14-615

NM OIL CONSERVATION
OCD Artesia
ARTESIA DISTRICT
AUG 31 2015
RECEIVED

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
SHL:NMNM034461 BHL:NM030752

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.
War Horse Fed Com #2H

2. Name of Operator Murchison Oil and Gas, Inc.

9. API Well No.
30-015-43333

3a. Address 1100 Mira Vista Blvd.
Plano, TX 75093

3b. Phone No. *(include area code)*
972-931-0700

10. Field and Pool, or Exploratory
Wildcat G-04 S182927M; Bone Spring

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 1700' FNL 175' FEL
At proposed prod. zone 1700' FNL 330' FWL

NORTHODOX LOCATION

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 21 T-18S R-29E

14. Distance in miles and direction from nearest town or post office*
Approximately 10 miles SW of Loco Hills post office

12. County or Parish
Eddy

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
SHL 175' FEL Sec. 21 (NM034461 lease line)

16. No. of acres in lease
NM034461: 240 ac
NM030752: 840 ac

17. Spacing Unit dedicated to this well
160 ac

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
See 1 mile radius map

19. Proposed Depth
7796'TVD/ 12545'MD

20. BLM/BIA Bond No. on file
NM 2163

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
RKB:3503.7' GL: 3481.7'

22. Approximate date work will start*
07/15/2014

23. Estimated duration
36 days

24. Attachments

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

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

25. Signature
Name *(Printed/Typed)* Steve Morris
Date 03/25/2014

Title
Senior Drilling Engineer

Approved by *(Signature)* /s/George MacDonell
Name *(Printed/Typed)*
Date AUG 24 2015

Title FIELD MANAGER
Office CARLSBAD FIELD OFFICE

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.

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Capitan Controlled Water Basin

KRD
9/1/2015

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Murchison Oil & Gas, Inc.
War Horse Federal Com #2H
SHL: 1700' FNL & 175' FEL, Lot H, Sec. 21, T18S, R29E
BHL: 1700' FNL & 330' FWL, Lot E, Sec. 21, T18S, R29E
Eddy County, New Mexico

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 Murchison Oil & Gas, Inc., 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 5th day of June 2015.

Gary Cooper, Vice President Operations
Murchison Oil & Gas, Inc.
7250 Dallas Parkway, Ste. 1400
Plano, TX 75024
972-931-0700 Office
972-322-7466 Cell
rcooper@jdmii.com

Field Representatives:
Greg Boans
575-706-0667
gboans@jdmii.com

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 31 2015

RECEIVED

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-43333	97908	WILDCAT G-04 S182927;BONE SPRING

[4] Property Code	[5] Property Name	[6] Well Number
~~39564~~ 39654	WAR HORSE FEDERAL COM	2H

[7] OGRID No.	[8] Operator Name	[9] Elevation
15363	MURCHISON OIL & GAS, INC.	3481.7

[10] Surface Location

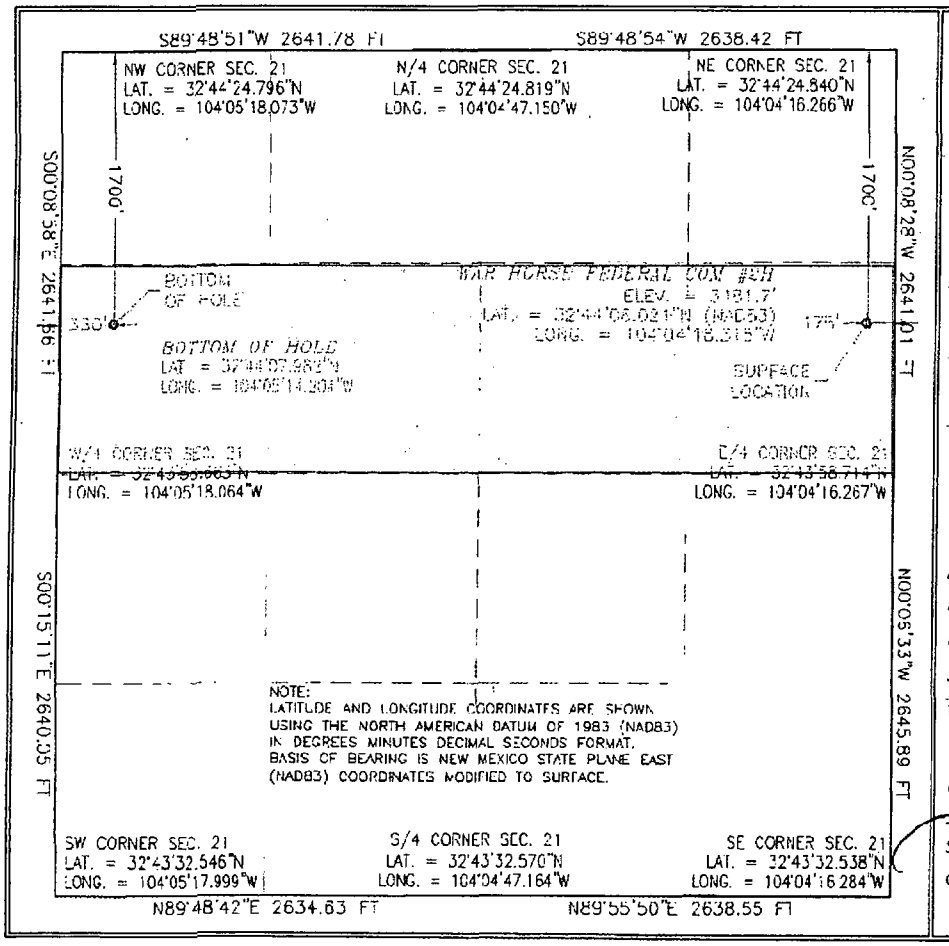
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	21	18 S	29 E		1700	NORTH	175	EAST	EDDY

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	21	18 S	29 E		1700	NORTH	330	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
160			

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.



[17] OPERATOR CERTIFICATION

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

Signature — Date: 6/22/15

Gary Cooper
Printed Name

rcooper@jdmii.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

JUNE 19, 2015
Date of Survey

FILIMON F. JARAMILLO
NEW MEXICO
12797
REGISTERED PROFESSIONAL SURVEYOR

Signature and Seal of Professional Surveyor:

Certificate Number: FILIMON F. JARAMILLO, PLS 12797

SURVEY NO. 1481D

EXHIBIT A

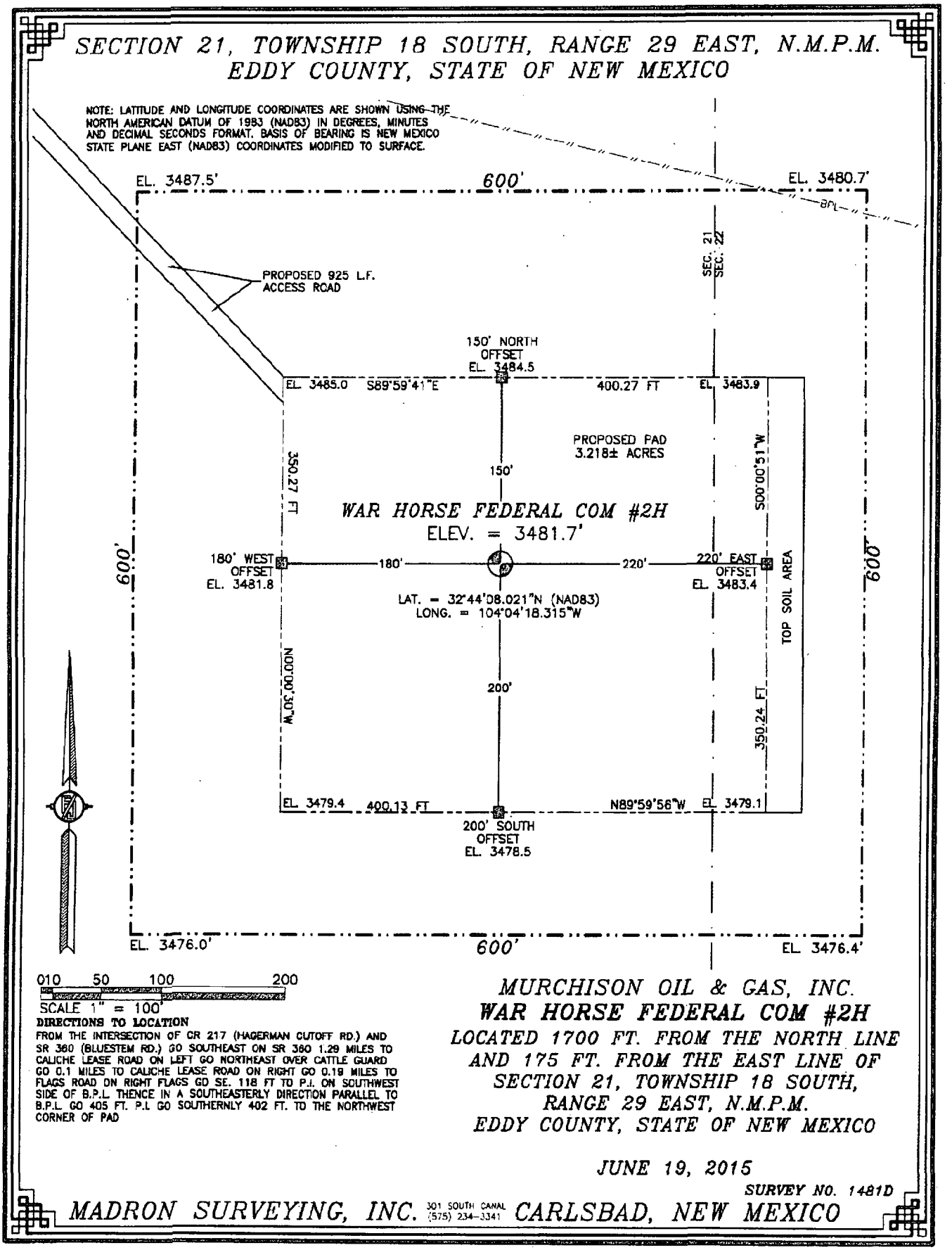
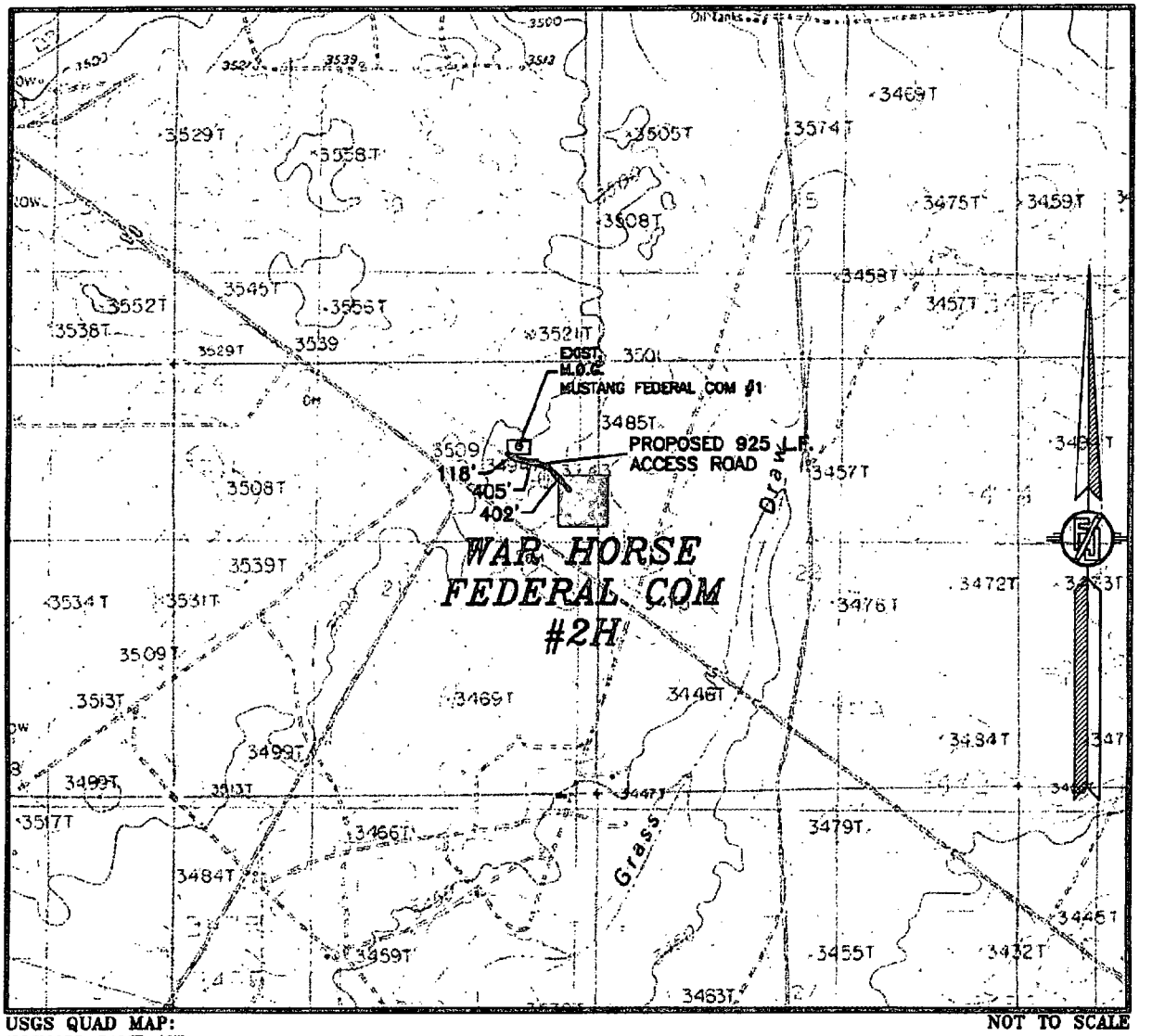

SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) IN DEGREES, MINUTES AND DECIMAL SECONDS FORMAT. BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST (NAD83) COORDINATES MODIFIED TO SURFACE.
EL. 3487.5'
600'
EL. 3480.7'
BPL
SEC. 21
SEC. 22
PROPOSED 925 L.F. ACCESS ROAD
150' NORTH OFFSET EL. 3484.5
EL. 3485.0
S89°59'41"E
400.27 FT
EL. 3483.9
PROPOSED PAD 3.218± ACRES
350.27 FT
150'
S00°00'51"W
WAR HORSE FEDERAL COM #2H
ELEV. = 3481.7'
180' WEST OFFSET EL. 3481.8
180'
220'
220' EAST OFFSET EL. 3483.4
LAT. = 32°44'08.021"N (NAD83)
LONG. = 104°04'18.315"W
TOP SOIL AREA
600'
N00°00'30"W
200'
350.24 FT
EL. 3479.4
400.13 FT
N89°59'56"W
EL. 3479.1
200' SOUTH OFFSET EL. 3478.5
EL. 3476.0'
600'
EL. 3476.4'
010 50 100 200
SCALE 1" = 100'
DIRECTIONS TO LOCATION
FROM THE INTERSECTION OF CR 217 (HAGERMAN CUTOFF RD.) AND SR 360 (BLUESTEM RD.) GO SOUTHEAST ON SR 360 1.29 MILES TO CALICHE LEASE ROAD ON LEFT GO NORTHEAST OVER CATTLE GUARD GO 0.1 MILES TO CALICHE LEASE ROAD ON RIGHT GO 0.19 MILES TO FLAGS ROAD ON RIGHT FLAGS GO SE. 118 FT TO P.I. ON SOUTHWEST SIDE OF B.P.L. THENCE IN A SOUTHEASTERLY DIRECTION PARALLEL TO B.P.L. GO 405 FT. P.I GO SOUTHERNLY 402 FT. TO THE NORTHWEST CORNER OF PAD
MURCHISON OIL & GAS, INC.
WAR HORSE FEDERAL COM #2H
LOCATED 1700 FT. FROM THE NORTH LINE AND 175 FT. FROM THE EAST LINE OF SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JUNE 19, 2015
SURVEY NO. 1481D
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

