| *Dies Used* | **5.49"** | *Dies Used* | **5.49"** |

## Hydrostatic Test Requirements

| | | |
|---|---|---|
| *Test Pressure (psi)* | **10,000** | ***Hose assembly was tested with ambient water temperature.*** |
| *Test Pressure Hold Time (minutes)* | **11 1/2** | |

| *Date Tested* | *Tested By* | *Approved By* |
|---|---|---|
| *11/19/2015* |  |  |

Midwest Hose
& Specialty, Inc.

# Certificate of Conformity

| | |
|---|---|
| *Customer:* **Hobbs** | *Customer P.O.#* **302337** |
| *Sales Order #* **271739** | *Date Assembled:* **11/19/2015** |

## Specifications

| | | | |
|---|---|---|---|
| *Hose Assembly Type:* | **Rotary/Vibrator** | | |
| *Assembly Serial #* | **326000** | *Hose Lot # and Date Code* | **11834 11/14** |
| *Hose Working Pressure (psi)* | **5000** | *Test Pressure (psi)* | **10000** |

*We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.*

*Supplier:*
***Midwest Hose & Specialty, Inc.***
***3312 S I-35 Service Rd***
***Oklahoma City, OK 73129***

*Comments:*

| *Approved By* | *Date* |
|---|---|
| Kim Thomas | **11/19/2015** |

Midwest Hose & Specialty, Inc.

# Internal Hydrostatic Test Graph

November 19, 2015

**Customer:** Hobbs

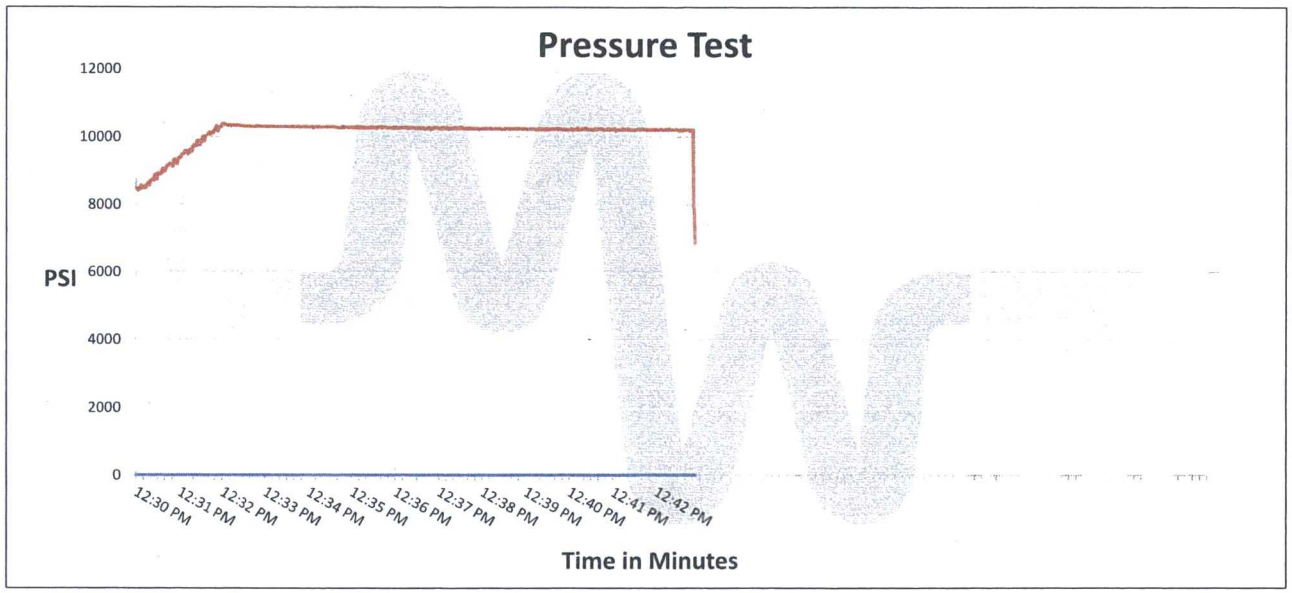
**Pick Ticket #:** 326000

## Hose Specifications

| Hose Type | Length |
|---|---|
| D | 25' |
| **I.D.** | **O.D.** |
| 3.5" | 4.89" |
| **Working Pressure** | **Burst Pressure** |
| 5000 PSI | Standard Safety Multiplier Applies |