EXHIBIT B

SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
ILLINOIS CAMP NE

NOT TO SCALE

MURCHISON OIL & GAS, INC.
WAR HORSE FEDERAL COM #2H
LOCATED 1700 FT. FROM THE NORTH LINE
AND 175 FT. FROM THE EAST LINE OF
SECTION 21, TOWNSHIP 18 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

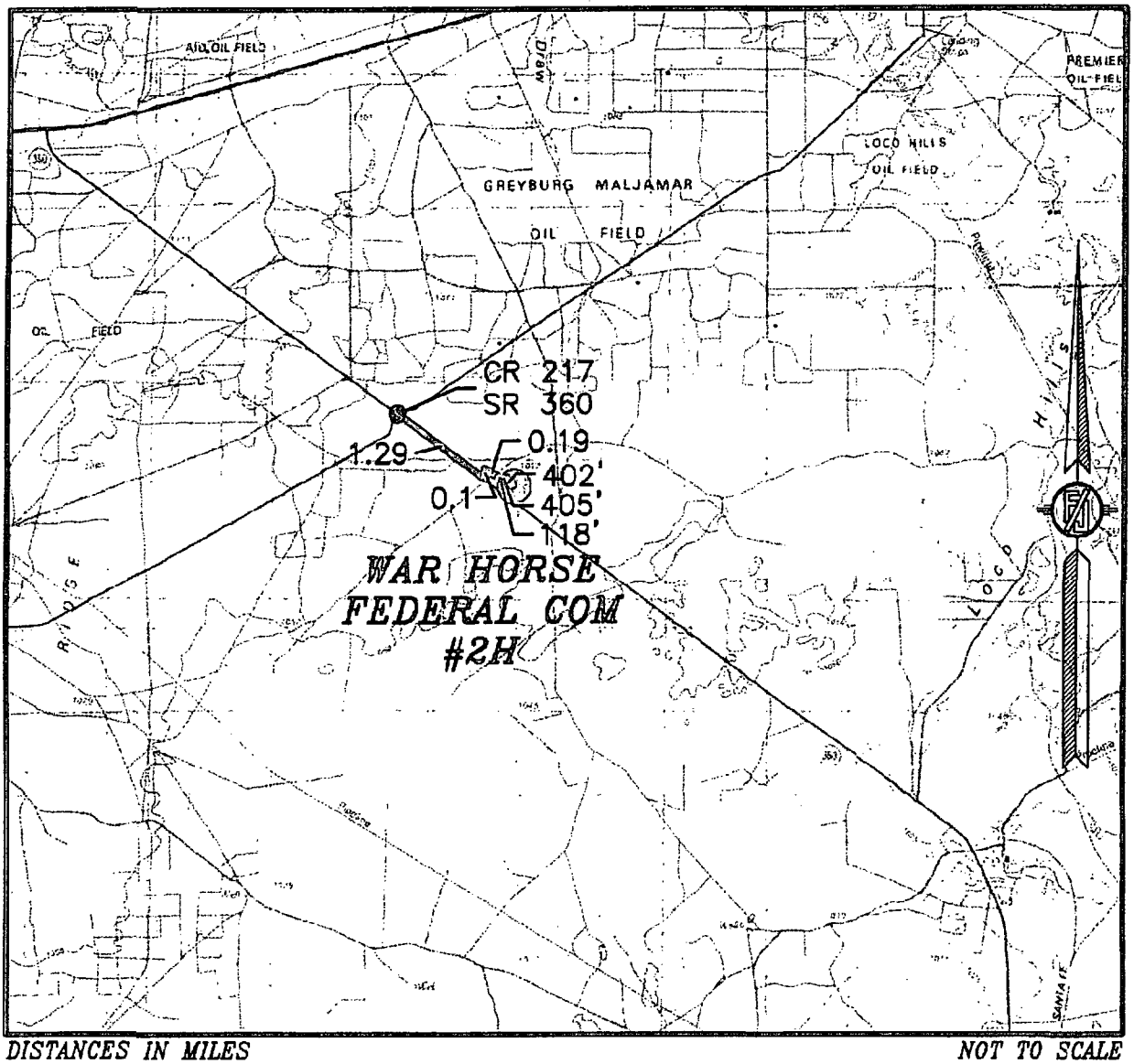
JUNE 19, 2015

SURVEY NO. 1481D

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

EXHIBIT C

SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DIRECTIONS TO LOCATION
FROM THE INTERSECTION OF CR 217 (HAGERMAN CUTOFF RD.) AND SR 360 (BLUESTEM RD.) GO SOUTHEAST ON SR 360 1.29 MILES TO CALICHE LEASE ROAD ON LEFT GO NORTHEAST OVER CATTLE GUARD GO 0.1 MILES TO CALICHE LEASE ROAD ON RIGHT GO 0.19 MILES TO FLAGS ROAD ON RIGHT FLAGS GO SE. 118 FT TO P.I. ON SOUTHWEST SIDE OF B.P.L. THENCE IN A SOUTHEASTERLY DIRECTION PARALLEL TO B.P.L. GO 405 FT. P.I. GO SOUTHERNLY 402 FT. TO THE NORTHWEST CORNER OF PAD

MURCHISON OIL & GAS, INC.
WAR HORSE FEDERAL COM #2H
LOCATED 1700 FT. FROM THE NORTH LINE
AND 175 FT. FROM THE EAST LINE OF
SECTION 21, TOWNSHIP 18 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

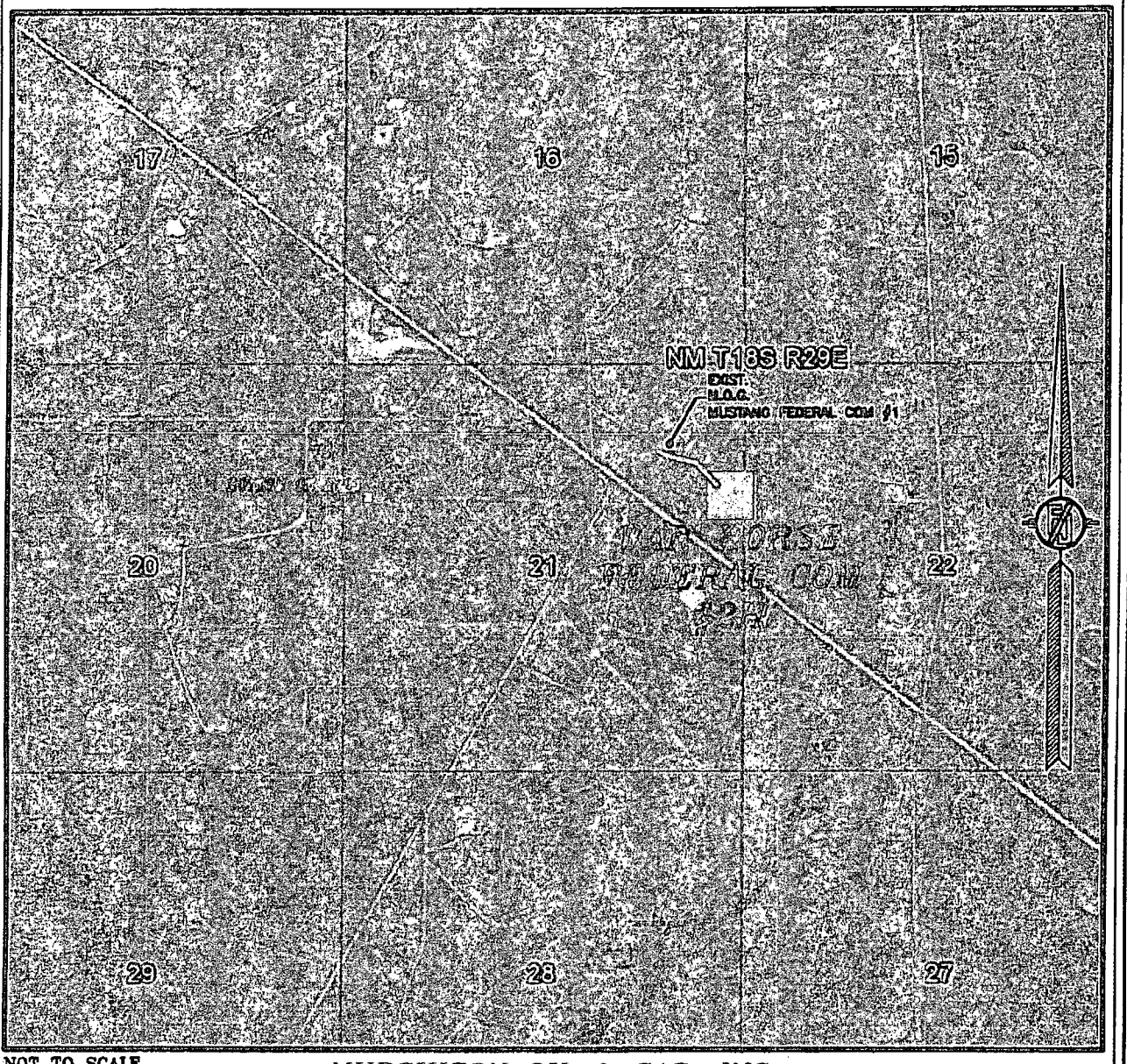
JUNE 19, 2015

SURVEY NO. 1481D

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

EXHIBIT D

SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
APRIL 2013

MURCHISON OIL & GAS, INC.
WAR HORSE FEDERAL COM #2H
LOCATED 1700 FT. FROM THE NORTH LINE
AND 175 FT. FROM THE EAST LINE OF
SECTION 21, TOWNSHIP 18 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 19, 2015

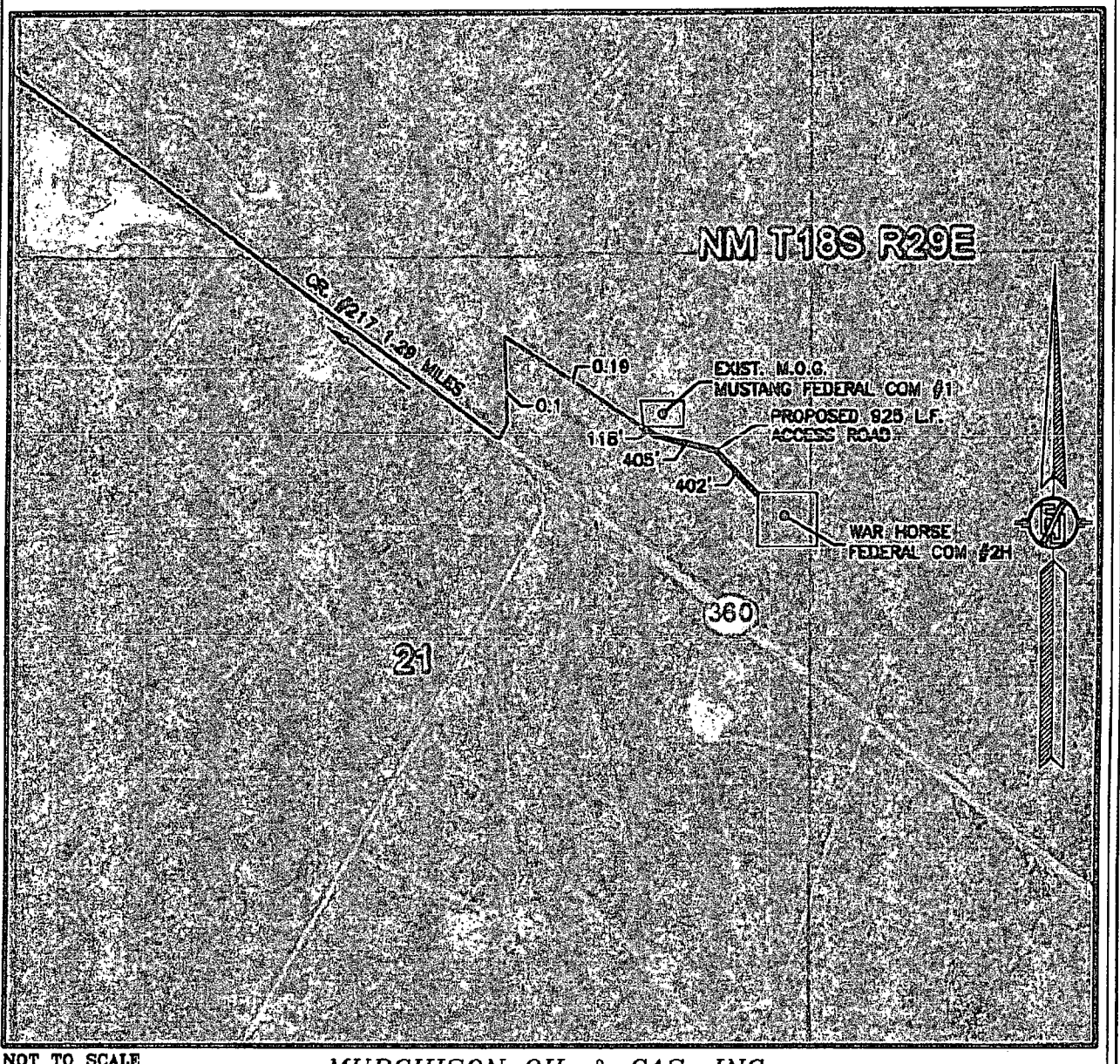
SURVEY NO. 1481D

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

EXHIBIT E

SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL ACCESS ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
APRIL 2013

MURCHISON OIL & GAS, INC.
WAR HORSE FEDERAL COM #2H
LOCATED 1700 FT. FROM THE NORTH LINE
AND 175 FT. FROM THE EAST LINE OF
SECTION 21, TOWNSHIP 18 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 19, 2015

SURVEY NO. 1481D

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

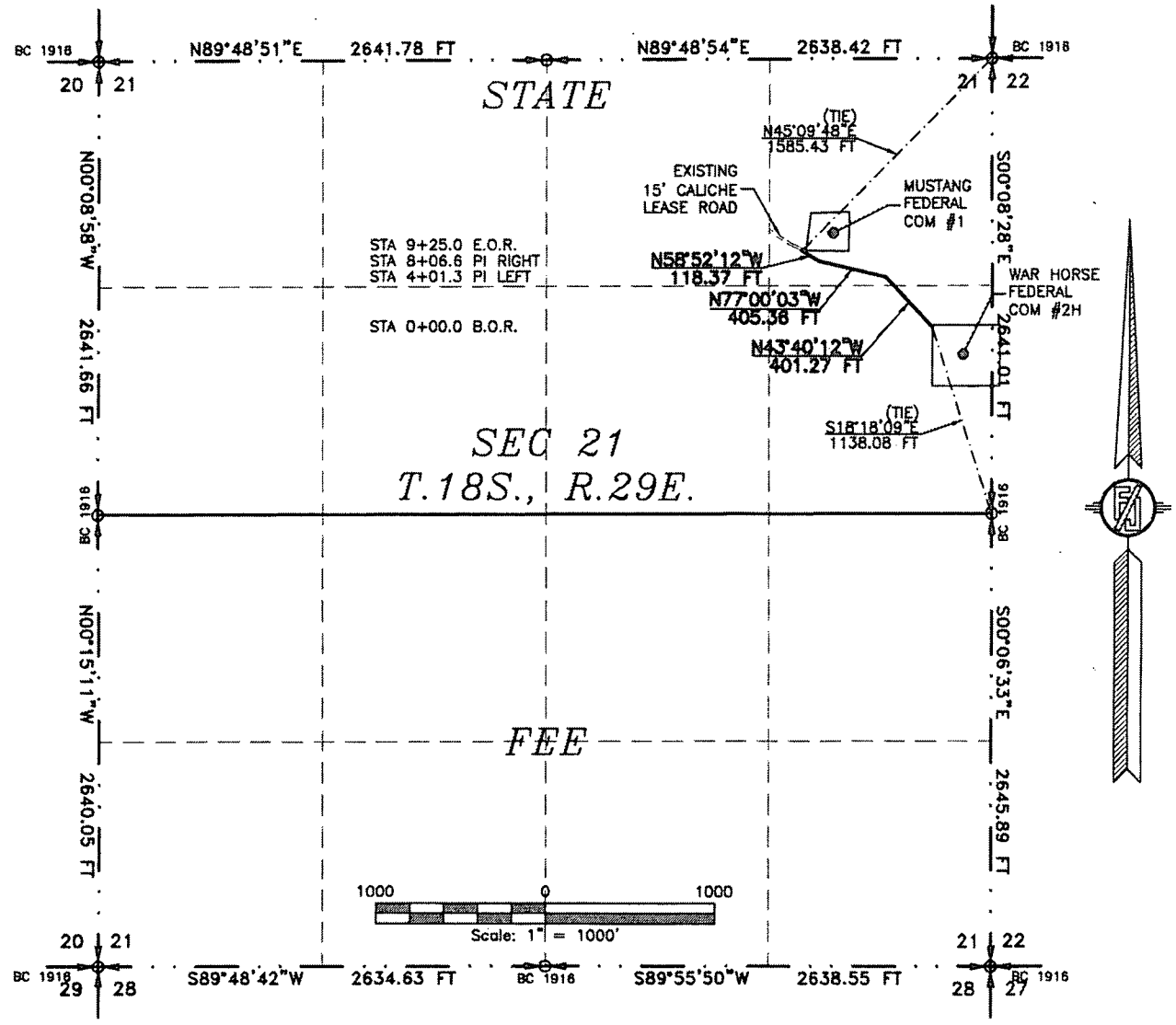
EXHIBIT K-1

ACCESS ROAD PLAT

ACCESS ROAD FROM WAR HORSE FEDERAL COM #2H TO AN EXISTING 15' CALICHE LEASE ROAD

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015



SEE NEXT SHEET (2-4) FOR DESCRIPTION

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 28 DAY OF JULY 2015

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 1-4

FILIMON F. JARAMILLO PLS. 12797
301 SOUTH CANAL
(575) 234-3341

SURVEY NO. 4142

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD FROM WAR HORSE FEDERAL COM #2H TO AN EXISTING 15' CALICHE LEASE ROAD

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015

DESCRIPTION

A STRIP OF LAND 20 FEET WIDE CROSSING STATE OF NEW MEXICO LAND IN SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 10 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE SE/4 NE/4 OF SAID SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M., WHENCE THE EAST QUARTER CORNER OF SAID SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS S18°18'09"E, A DISTANCE OF 1138.08 FEET;
THENCE N43°40'12"W A DISTANCE OF 401.27 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N77°00'03"W A DISTANCE OF 405.36 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N58°52'12"W A DISTANCE OF 118.37 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS N45°09'48"E, A DISTANCE OF 1585.43 FEET;

SAID STRIP OF LAND BEING 925.00 FEET OR 56.06 RODS IN LENGTH, CONTAINING 0.425 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

SE/4 NW/4	329.14 L.F.	19.95 RODS	0.151 ACRES
NE/4 NE/4	595.86 L.F.	36.11 RODS	0.274 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 28 DAY OF JULY 2015

FILIMON F. JARAMILLO NO. 12797 REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO NO. 12797
PROFESSIONAL SURVEYOR
301 SOUTH CANAL
(575)234-3341

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

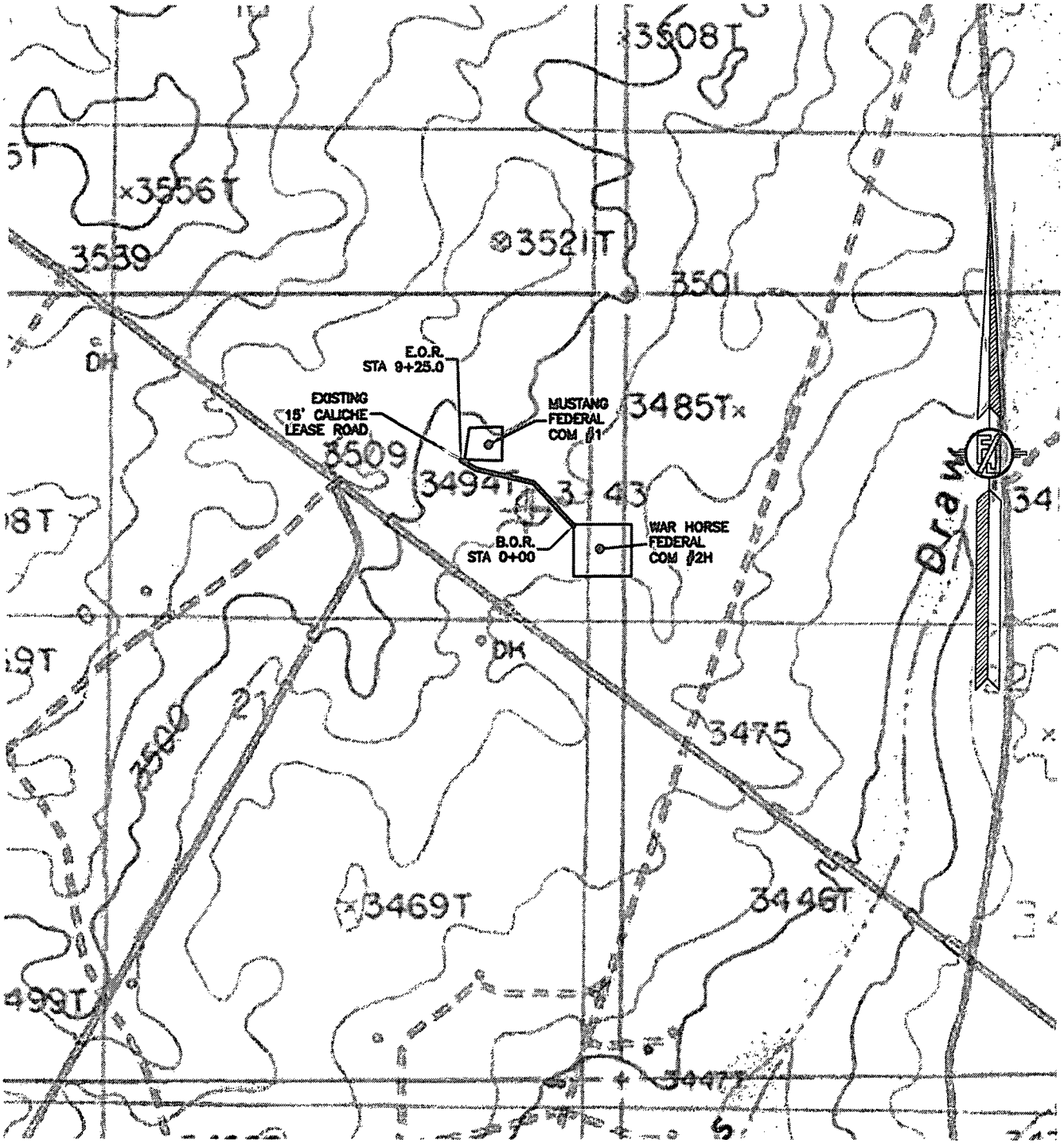
EXHIBIT K-3

ACCESS ROAD PLAT

ACCESS ROAD FROM WAR HORSE FEDERAL COM #2H TO AN EXISTING 15' CALICHE LEASE ROAD

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015



SHEET: 3-4 *SURVEY NO. 4142*

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

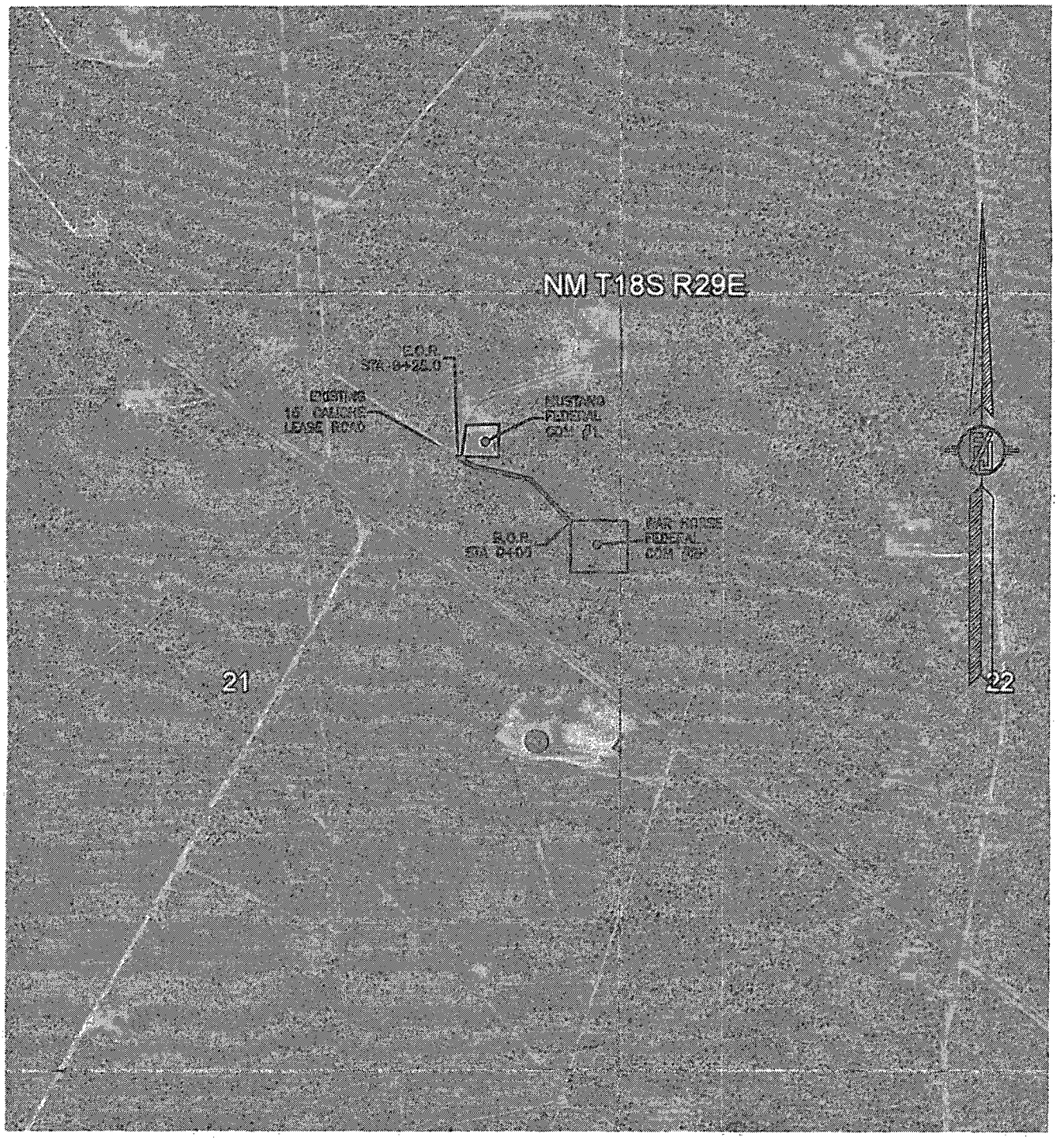
EXHIBIT K-4

ACCESS ROAD PLAT

ACCESS ROAD FROM WAR HORSE FEDERAL COM #2H TO AN EXISTING 15' CALICHE LEASE ROAD

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015



SHEET: 4-4 *SURVEY NO. 4142*

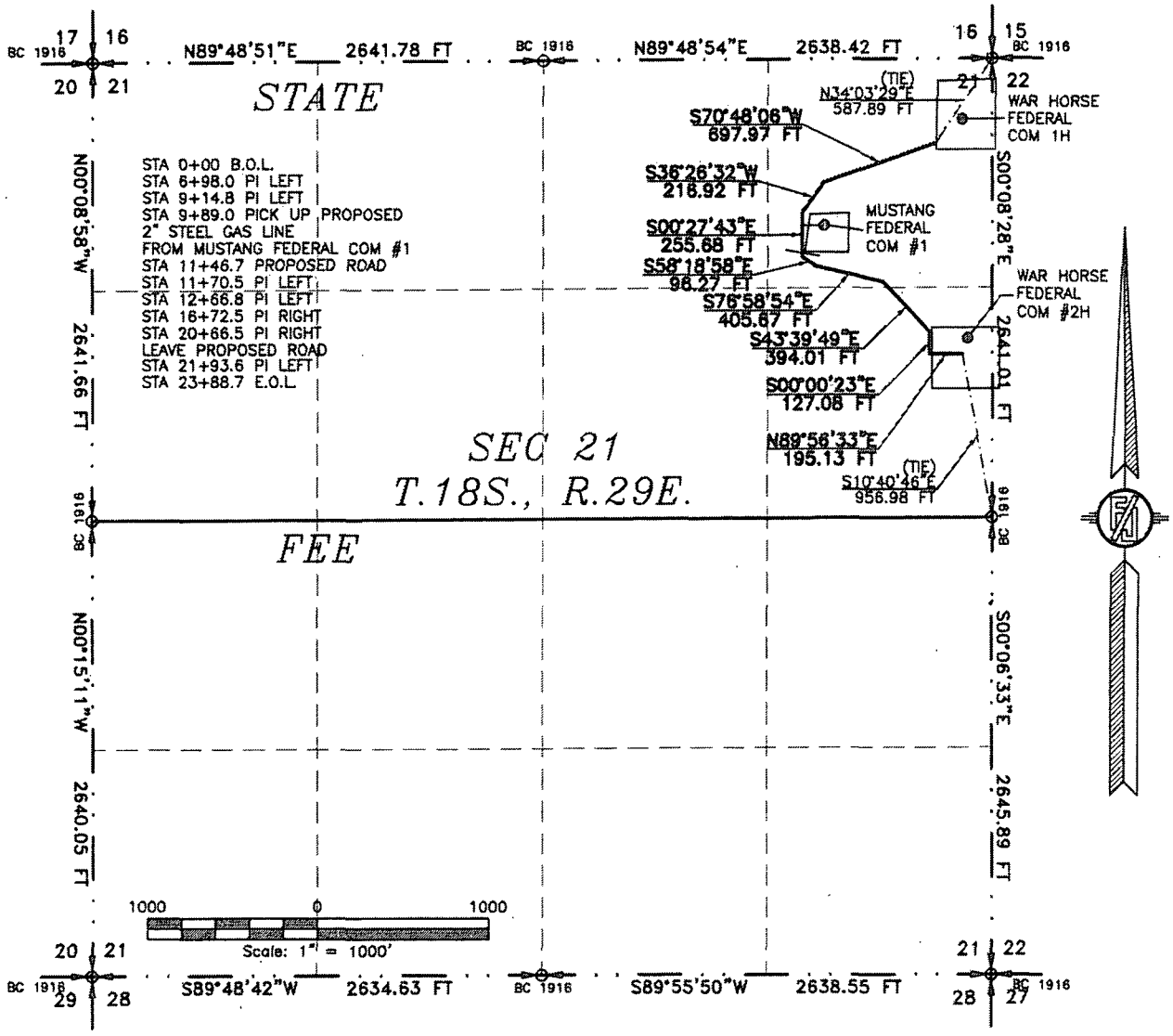
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