## Verification

| Type of Fitting | Coupling Method |
|---|---|
| 4 1/16 5K | Swage |
| **Die Size** | **Final O.D.** |
| 5.49" | 5.50" |
| **Hose Serial #** | **Hose Assembly Serial #** |
| 11834 | 326000 |




| Test Pressure | Time Held at Test Pressure | Actual Burst Pressure | Peak Pressure |
|---|---|---|---|
| 10000 PSI | 11 2/4 Minutes | | 10473 PSI |

**Comments:** Hose assembly pressure tested with water at ambient temperature.

**Tested By:** *James Hawkins*

**Approved By:** *Kim Thomas*

x _____

x _____

Midwest Hose & Specialty, Inc.

# Hose Assembly & Test Report

| General Information | | Hose Specifications | |
|---|---|---|---|
| Customer | Hobbs | Hose Assembly Type | choke + kill |
| Date Assembled | 6-26-14 | Certification | API 7K |
| Location Assembled | OKC | Hose Grade | D |
| Sales Order # | 216797 | Hose Working Pressure | 5,000 |
| Customer Purchase Order # | 237512 | Hose Lot # | 83094 |
| Hose Assembly Serial # | 260212 | Hose Date Code | 04/12 |
| Pick Ticket Line Item | 0010 | Hose I.D. (inches) | 3.5 inches |
| Hose Assembly Length (Feet and Inches) | 50 feet | Hose O.D. (inches) | 5.49 |
| Contact Information Phone # | | Armor (yes/no) | yes |

## Fittings

| End A | | End B | |
|---|---|---|---|
| Stem (Part and Revision #) | R3.5X64WB | Stem (Part and Revision #) | R3.5X64WB |
| Stem (Heat #) | 13114050225 | Stem (Heat #) | 13114050225 |
| Stem (Rockwell Hardness HRB #) | — | Stem (Rockwell Hardness HRB #) | — |
| Ferrule (Part and Revision #) | RF3.5 | Ferrule (Part and Revision #) | RF3.5 |
| Ferrule (Heat #) | 126151 | Ferrule (Heat #) | 372114 |
| Ferrule (Rockwell Hardness HRB #) | — | Ferrule (Rockwell Hardness HRB #) | — |
| Connection (Part #) | 4 1/16 5K | Connection (Part #) | 4 1/16 5K |
| Connection (Heat #) | V3360 | Connection (Heat #) | V3360 |
| Connection (Brinell Hardness HB #) | — | Connection (Brinell Hardness HB #) | — |
| Stress Relief # | 17614 | Stress Relief # | 17614 |
| Welding # | MKR | Welding # | MKR |
| X-ray # | — | X-ray # | — |

## Assembly Information

| End A | | End B | |
|---|---|---|---|
| Skive O.D. (inches) | 5.04 | Skive O.D. (inches) | 4.92 |
| Swager Dies (1st pass) | 5.62 | Swager Dies (1st pass) | 5.53 |
| Swager Dies (2nd pass) | — | Swager Dies (2nd pass) | — |
| Final Swage O.D. (inches) | 5.14 | Final Swage O.D. (inches) | 5.48 |
| Compression % (See Crimp Calculator) | 24% | Compression % (See Crimp Calculator) | 22% |
| Swaged By | Charles Ash | | |

## Hydrostatic Test Requirements

| | | | |
|---|---|---|---|
| Test Pressure (psi) | 10,000 | Hold Time (minutes) | 13¼ |
| Tested By | Charles Ash | Date Tested | 6-26-14 |

*This is to certify that the above Hose Assembly has been satisfactorily tested in accordance with MHSI procedure 8.2.4.2*

## Final Verification

| | | | |
|---|---|---|---|
| Visual Inspection | Yes No | Hammer Unions | Yes No |
| Cleanliness | Yes No | Safety Clamps | Yes No |
| Customer or Third Party Witness No | Customer or Third Party Witnessed By: | | |

COG Production LLC
$H_2S$ Equipment Schematic
Terrain: Shinnery sand hills.

**Well pad will be 400' X 400'**
**with cellar in center of pad**