FLOWLINE PLAT

R-O-W FOR A BURIED 4" SDR 7 POLY WATER LINE FROM WAR HORSE FEDERAL COM #1H TO MUSTANG FEDERAL COM #1 TO PICK UP A PROPOSED 2" STEEL GAS LINE IN THE SAME DITCH THEN TO WAR HORSE FEDERAL COM #2H

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015



SEE NEXT SHEET (2-4) FOR DESCRIPTION

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 28TH DAY OF JULY 2015

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO PLS 12797

FLOWLINE PLAT

R-O-W FOR A BURIED 4" SDR 7 POLY WATER LINE FROM WAR HORSE FEDERAL COM #1H TO MUSTANG FEDERAL COM #1 TO PICK UP A PROPOSED 2" STEEL GAS LINE IN THE SAME DITCH THEN TO WAR HORSE FEDERAL COM #2H

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING STATE OF NEW MEXICO LAND IN SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS N34°03'29"E, A DISTANCE OF 587.89 FEET;
THENCE S70°48'06"W A DISTANCE OF 697.97 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S36°26'32"W A DISTANCE OF 216.92 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S00°27'43"E A DISTANCE OF 255.68 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S58°18'58"E A DISTANCE OF 96.27 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S76°58'54"E A DISTANCE OF 405.67 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S43°39'49"E A DISTANCE OF 394.01 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S00°00'23"E A DISTANCE OF 127.08 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N89°56'33"E A DISTANCE OF 195.13 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE EAST QUARTER CORNER OF SAID SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS S10°40'46"E, A DISTANCE OF 956.98 FEET;

SAID STRIP OF LAND BEING 2388.72 FEET OR 144.77 RODS IN LENGTH, CONTAINING 1.645 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	1719.26 L.F.	104.20 RODS	1.184 ACRES
SE/4 NE/4	669.46 L.F.	40.57 RODS	0.461 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 29TH DAY OF JULY 2015

FILIMON F. JARAMILLO NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 2-4

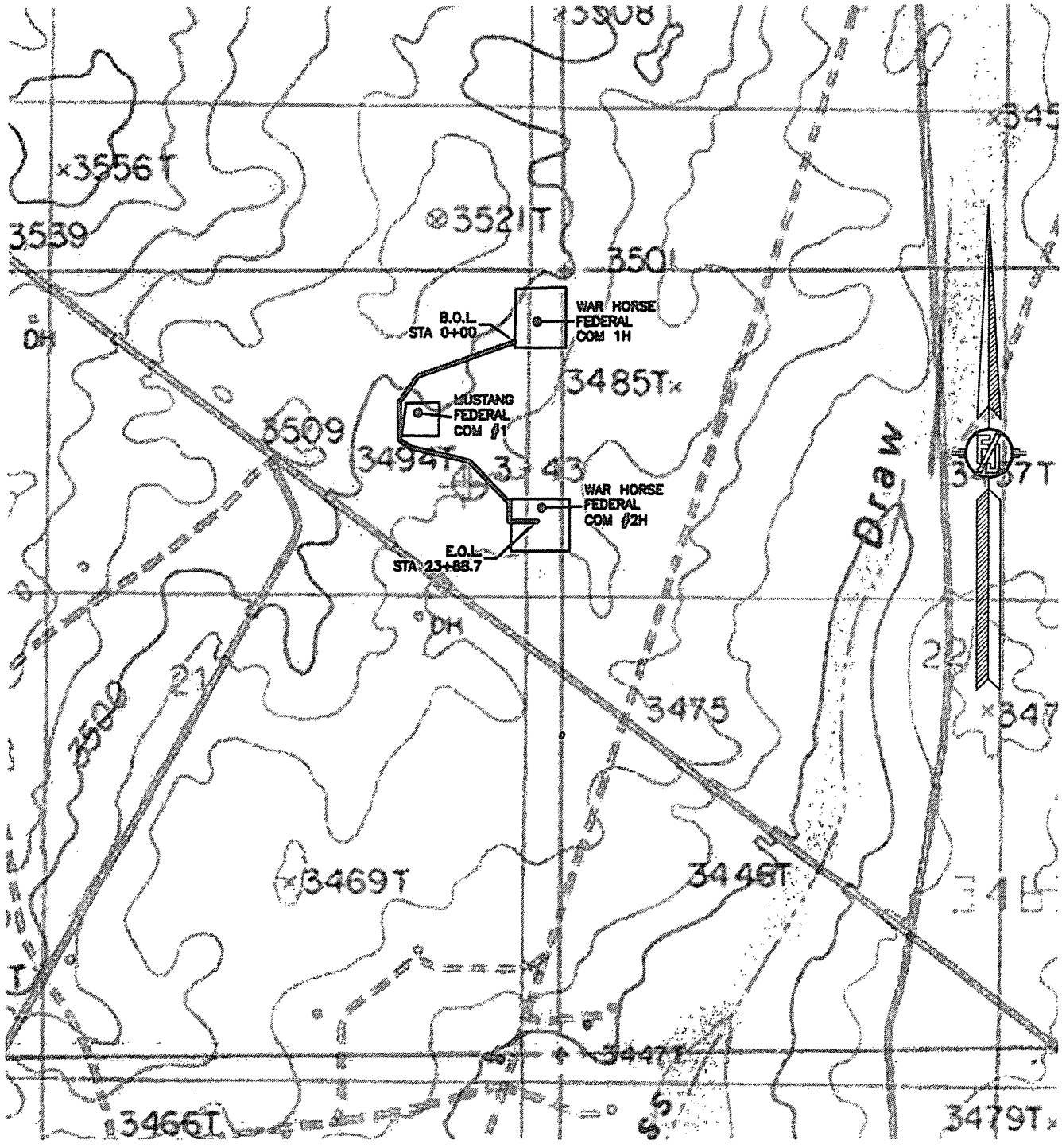
SURVEY NO. 4068A

FLOWLINE PLAT

R-O-W FOR A BURIED 4" SDR 7 POLY WATER LINE FROM WAR HORSE FEDERAL COM #1H TO MUSTANG FEDERAL COM #1 TO PICK UP A PROPOSED 2" STEEL GAS LINE IN THE SAME DITCH THEN TO WAR HORSE FEDERAL COM #2H

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015



SHEET: 3-4 *SURVEY NO. 4068A*

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

FLOWLINE PLAT

R-O-W FOR A BURIED 4" SDR 7 POLY WATER LINE FROM WAR HORSE FEDERAL COM #1H TO MUSTANG FEDERAL COM #1 TO PICK UP A PROPOSED 2" STEEL GAS LINE IN THE SAME DITCH THEN TO WAR HORSE FEDERAL COM #2H

MURCHISON OIL & GAS, INC.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 28, 2015

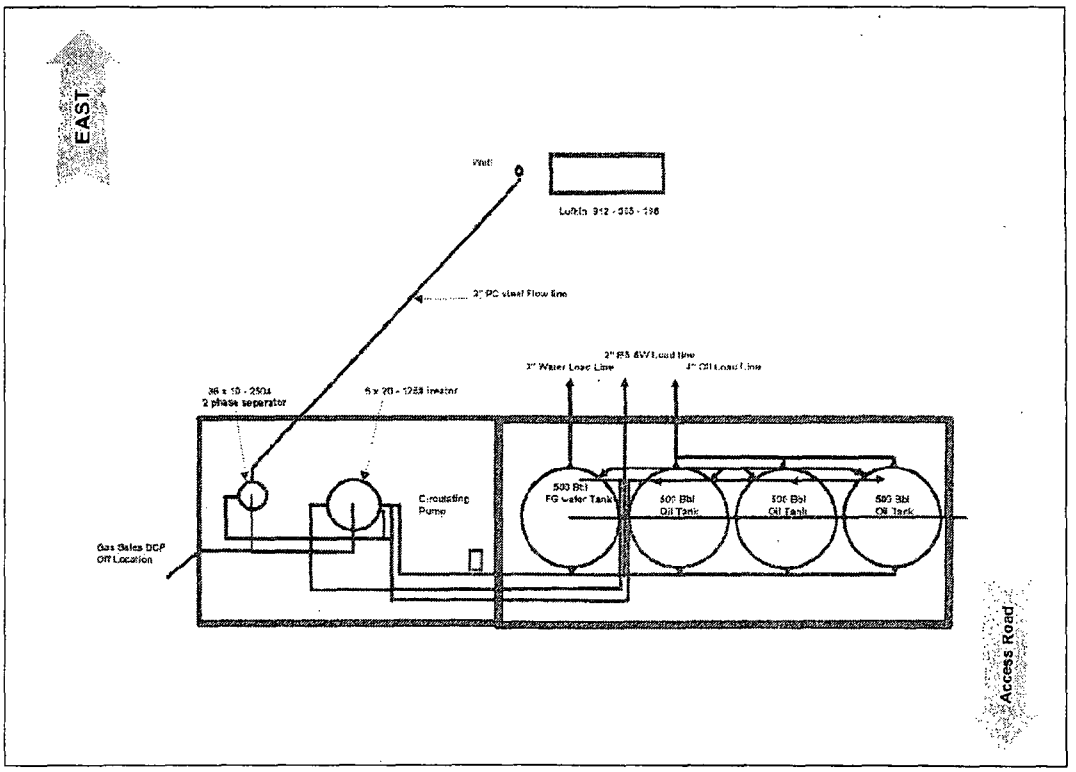
SHEET: 4-4

SURVEY NO. 4068A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

EXHIBIT H

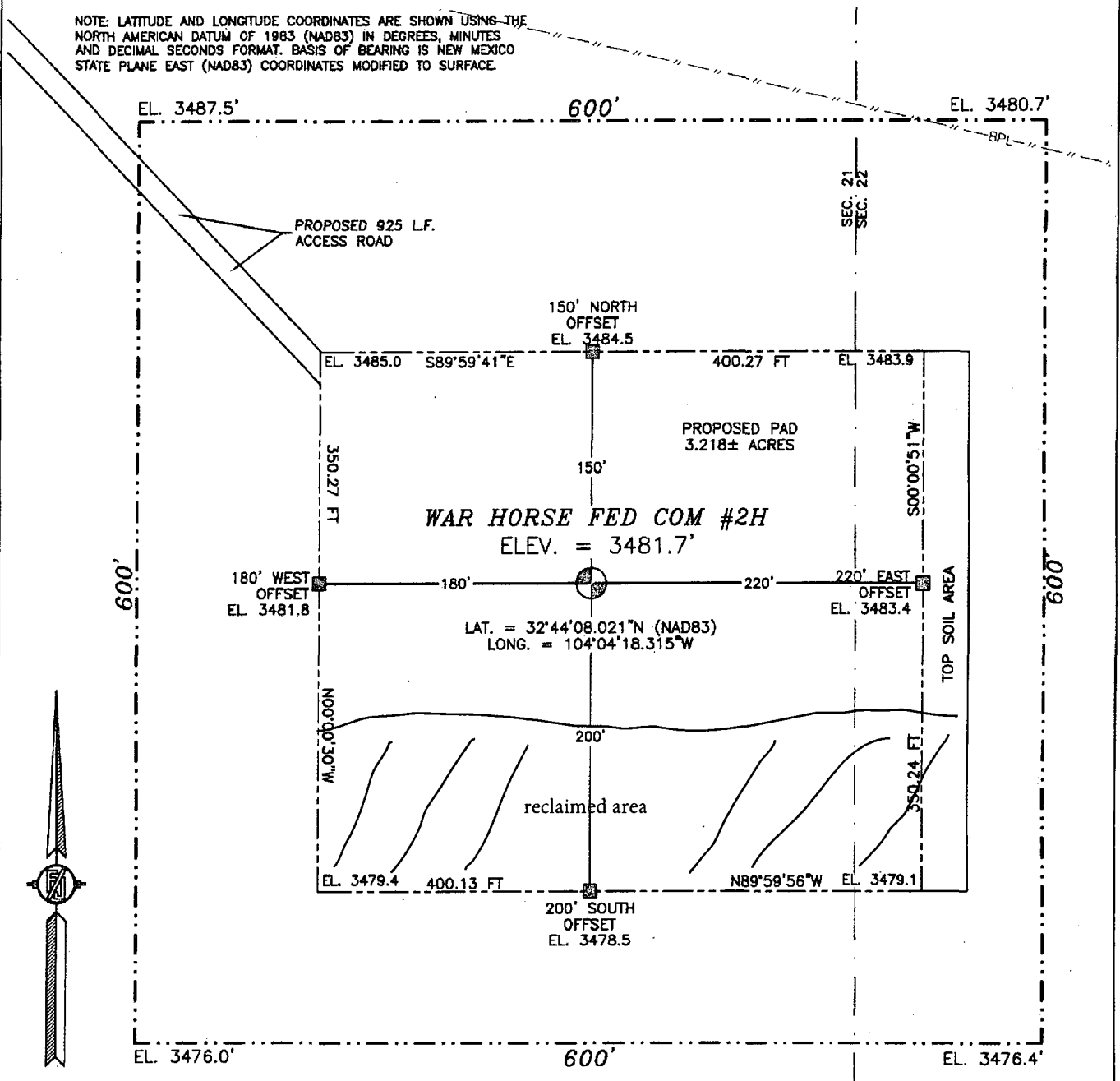
Production Facility Layout
War Horse Federal #1H



Containment Area: Fiberglass container around tanks (Vol = 40' x 100' x 2.89' = 2,064 bbls)
Tank Pad: Tanks set within fiberglass containment
Leak Detection: Leak detection float w/alarm inside fiberglass container; level control alarms on all tanks

EXHIBIT I

SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO



010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR 217 (HAGERMAN CUTOFF RD.) AND SR 360 (BLUESTEM RD.) GO SOUTHEAST ON SR 360 1.29 MILES TO CALICHE LEASE ROAD ON LEFT GO NORTHEAST OVER CATTLE GUARD GO 0.1 MILES TO CALICHE LEASE ROAD ON RIGHT GO 0.19 MILES TO FLAGS ROAD ON RIGHT FLAGS GO SE. 118 FT TO P.I. ON SOUTHWEST SIDE OF B.P.L. THENCE IN A SOUTHEASTERLY DIRECTION PARALLEL TO B.P.L. GO 405 FT. P.I. GO SOUTHERNLY 402 FT. TO THE NORTHWEST CORNER OF PAD

MURCHISON OIL & GAS, INC.
WAR HORSE FED COM #2H

LOCATED 1700 FT. FROM THE NORTH LINE AND 175 FT. FROM THE EAST LINE OF SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

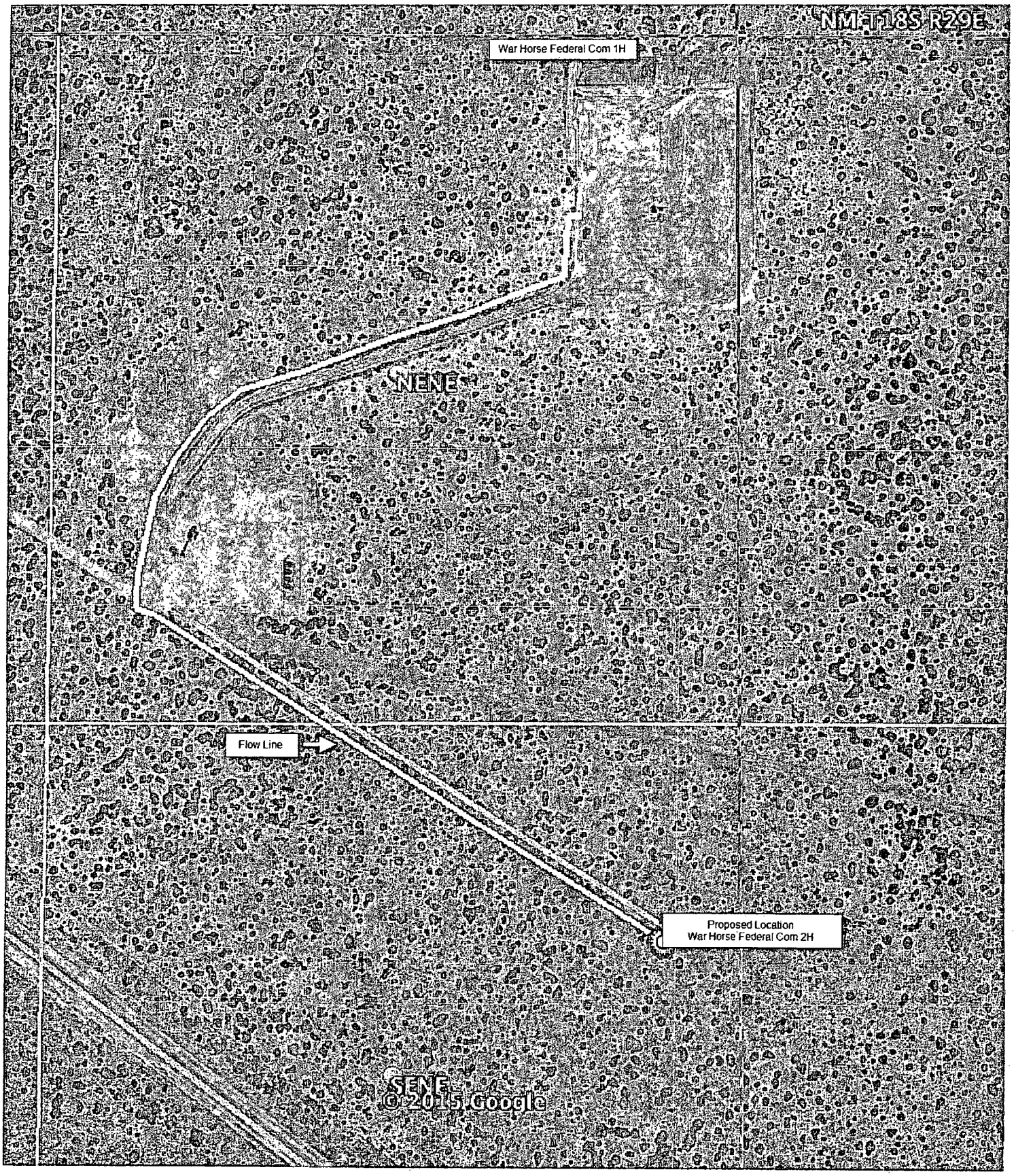
JANUARY 30, 2014

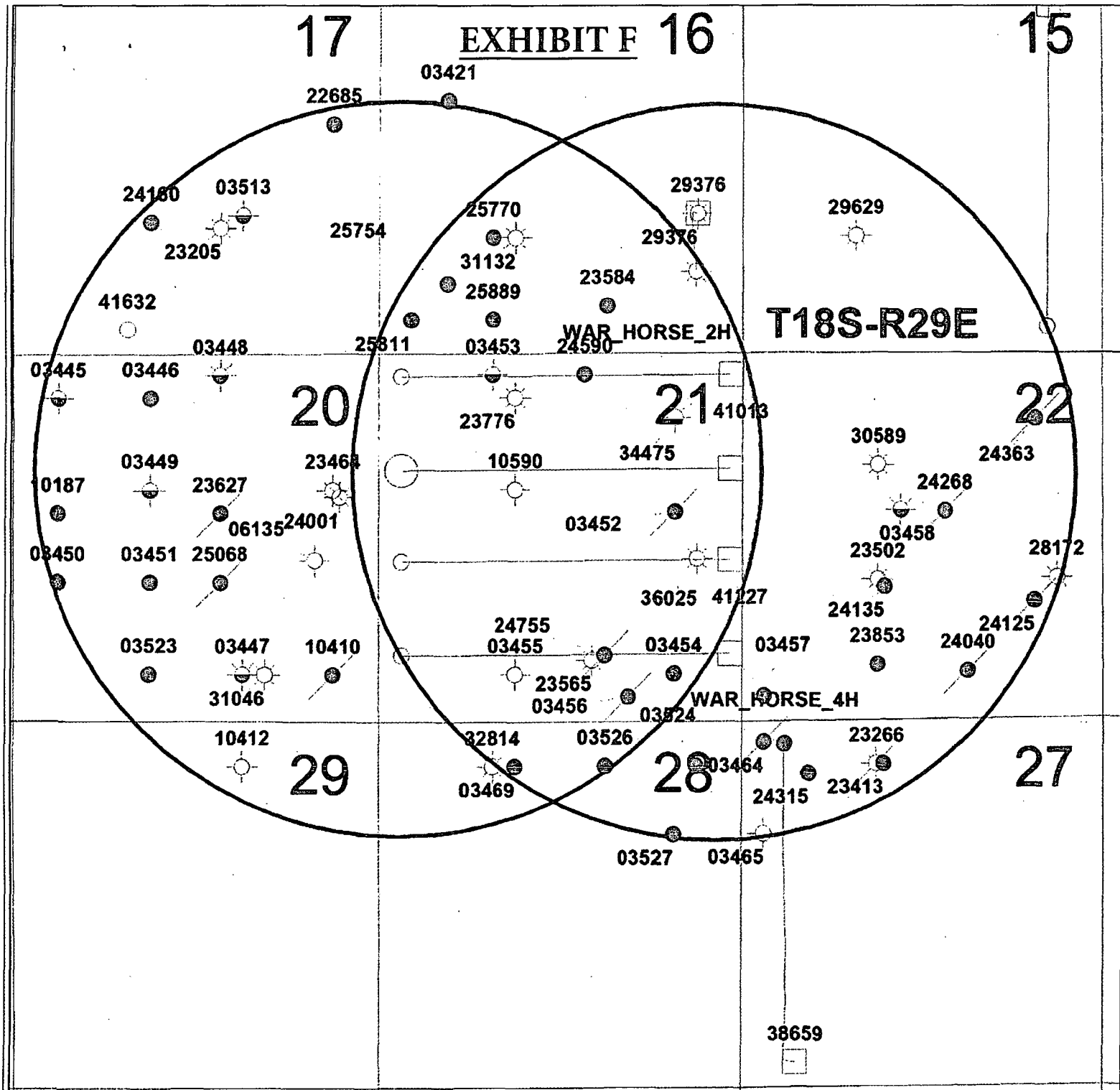
SURVEY NO. 1481C

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

EXHIBIT J

Proposed Pipeline to War Horse Federal Com 1H
Production Facilities





Murchison Oil and Gas

War Horse Fed Com 2H

1 Miles Radius from SHL

0 2,000 4,000

FEET

POSTED WELL DATA

API Series

December 17, 2013

Murchison Oil and Gas
Drilling Prognosis
War Horse Federal Com 2H

Revision date: March 25, 2014; June 5, 2015

Surface Location:	631,428.16usft N, 621,770.02usft E 1700' FNL, 175' FEL Section 21, T-18-S, R-29-E Eddy County, New Mexico
Bottom Hole:	631,412.78usft N, 616,996.36usft E 1700' FNL, 330' FWL Section 21, T-18-S, R-29-E Lea County, New Mexico
Planned Total Depth:	7796' TVD /12,545' MD
RKB: 3503.7'	GL: 3481.7'
Preparer:	Steve Morris; Gary Cooper

Contents

Article I. *Well Overview:*

The War Horse Federal Com 4H will be a horizontal well in the Second Bone Spring Sand.

Article II. *Estimated Formation Tops (geoprognosis with TVD's adjusted to actual KB):*

Formation	TVD	Subsea	Thickness	Type
Salt	267'	-3237'		
Salt Base	827'	-2677'		
Tansil	867'	-2637'		
Yates	1007'	-2497'		
Seven Rivers	1377'	-2127'		
Queen	2017'	-1487'		
Grayburg	2367'	-1137'		
San Andres	2847'	-657'		
Bone Spring Lime	3877'	373'		
1st Bone Spring	6547'	3043'	945'	Hydrocarbon
2nd Bone Spring	7492'	3988'	540'	Hydrocarbon

No shallow water zones as per the attached POD and water column report.

Article III. *Pressure Control:*

A 13-5/8" 5M BOP and 5M choke manifold will be used. See schematics below.
BOP test shall be conducted:

A. when initially installed
B. whenever any seal subject to test pressure is broken
C. following related repairs
D. at 30 day intervals

BOP, choke, kill lines, Kelly cock, inside BOP, etc. will be hydro tested to 250psi(low) and 5,000psi(high). The annular will be tested to 250psi (low) and 2500psi (high).

BOP will be function tested on each trip.

See COA

A Co-Flex hose may be used from the BOP to the Choke Manifold. If this is used the manufacture specifications and certifications will be furnished prior to use. A variance is requested for the use of the co-flex hose.

Downstream of the Choke Manifold assembly 1502(15,000psi working pressure) hammer unions may be used to connect the mud/gas separator. See choke manifold diagram for hammer union possible placement. A variance is requested for the use of these hammer unions.

See COA - only for line from buffer tank to mud/gas separator.

Article IV. *Casing Program (minimum):*

All casing is new API casing.

Hole Size	Casing	Weight lb/ft	Grade	Conn	MD/RKB	Stage
	20"				120'	Conductor
16"	13.375"	54.5	J-55	STC	262'	Surface
12.25"	9.625"	40	L-80	LTC	3100'	Intermediate
8.5"	5.5"	17	P-110	BTC	12545'	Production

Size	Collapse psi	SF	Burst psi	SF	Tension Klbs	SF
13.375	1130	3.08	2730	3.54	514	5.66
9.625	3090	1.28	5750	2.03	727	3.33
5.5	7480	1.55	10640	1.29	568	3.06

13.375" casing will be set 5' above the Salt
9.625" casing will be set in the San Andres

Article V. *Cement Program:*

Section 5.01 13.375" Surface Casing

Tail: 0 – 290'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
14.8ppg	1.34cuft/sk	209	6.31	80%	Class C + 1.5% bwoc Calcium Chloride + 0.005 lbs/sack Static Free + 0.005 gps FP-6L

Circulate cement to surface. If cement does not circulate a 1" grout string will be used to perform a top job.

Cement volumes will be adjusted respectively once actual casing depth is determined and washout from a fluid caliper.

Section 5.02 9.625" Intermediate Casing

Lead: 0 – 2600'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
12.6ppg	2.13cuft/sk	816	8.81	80%	Class C (35:65) + Poz (Fly Ash) + 4% bwoc Bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sack Cello Flake + 0.005 lbs/sack Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride

Tail: 2600 – 3100'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
14.8ppg	1.33cuft/sk	224	6.35	80%	Class C

Circulate cement to surface. If cement does not circulate to surface a top squeeze job or casing perforation will be used.

This will be discussed with the BLM prior to commencing remedial cement job. As well, a temperature survey or CBL will be performed. This will be discussed with the BLM prior to either being run.

Cement volumes will be adjusted accordingly once actual casing depth is determined and washout from a fluid caliper.

Section 5.03 5.5" Production Casing

Lead: Surface-10,900'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
11.9ppg	2.38cuft/sk	1167	13.22	80%	Class H (50:50) + Poz (Fly Ash) + 10% bwoc Bentonite II + 5% bwow Sodium Chloride + 5 lbs/sack LCM-1 + 0.005 lbs/sack Static Free + 0.005 gps FP-6L

Tail: 10900'-TD

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
13ppg	1.64cuft/sk	795	8.49	20%	Class H (15:61:11) Poz (Fly Ash):Class H Cement:CSE-2 + 4% bwow Sodium Chloride + 3 lbs/sack LCM-1 + 0.6% bwoc FL-25 + 0.005 gps FP-6L + 0.005% bwoc Static Free

Circulate cement to surface. If cement does not circulate to surface a top squeeze job or casing perforation will be used.
This will be discussed with the BLM prior to commencing remedial cement job. As well, a temperature survey or CBL will be performed. This will be discussed with the BLM prior to either being run.

Cement volumes will be adjusted accordingly once actual casing depth is determined and washout from a fluid caliper.

Article VI. *Product Descriptions:*

Bentonite II
P105

CSE-2
An additive which contributes to low density, high compressive strength development of cement slurries at all temperature ranges. This material also controls free water without the need for standard extenders.

Calcium Chloride
A powdered, flaked or pelletized material used to decrease thickening time and increase the rate of strength development.

Cello Flake
Graded (3/8 to 3/4 inch) cellophane flakes used as a lost circulation material.

Class C Cement
Intended for use from surface to 6000 ft., and for conditions requiring high early strength and/or sulfate resistance.

Class H Cement
Class H cement is an API type, all purpose oil well cement which is used without modification in wells up to 8,000 ft. It possesses a moderate sulfate resistance. With the use of accelerators or retarders, it can be used in a wide range of well depths and temperatures.

FL-25
An all purpose salt-tolerant fluid loss additive that provides exceptional fluid loss control across a wide range of temperatures and salinity conditions and remedial cementing applications.

FL-52
A water soluble, high molecular weight fluid loss additive used in medium to low density slurries. It is functional from low to high temperature ranges.

FP-6L
A clear liquid that decreases foaming in slurries during mixing.

LCM-1
A graded (8 to 60 mesh) naturally occurring hydrocarbon, asphaltite. It is used as a lost circulation material at low to moderate temperatures and will act as a slurry extender. Cement compressive strength is reduced.

MPA-5
Used to enhanced compressive, tensile, fleural strength development and reduced permeability

Poz (Fly Ash)
A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a filler slurry or a sulfate resistant completion cement.

Sodium Chloride
At low concentrations, it is used to protect against clay swelling.

Sodium Metasilicate
An extender used to produce economical, low density cement slurry.

Static Free
An anti-static additive used to prevent air entrainment due to agglomerated particles. Can be used in Cementing and Fracturing operations to aid in the flow of dry materials.

Article VII. *Mud Program:*

Depth	Hole	Type	MW	PV	YP	WL	pH	Sol %
0- 267	16"	Fresh Water	8.4-8.9	10-12	12-15	NC	9.5	<3.0
267-3100	12.25"	Brine	9.8-10	1	1	NC	9.5	<1.0
3100-KOP	8.5"	Cut Brine	8.4-8.6	1	1	NC	9.5	<1.0
KOP-TD	8.5"	Cut Brine	8.9-9.1	4-6	4-6	18-20	9.5	<3.0

Sufficient mud will be on location to control any abnormal conditions encountered. Such as but not limited to a kick, lost circulation and hole sloughing.

Article VIII. *Mud Monitoring System:*

A Pason PVT system will be rigged up prior to spudding the well. A volume monitoring system that measures, calculates, and displays readings from the mud system on the rig to alert the rig crew of impending gas kicks and lost circulation issues.

Components

a) PVT Pit Bull monitor:

Acts as the heart of the system, containing all the controls, switches, and alarms. Typically, it is mounted near the driller's console.

b) Junction box:

Provides a safe, convenient place for making the wiring connections.

c) Mud probes:

Measure the volume of drilling fluid in each individual tank.

d) Flow sensor:

Measures the relative amount of mud flowing in the return line.

Article IX. *Logging, Drill stem testing and Coring:* See COA for additional requirements

2 man mud logging will start after surface casing has been set.

8.5" hole will have LWD (Gamma Ray) to section TD.

Article X. *Bottom Hole:*

Temperature is expected to be 139°F, using a 0.76°/100' gradient. The bottom hole pressure is expected to be 3430psi maximum using a pressure gradient of 0.44psi/ft. With a partially evacuated hole and a gradient of 0.22psi the maximum surface pressure would be 1715psi.

Article XI. *Abnormal Conditions:*

No abnormal conditions are expected. Temperature is expected to be normal. All zones are expected to be normal pressure.

Lost circulation is possible in both the 16" and 12.25" hole sections. 20ppb of LCM will be maintained in the active system at all times while drilling these sections. As well, a 50bbl pill of 50ppb LCM will be premixed in the slug pit in case lost circulation is encountered. If complete loss circulation is encountered in the Capitan Reef the Brine will be switched over to fresh water. The BLM will be notified of this and an inspector requested to witness the drilling fluid swap.

Article XII. *H2S:*

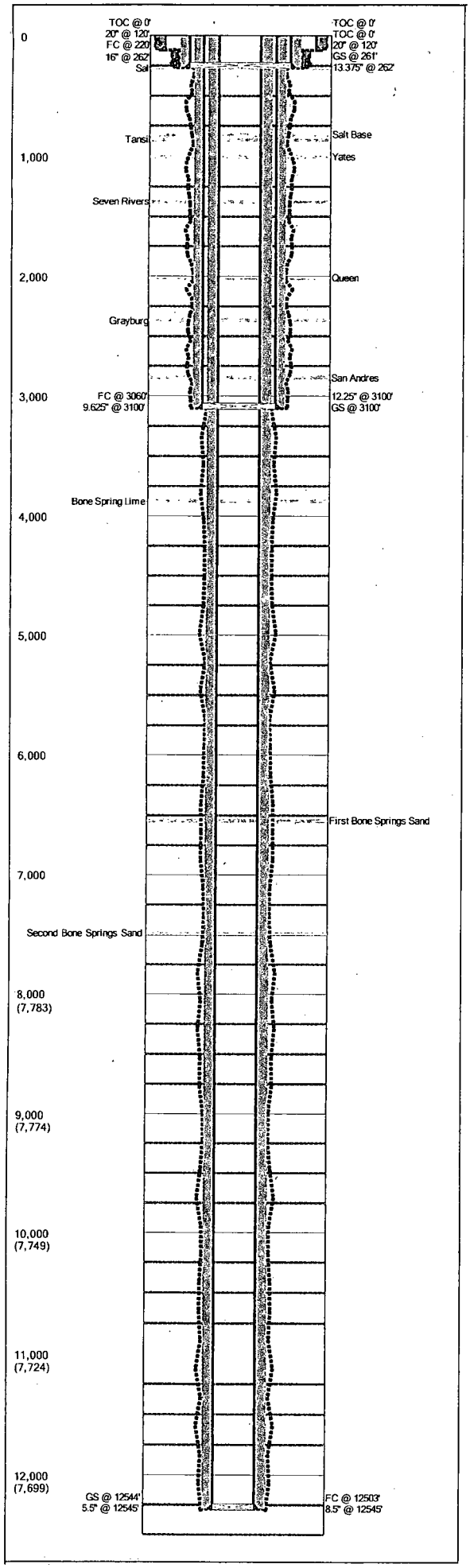
No H2S is expected. But there is the possibility of the presence of H2S. Attached is the H2S response plan. See COA

Article XIII. *Directional:*

Directional survey plan and plot attached.

Article XIV. *Drilling Recorder:*

Rig up EDR & PVT prior to spud to record drilling times and other drilling parameters from surface to TD.



Last Updated: 3/6/2014 10:22 AM

Field Name	Lease Name	Well No.
Mustang	War Horse Federal Com	2H

County, State	API No.
Eddy, New Mexico	00000000123456

Version	Version Tag
1	

G.L. (ft)	K.B. (ft)	Sec.	Township/Block	Range/Survey
3,487.0	3,509.0	21	18S	29E

Operator	Well Status	Latitude	Longitude
Murchison Oil & Gas INC.	Planning		

Footage Call
1700' FNL & 175' FEL From Section

PropNum	Spud Date	Comp. Date

Additional Information

Prepared By	Updated By	Last Updated
Steve Morris	Steve Morris	3/6/2014 10:22 AM

Hole Summary

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	20.000	0	120	
	16.000	120	262	Fresh Water/ 8.4-8.9ppg/ 10-12 PV/ 12-15 YP/ 9.5pH
	12.250	262	3,100	Brine/ 10ppg/ 1 PV/ 1 YP/ 9.5pH
	8.500	3,100	12,545	6500 - KOP Cut Brine/ 8.4-8.6ppg/ 1 PV/ 1 YP/ 9.5pH KOP - TD Cut Brine/ 8.9-9.1ppg/ 4-6 PV/ 4-6 YP/ 18-20 WL/ 9.5pH

Tubular Summary

Date	Description	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)
	Conductor Casing	20.000			0	120
	Surface Casing	13.375	54.50	J-55	0	262
	Intermediate Casing	9.625	40.00	L-80	0	3,100
	Production Casing	5.500	17.00	P-110	0	12,545

Casing Cement Summary

Date	No. Sx	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	209	13.375	0	262	120' Casing in conductor with no excess 126.7cuft 22.6bbls 94sx 142' casing in open hole with 100% excess 119.4cuft 21.3bbls 89sx Shoe track 40ft with no excess 34.7cuft 6.2bbls 26sx
	1,041	9.625	0	3,100	262' Lead Casing in casing with no excess 94.9cuft 16.9bbls 55sx 2338' Lead Casing in open hole with 80% excess 1318cuft 234.7bbls 761sx 500' Tail Casing in open hole with 80% excess 281.9cuft 50.2bbls 212sx 40' Tail in Shoe Track with no excess 16.2cuft 2.9bbls 12sx
	1,957	5.500	0	12,545	3100' Lead Casing in casing with no excess 808.3cuft 144bbls 340sx 4775' Lead Casing in open hole with 80% excess 1968.9cuft 350.7bbls 827sx 4670' Tail Casing in open hole with 20% excess 1283.7cuft 228.6bbls 783sx 80' Shoe Track with no excess 10.8cuft 1.9bbls 7sx

Tools/Problems Summary

Last Updated: 3/6/2014 10:22 AM

Date	Tool Type	O.D. (in)	I.D. (in)	Top (MD ft)	Bottom (MD ft)
	FC	13.375	0.000	220	0
	GS	13.375	0.000	261	0
	FC	9.625	0.000	3,060	0
	GS	9.625	0.000	3,100	0
	FC	5.500	0.000	12,503	0
	GS	5.500	0.000	12,544	0

Formation Tops Summary

Formation	Top (MD ft)	Comments
Salt	267	Interbedded Halite with stringers of other evaporite minerals
Salt Base	827	Base of Salt
Tansil	867	Chiefly consisting of Evaporites, breaks of dolomite, silt and fine sand to shale, transitions to cheifly dolomite higher in the section
Yates	1,007	Interbedded red and grey sandstones, shale and anhydrite, as well as some dolomite facies
Seven Rivers	1,377	Contains mostly gypsum and red sandstones, however shelfward the seven rivers contains halite as well
Queen	2,017	Interbedded Sandstones & Carbonate beds with varying depositional system
Grayburg	2,367	Interbedded Sandstones & Carbonate beds with varying depositional system
San Andres	2,847	Carbonate beds with depositional systems ranging from Tidal to potentially deep Marine
Bone Spring Lime	3,877	Marker bed for the top of the Leonardian age rocks
First Bone Springs Sand	6,547	Hydrocarbon. Interbedded Argiliceous quartz-rich siltstones with interbedded organic-rich silt beds
Second Bone Springs Sand	7,492	Hydrocarbon. Interbedded Argiliceous quartz-rich siltstones with interbedded organic-rich silt beds

Last Updated: 3/6/2014 10:22 AM

Field Name	Lease Name	Well No.	County, State	API No.
Mustang	War Horse Federal Com	2H	Eddy, New Mexico	00000000123456

Version	Version Tag	Spud Date	Comp. Date	G.L. (ft)	K.B. (ft)
1				3,487.0	3,509.0

Sec.	Township/Block	Range/Survey	Footage Call
21	18S	29E	1700' FNL & 175' FEL From Section

Operator	Well Status	Latitude	Longitude	PropNum
Murchison Oil & Gas INC.	Planning			

Last Updated	Prepared By	Updated By
03/06/2014 10:22 AM	Steve Morris	Steve Morris

Additional Information

Hole Summary

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	20.000	0	120	
	16.000	120	262	Fresh Water/ 8.4-8.9ppg/ 10-12 PV/ 12-15 YP/ 9.5pH
	12.250	262	3,100	Brine/ 10ppg/ 1 PV/ 1 YP/ 9.5pH
	8.500	3,100	12,545	6500 - KOP Cut Brine/ 8.4-8.6ppg/ 1 PV/ 1 YP/ 9.5pH KOP - TD Cut Brine/ 8.9-9.1ppg/ 4-6 PV/ 4-6 YP/ 18-20 WL/ 9.5pH

Tubular Summary

Date	Description	No. Jts	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)	Comments
	Conductor Casing		20.000			0	120	
	Surface Casing		13.375	54.50	J-55	0	262	Set above the salt zone Collapse 1130psi S.F. 3.08 Burst 2730psi S.F. 3.54 Tension 514,000 S.F. 5.66
	Intermediate Casing		9.625	40.00	L-80	0	3,100	Set in the Bone Spring Lime Collapse 3090psi S.F. 1.64 Burst 5750psi S.F. 2.03 Tension 727,000 S.F. 2.92
	Production Casing		5.500	17.00	P-110	0	12,545	Collapse 7480psi S.F. 1.55 Burst 10640psi S.F. 1.29 Tension 568,000 S.F. 3.06

Casing Cement Summary

Date	No. Sx	Yield (cuft/sk)	Vol. (cuft)	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Description	Comments
	209			13.375	0	262	209 sx 14.8ppg Yield 1.35cuft/sk 6.35 gpsClass C + 2% CACL2 + 0.25# CF + 0.005# SF	120' Casing in conductor with no excess 126.7cuft 22.6bbls 94sx 142' casing in open hole with 100% excess 119.4cuft 21.3bbls 89sx Shoe track 40ft with no excess 34.7cuft 6.2bbls 26sx
	1,041			9.625	0	3,100	Lead 1925 sx 12.6ppg Yield 1.73cuft/sk 8.8gps(60:40) Poz (Fly Ash):Class C Cement + 0.005 lbs/sack Static Free + 5% bwow SodiumChloride + 0.15% bwoc R-3 + 0.125 lbs/sack CelloFlake + 3 lbs/sack LCM-1 + 0.25% bwoc FL-52 +0.005 gps FP-6L + 1% bwoc Sodium Metasilicate Tail 224 sx 14.8ppg Yield 1.33cuft 6.31gpsClass C Cement + 0.005 lbs/sack Static Free + 0.1% bwoc R-3 + 0.125 lbs/sack Cello Flake	262' Lead Casing in casing with no excess 94.9cuft 16.9bbls 55sx 2338' Lead Casing in open hole with 80% excess 1318cuft 234.7bbls 761sx 500' Tail Casing in open hole with 80% excess 281.9cuft 50.2bbls 212sx 40' Tail in Shoe Track with no excess 16.2cuft 2.9bbls 12sx
	1,957			5.500	0	12,545	Lead sx 11.9ppg Yield 2.38cuft/sk 13.22gps50/50/10 H+.45%FL52+5%SALT+.25%R 3+3#LCM-1+.005# SF Tail sx 13ppg Yield 1.64cuft/sk 8.49gps(15:61:11) Poz (Fly Ash):Class C Cement:CSE-2 + 0.4% bwoc FL-25 + 0.4% bwoc FL-52 + 0.5% bwoc BA-10A + 0.1% bwoc R-21	3100' Lead Casing in casing with no excess 808.3cuft 144bbls 340sx 4775' Lead Casing in open hole with 80% excess 1968.9cuft 350.7bbls 827sx 4670' Tail Casing in open hole with 20% excess 1283.7cuft 228.6bbls 783sx 80' Shoe Track with no excess 10.8cuft 1.9bbls 7sx

Tools/Problems Summary

Date	Tool Type	O.D. (in)	I.D. (in)	Top (MD ft)	Bottom (MD ft)	Description	Comments
	Float Collar	13.375	0.000	220	0		
	Guide Shoe	13.375	0.000	261	0		
	Float Collar	9.625	0.000	3,060	0		
	Guide Shoe	9.625	0.000	3,100	0		
	Float Collar	5.500	0.000	12,503	0		
	Guide Shoe	5.500	0.000	12,544	0		

Formation Top Summary

Formation Name	Top (MD ft)	Comments
Salt	267	Interbedded Halite with stringers of other evaporite minerals
Salt Base	827	Base of Salt
Tansil	867	Chiefly consisting of Evaporites, breaks of dolomite, silt and fine sand to shale, transitions to cheifly dolomite higher in the section

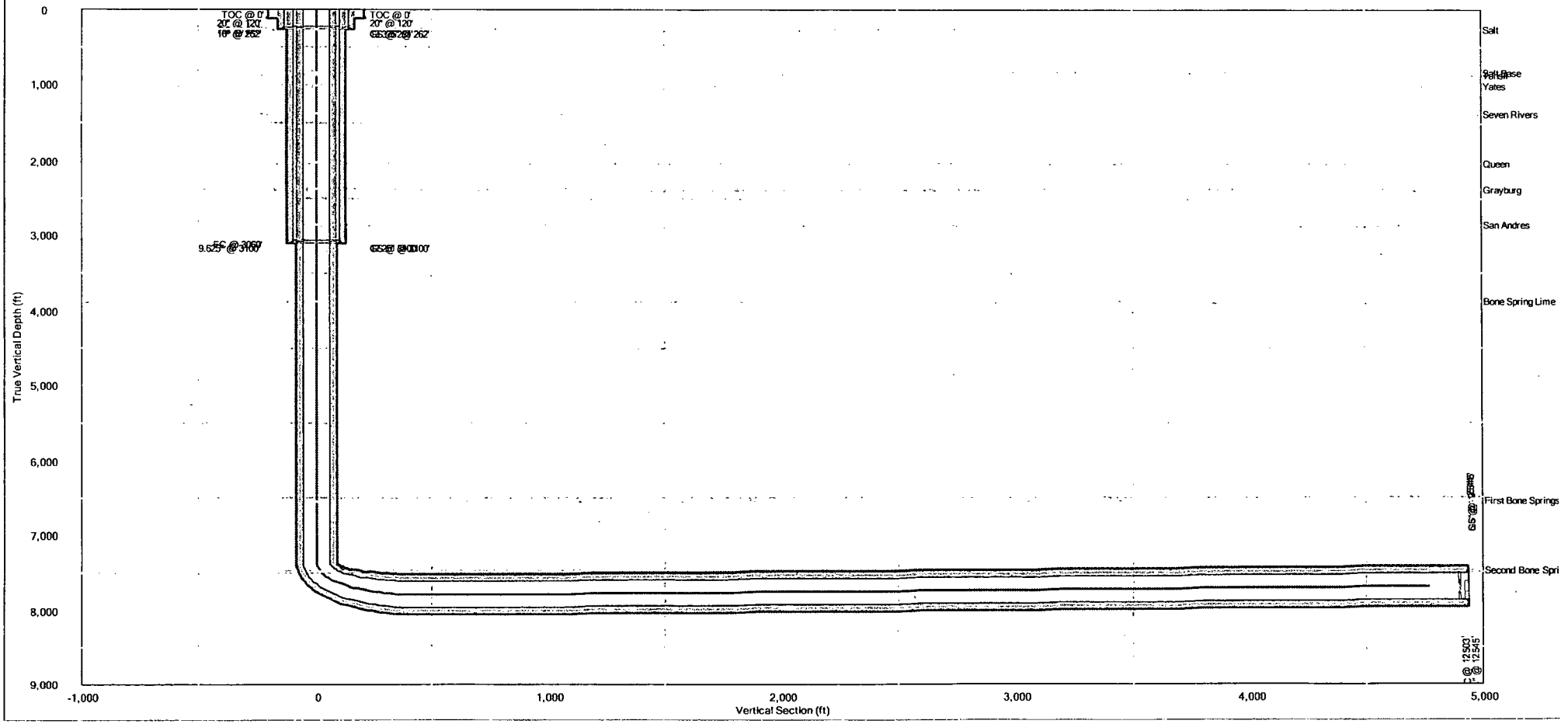
Last Updated: 3/6/2014 10:22 AM

Formation Name	Top (MD ft)	Comments
Yates	1,007	*Interbedded red and grey sandstones, shale and anhydrite, as well as some dolomite facies*
Seven Rivers	1,377	Contains mostly gypsum and red sandstones, however shelfward the seven rivers contains halite as well
Queen	2,017	Interbedded Sandstones & Carbonate beds with varying depositional system
Grayburg	2,367	Interbedded Sandstones & Carbonate beds with varying depositional system
San Andres	2,847	Carbonate beds with depositional systems ranging from Tidal to potentially deep Marine
Bone Spring Lime	3,877	Marker bed for the top of the Leonardian age rocks
First Bone Springs Sand	6,547	Hydrocarbon. Interbedded Argiliceous quartz-rich siltstones with interbedded organic-rich silt beds
Second Bone Springs Sand	7,492	Hydrocarbon. Interbedded Argiliceous quartz-rich siltstones with interbedded organic-rich silt beds

Field Name	Lease Name	Well No.	County, State	API No.	Version	Version Tag	Spud Date	Comp. Date	G.L. (ft)	K.B. (ft)
Mustang	War Horse Federal Com	2H	Eddy, New Mexico	00000000123456	1				3,487.0	3,509.0

Sec.	Township/Block	Range/Survey	Footage Call	Latitude	Longitude	Well Status	PropNum	Operator
21	18S	29E	1700' FNL & 175' FEL From Section			Planning		Murchison Oil & Gas INC.

Last Updated	Prepared By	Updated By	Additional Information
3/06/14 10:22:29 AM	Steve Morris	Steve Morris	



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 21 **Township:** 18S **Range:** 29E

MURCHISON OIL & GAS, INC.

Murchison Oil and Gas

Mustang
Mustang Section 21
War Horse Federal Com #2H

Plan: 140304 War Horse Federal Com #2H

MOJO Standard Plan

04 March, 2014

MOJO
DIRECTIONAL CORPORATION

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Project Mustang

Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		Using geodetic scale factor

Site Mustang Section 21

Site Position:		Northing:	632,777.80 usft	Latitude:	32° 44' 21.376 N
From:	Lat/Long	Easting:	621,766.69 usft	Longitude:	104° 4' 18.315 W
Position Uncertainty:	1.0 usft	Slot Radius:	16 "	Grid Convergence:	0.14 °

Well War Horse Federal Com #2H

Well Position	+N/-S	0.0 usft	Northing:	631,428.16 usft	Latitude:	32° 44' 8.021 N
	+E/-W	0.0 usft	Easting:	621,770.02 usft	Longitude:	104° 4' 18.315 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,481.7 usft

Wellbore War Horse Federal Com #2H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/12/2013	7.55	60.51	48,619

Design 140304 War Horse Federal Com #2H

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	269.82

Survey Tool Program Date 04/03/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	12,544.4	140304 War Horse Federal Com #2H (Wa	MWD	MWD - Standard

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.0	-3,503.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
100.0	0.00	0.00	100.0	-3,403.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
200.0	0.00	0.00	200.0	-3,303.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
300.0	0.00	0.00	300.0	-3,203.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
303.0	0.00	0.00	303.0	-3,200.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
13 3/8"										
303.7	0.00	0.00	303.7	-3,200.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Salt										
400.0	0.00	0.00	400.0	-3,103.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
500.0	0.00	0.00	500.0	-3,003.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
600.0	0.00	0.00	600.0	-2,903.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
700.0	0.00	0.00	700.0	-2,803.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
800.0	0.00	0.00	800.0	-2,703.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
833.7	0.00	0.00	833.7	-2,670.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Salt Base										
900.0	0.00	0.00	900.0	-2,603.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
923.7	0.00	0.00	923.7	-2,580.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Tansil										
1,000.0	0.00	0.00	1,000.0	-2,503.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,100.0	0.00	0.00	1,100.0	-2,403.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,133.7	0.00	0.00	1,133.7	-2,370.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Yates										
1,200.0	0.00	0.00	1,200.0	-2,303.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,300.0	0.00	0.00	1,300.0	-2,203.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,400.0	0.00	0.00	1,400.0	-2,103.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,433.7	0.00	0.00	1,433.7	-2,070.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Seven Rivers										
1,500.0	0.00	0.00	1,500.0	-2,003.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
1,600.0	0.00	0.00	1,600.0	-1,903.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,700.0	0.00	0.00	1,700.0	-1,803.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,800.0	0.00	0.00	1,800.0	-1,703.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
1,900.0	0.00	0.00	1,900.0	-1,603.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,000.0	0.00	0.00	2,000.0	-1,503.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,058.7	0.00	0.00	2,058.7	-1,445.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Queen										
2,100.0	0.00	0.00	2,100.0	-1,403.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,200.0	0.00	0.00	2,200.0	-1,303.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,300.0	0.00	0.00	2,300.0	-1,203.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,400.0	0.00	0.00	2,400.0	-1,103.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,403.7	0.00	0.00	2,403.7	-1,100.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Grayburg										
2,500.0	0.00	0.00	2,500.0	-1,003.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,600.0	0.00	0.00	2,600.0	-903.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,700.0	0.00	0.00	2,700.0	-803.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,800.0	0.00	0.00	2,800.0	-703.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,900.0	0.00	0.00	2,900.0	-603.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
2,903.7	0.00	0.00	2,903.7	-600.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
San Andres										
3,000.0	0.00	0.00	3,000.0	-503.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,100.0	0.00	0.00	3,100.0	-403.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
9 5/8"										
3,200.0	0.00	0.00	3,200.0	-303.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,300.0	0.00	0.00	3,300.0	-203.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,400.0	0.00	0.00	3,400.0	-103.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,500.0	0.00	0.00	3,500.0	-3.7	0.0	0.0	0.0	0.00	631,428.16	621,770.02

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
3,600.0	0.00	0.00	3,600.0	96.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,700.0	0.00	0.00	3,700.0	196.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,800.0	0.00	0.00	3,800.0	296.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,900.0	0.00	0.00	3,900.0	396.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
3,968.7	0.00	0.00	3,968.7	465.0	0.0	0.0	0.0	0.00	631,428.16	621,770.02
Bone Spring Lime										
4,000.0	0.00	0.00	4,000.0	496.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,100.0	0.00	0.00	4,100.0	596.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,200.0	0.00	0.00	4,200.0	696.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,300.0	0.00	0.00	4,300.0	796.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,400.0	0.00	0.00	4,400.0	896.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,500.0	0.00	0.00	4,500.0	996.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,600.0	0.00	0.00	4,600.0	1,096.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,700.0	0.00	0.00	4,700.0	1,196.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,800.0	0.00	0.00	4,800.0	1,296.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
4,900.0	0.00	0.00	4,900.0	1,396.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,000.0	0.00	0.00	5,000.0	1,496.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,100.0	0.00	0.00	5,100.0	1,596.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,200.0	0.00	0.00	5,200.0	1,696.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,300.0	0.00	0.00	5,300.0	1,796.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,400.0	0.00	0.00	5,400.0	1,896.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,500.0	0.00	0.00	5,500.0	1,996.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,577.0	0.00	0.00	5,577.0	2,073.3	0.0	0.0	0.0	0.00	631,428.16	621,770.02
5,600.0	0.69	90.00	5,600.0	2,096.3	0.0	0.1	-0.1	3.00	631,428.16	621,770.16
5,700.0	3.69	90.00	5,699.9	2,196.2	0.0	4.0	-4.0	3.00	631,428.16	621,773.98
5,777.0	6.00	90.00	5,776.6	2,272.9	0.0	10.5	-10.5	3.00	631,428.16	621,780.49
5,800.0	6.00	90.00	5,799.5	2,295.8	0.0	12.9	-12.9	0.00	631,428.16	621,782.89

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
5,900.0	6.00	90.00	5,899.0	2,395.3	0.0	23.3	-23.3	0.00	631,428.16	621,793.34
6,000.0	6.00	90.00	5,998.4	2,494.7	0.0	33.8	-33.8	0.00	631,428.16	621,803.79
6,100.0	6.00	90.00	6,097.9	2,594.2	0.0	44.2	-44.2	0.00	631,428.16	621,814.25
6,200.0	6.00	90.00	6,197.3	2,693.6	0.0	54.7	-54.7	0.00	631,428.16	621,824.70
6,300.0	6.00	90.00	6,296.8	2,793.1	0.0	65.1	-65.1	0.00	631,428.16	621,835.15
6,400.0	6.00	90.00	6,396.2	2,892.5	0.0	75.6	-75.6	0.00	631,428.16	621,845.60
6,500.0	6.00	90.00	6,495.7	2,992.0	0.0	86.0	-86.0	0.00	631,428.16	621,856.05
6,600.0	6.00	90.00	6,595.1	3,091.4	0.0	96.5	-96.5	0.00	631,428.16	621,866.51
6,689.1	6.00	90.00	6,683.7	3,180.0	0.0	105.8	-105.8	0.00	631,428.16	621,875.81
1st Bone Spring										
6,700.0	6.00	90.00	6,694.6	3,190.9	0.0	106.9	-106.9	0.00	631,428.16	621,876.96
6,800.0	6.00	90.00	6,794.0	3,290.3	0.0	117.4	-117.4	0.00	631,428.16	621,887.41
6,900.0	6.00	90.00	6,893.5	3,389.8	0.0	127.8	-127.8	0.00	631,428.16	621,897.86
7,000.0	6.00	90.00	6,992.9	3,489.2	0.0	138.3	-138.3	0.00	631,428.16	621,908.31
7,100.0	6.00	90.00	7,092.4	3,588.7	0.0	148.8	-148.8	0.00	631,428.16	621,918.77
7,200.0	6.00	90.00	7,191.8	3,688.1	0.0	159.2	-159.2	0.00	631,428.16	621,929.22
7,277.0	6.00	90.00	7,268.4	3,764.7	0.0	167.3	-167.3	0.00	631,428.16	621,937.27
7,300.0	3.24	90.00	7,291.3	3,787.6	0.0	169.1	-169.1	12.00	631,428.16	621,939.12
7,325.0	0.24	90.00	7,316.3	3,812.6	0.0	169.9	-169.9	12.00	631,428.16	621,939.88
7,350.0	2.76	270.00	7,341.3	3,837.6	0.0	169.3	-169.3	12.00	631,428.16	621,939.33
7,375.0	5.76	270.00	7,366.2	3,862.5	0.0	167.5	-167.5	12.00	631,428.16	621,937.47
7,400.0	8.76	270.00	7,391.0	3,887.3	0.0	164.3	-164.3	12.00	631,428.16	621,934.31
7,425.0	11.76	270.00	7,415.6	3,911.9	0.0	159.8	-159.8	12.00	631,428.16	621,929.86
7,450.0	14.76	270.00	7,440.0	3,936.3	0.0	154.1	-154.1	12.00	631,428.16	621,924.13
7,475.0	17.76	270.00	7,464.0	3,960.3	0.0	147.1	-147.1	12.00	631,428.16	621,917.13
7,500.0	20.76	270.00	7,487.6	3,983.9	0.0	138.9	-138.9	12.00	631,428.16	621,908.88
7,525.0	23.76	270.00	7,510.7	4,007.0	0.0	129.4	-129.4	12.00	631,428.16	621,899.42

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
7,550.0	26.76	270.00	7,533.3	4,029.6	0.0	118.7	-118.7	12.00	631,428.16	621,888.75
7,550.4	26.81	270.00	7,533.7	4,030.0	0.0	118.5	-118.5	12.00	631,428.16	621,888.55
2nd Bone Spring										
7,575.0	29.76	270.00	7,555.3	4,051.6	0.0	106.9	-106.9	12.00	631,428.16	621,876.91
7,600.0	32.76	270.00	7,576.7	4,073.0	0.0	93.9	-93.9	12.00	631,428.16	621,863.94
7,625.0	35.76	270.00	7,597.4	4,093.7	0.0	79.9	-79.9	12.00	631,428.16	621,849.87
7,650.0	38.76	270.00	7,617.2	4,113.5	0.0	64.7	-64.7	12.00	631,428.16	621,834.74
7,675.0	41.76	270.00	7,636.3	4,132.6	0.0	48.6	-48.6	12.00	631,428.16	621,818.59
7,700.0	44.76	270.00	7,654.5	4,150.8	0.0	31.4	-31.4	12.00	631,428.16	621,801.46
7,725.0	47.76	270.00	7,671.8	4,168.1	0.0	13.4	-13.4	12.00	631,428.16	621,783.40
7,750.0	50.76	270.00	7,688.1	4,184.4	0.0	-5.6	5.6	12.00	631,428.16	621,764.46
7,775.0	53.76	270.00	7,703.4	4,199.7	0.0	-25.3	25.3	12.00	631,428.16	621,744.70
7,800.0	56.76	270.00	7,717.7	4,214.0	0.0	-45.9	45.9	12.00	631,428.16	621,724.16
7,825.0	59.76	270.00	7,730.8	4,227.1	0.0	-67.1	67.1	12.00	631,428.16	621,702.90
7,850.0	62.76	270.00	7,742.8	4,239.1	0.0	-89.0	89.0	12.00	631,428.16	621,680.98
7,875.0	65.76	270.00	7,753.7	4,250.0	0.0	-111.6	111.6	12.00	631,428.16	621,658.47
7,900.0	68.76	270.00	7,763.4	4,259.7	0.0	-134.6	134.6	12.00	631,428.16	621,635.42
7,925.0	71.76	270.00	7,771.8	4,268.1	0.0	-158.1	158.1	12.00	631,428.16	621,611.89
7,950.0	74.76	270.00	7,779.0	4,275.3	0.0	-182.1	182.1	12.00	631,428.16	621,587.95
7,975.0	77.76	270.00	7,784.9	4,281.2	0.0	-206.4	206.4	12.00	631,428.16	621,563.67
8,000.0	80.76	270.00	7,789.6	4,285.9	0.0	-230.9	230.9	12.00	631,428.16	621,539.12
8,025.0	83.76	270.00	7,793.0	4,289.3	0.0	-255.7	255.7	12.00	631,428.16	621,514.35
8,050.0	86.76	270.00	7,795.0	4,291.3	0.0	-280.6	280.6	12.00	631,428.16	621,489.44
8,077.0	90.00	270.00	7,795.8	4,292.1	0.0	-307.6	307.6	12.00	631,428.16	621,462.46
8,100.0	90.02	270.00	7,795.8	4,292.1	0.0	-330.6	330.6	0.11	631,428.16	621,439.46
8,200.0	90.13	269.98	7,795.7	4,292.0	0.0	-430.6	430.6	0.11	631,428.14	621,339.47
8,300.0	90.23	269.96	7,795.3	4,291.6	-0.1	-530.6	530.6	0.11	631,428.08	621,239.48

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V.Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
8,400.0	90.34	269.94	7,794.8	4,291.1	-0.2	-630.6	630.6	0.11	631,428.00	621,139.49
8,500.0	90.44	269.92	7,794.2	4,290.5	-0.3	-730.6	730.6	0.11	631,427.88	621,039.50
8,600.0	90.55	269.91	7,793.3	4,289.6	-0.4	-830.6	830.6	0.11	631,427.73	620,939.51
8,700.0	90.65	269.89	7,792.3	4,288.6	-0.6	-930.6	930.6	0.11	631,427.56	620,839.52
8,800.0	90.75	269.87	7,791.0	4,287.3	-0.8	-1,030.6	1,030.6	0.11	631,427.35	620,739.54
8,900.0	90.86	269.85	7,789.6	4,285.9	-1.1	-1,130.6	1,130.6	0.11	631,427.11	620,639.56
9,000.0	90.96	269.84	7,788.0	4,284.3	-1.3	-1,230.5	1,230.5	0.11	631,426.84	620,539.58
9,100.0	91.07	269.82	7,786.3	4,282.6	-1.6	-1,330.5	1,330.5	0.11	631,426.53	620,439.60
9,200.0	91.17	269.80	7,784.3	4,280.6	-2.0	-1,430.5	1,430.5	0.11	631,426.20	620,339.63
9,300.0	91.27	269.78	7,782.2	4,278.5	-2.3	-1,530.5	1,530.5	0.11	631,425.84	620,239.66
9,373.8	91.35	269.77	7,780.5	4,276.8	-2.6	-1,604.3	1,604.3	0.11	631,425.55	620,165.89
9,400.0	91.35	269.77	7,779.9	4,276.2	-2.7	-1,630.5	1,630.5	0.00	631,425.44	620,139.70
9,500.0	91.35	269.77	7,777.5	4,273.8	-3.1	-1,730.4	1,730.4	0.00	631,425.04	620,039.74
9,600.0	91.35	269.77	7,775.2	4,271.5	-3.5	-1,830.4	1,830.4	0.00	631,424.64	619,939.77
9,700.0	91.35	269.77	7,772.8	4,269.1	-3.9	-1,930.4	1,930.4	0.00	631,424.23	619,839.81
9,800.0	91.35	269.77	7,770.4	4,266.7	-4.3	-2,030.3	2,030.4	0.00	631,423.83	619,739.85
9,900.0	91.35	269.77	7,768.1	4,264.4	-4.7	-2,130.3	2,130.3	0.00	631,423.43	619,639.88
10,000.0	91.35	269.77	7,765.7	4,262.0	-5.1	-2,230.3	2,230.3	0.00	631,423.03	619,539.92
10,100.0	91.35	269.77	7,763.4	4,259.7	-5.5	-2,330.3	2,330.3	0.00	631,422.62	619,439.96
10,200.0	91.35	269.77	7,761.0	4,257.3	-5.9	-2,430.2	2,430.2	0.00	631,422.22	619,339.99
10,300.0	91.35	269.77	7,758.6	4,254.9	-6.3	-2,530.2	2,530.2	0.00	631,421.82	619,240.03
10,400.0	91.35	269.77	7,756.3	4,252.6	-6.7	-2,630.2	2,630.2	0.00	631,421.42	619,140.07
10,500.0	91.35	269.77	7,753.9	4,250.2	-7.1	-2,730.1	2,730.2	0.00	631,421.01	619,040.10
10,600.0	91.35	269.77	7,751.6	4,247.9	-7.5	-2,830.1	2,830.1	0.00	631,420.61	618,940.14
10,700.0	91.35	269.77	7,749.2	4,245.5	-8.0	-2,930.1	2,930.1	0.00	631,420.21	618,840.18
10,800.0	91.35	269.77	7,746.9	4,243.2	-8.4	-3,030.1	3,030.1	0.00	631,419.81	618,740.22
10,900.0	91.35	269.77	7,744.5	4,240.8	-8.8	-3,130.0	3,130.0	0.00	631,419.40	618,640.25

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11,000.0	91.35	269.77	7,742.1	4,238.4	-9.2	-3,230.0	3,230.0	0.00	631,419.00	618,540.29
11,100.0	91.35	269.77	7,739.8	4,236.1	-9.6	-3,330.0	3,330.0	0.00	631,418.60	618,440.33
11,200.0	91.35	269.77	7,737.4	4,233.7	-10.0	-3,429.9	3,430.0	0.00	631,418.20	618,340.36
11,300.0	91.35	269.77	7,735.1	4,231.4	-10.4	-3,529.9	3,529.9	0.00	631,417.79	618,240.40
11,400.0	91.35	269.77	7,732.7	4,229.0	-10.8	-3,629.9	3,629.9	0.00	631,417.39	618,140.44
11,500.0	91.35	269.77	7,730.3	4,226.6	-11.2	-3,729.9	3,729.9	0.00	631,416.99	618,040.47
11,600.0	91.35	269.77	7,728.0	4,224.3	-11.6	-3,829.8	3,829.9	0.00	631,416.58	617,940.51
11,700.0	91.35	269.77	7,725.6	4,221.9	-12.0	-3,929.8	3,929.8	0.00	631,416.18	617,840.55
11,800.0	91.35	269.77	7,723.3	4,219.6	-12.4	-4,029.8	4,029.8	0.00	631,415.78	617,740.59
11,900.0	91.35	269.77	7,720.9	4,217.2	-12.8	-4,129.7	4,129.8	0.00	631,415.38	617,640.62
12,000.0	91.35	269.77	7,718.5	4,214.8	-13.2	-4,229.7	4,229.7	0.00	631,414.97	617,540.66
12,100.0	91.35	269.77	7,716.2	4,212.5	-13.6	-4,329.7	4,329.7	0.00	631,414.57	617,440.70
12,200.0	91.35	269.77	7,713.8	4,210.1	-14.0	-4,429.7	4,429.7	0.00	631,414.17	617,340.73
12,300.0	91.35	269.77	7,711.5	4,207.8	-14.4	-4,529.6	4,529.7	0.00	631,413.77	617,240.77
12,400.0	91.35	269.77	7,709.1	4,205.4	-14.8	-4,629.6	4,629.6	0.00	631,413.36	617,140.81
12,500.0	91.35	269.77	7,706.7	4,203.0	-15.2	-4,729.6	4,729.6	0.00	631,412.96	617,040.84
12,542.7	91.35	269.77	7,705.7	4,202.0	-15.4	-4,772.3	4,772.3	0.00	631,412.79	616,998.13
12,544.5	91.35	269.77	7,705.7	4,202.0	-15.4	-4,774.1	4,774.1	0.10	631,412.78	616,996.36
5 1/2"										

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
12,544.5	7,705.7	5 1/2"	5-1/2	8-1/2
303.0	303.0	13 3/8"	13-3/8	16
3,100.0	3,100.0	9 5/8"	9-5/8	12-1/4

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well War Horse Federal Com #2H
Project:	Mustang	TVD Reference:	RKB @ 3503.7usft
Site:	Mustang Section 21	MD Reference:	RKB @ 3503.7usft
Well:	War Horse Federal Com #2H	North Reference:	Grid
Wellbore:	War Horse Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Design:	140304 War Horse Federal Com #2H	Database:	EDM 5000.1 Single User Db

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Dip (°)
833.7	833.7	Salt Base	0.00
923.7	923.7	Tansil	0.00
2,903.7	2,903.7	San Andres	0.00
1,433.7	1,433.7	Seven Rivers	0.00
7,550.4	7,533.7	2nd Bone Spring	0.00
1,133.7	1,133.7	Yates	0.00
2,403.7	2,403.7	Grayburg	0.00
2,058.7	2,058.7	Queen	0.00
6,689.1	6,683.7	1st Bone Spring	0.00
303.7	303.7	Salt	0.00
3,968.7	3,968.7	Bone Spring Lime	0.00

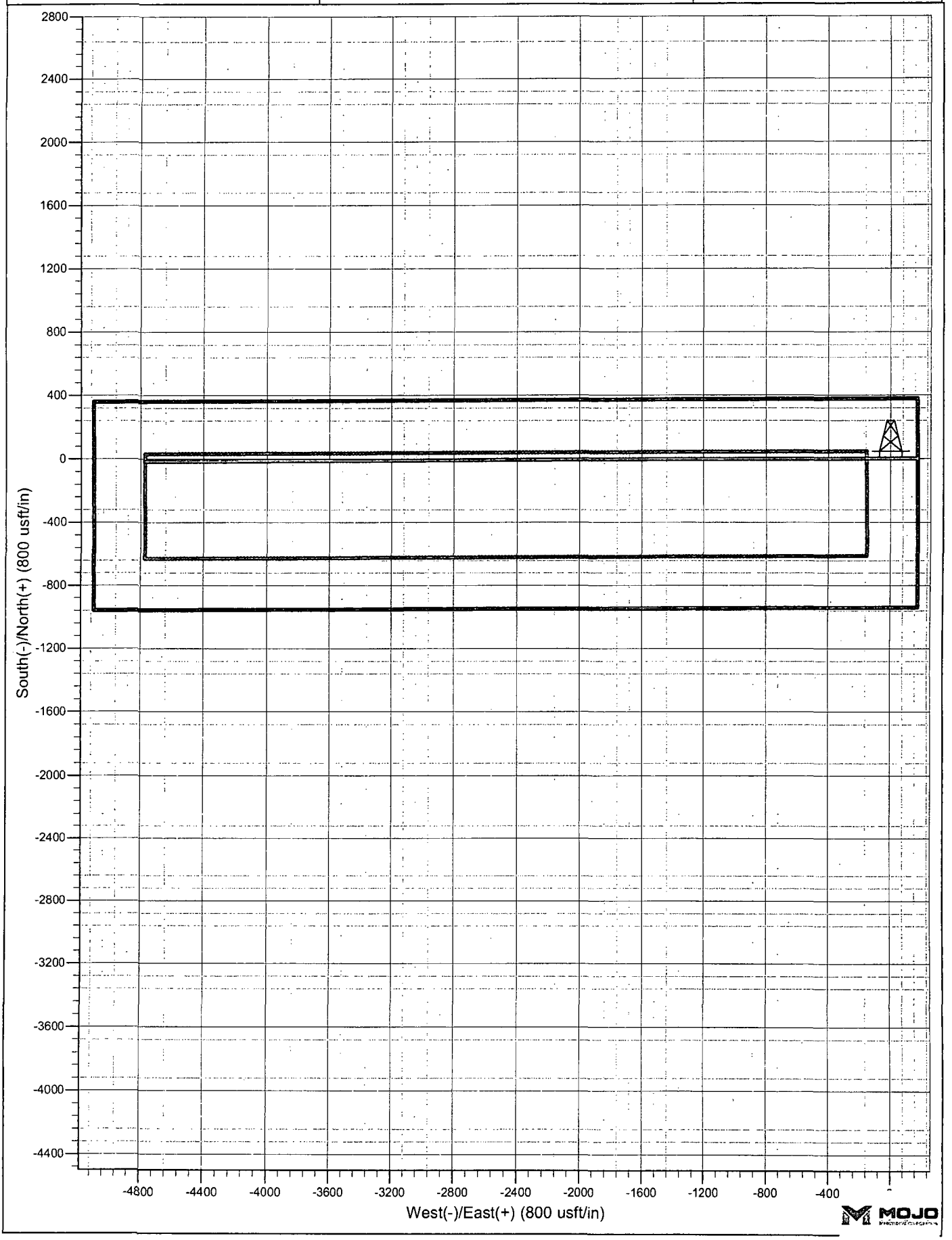
Checked By: _____ Approved By: _____ Date: _____

Project: Mustang
Site: Mustang Section 21
Well: War Horse Federal Com #2H
Wellbore: War Horse Federal Com #2H
Design: War Horse Federal Com #2H

MURCHISON OIL & GAS, INC.

Azimuths to Grid North
True North: -0.14°
Magnetic North: 7.41°

Magnetic Field
Strength: 48619.1snT
Dip Angle: 60.51°
Date: 12/12/2013
Model: IGRF2010



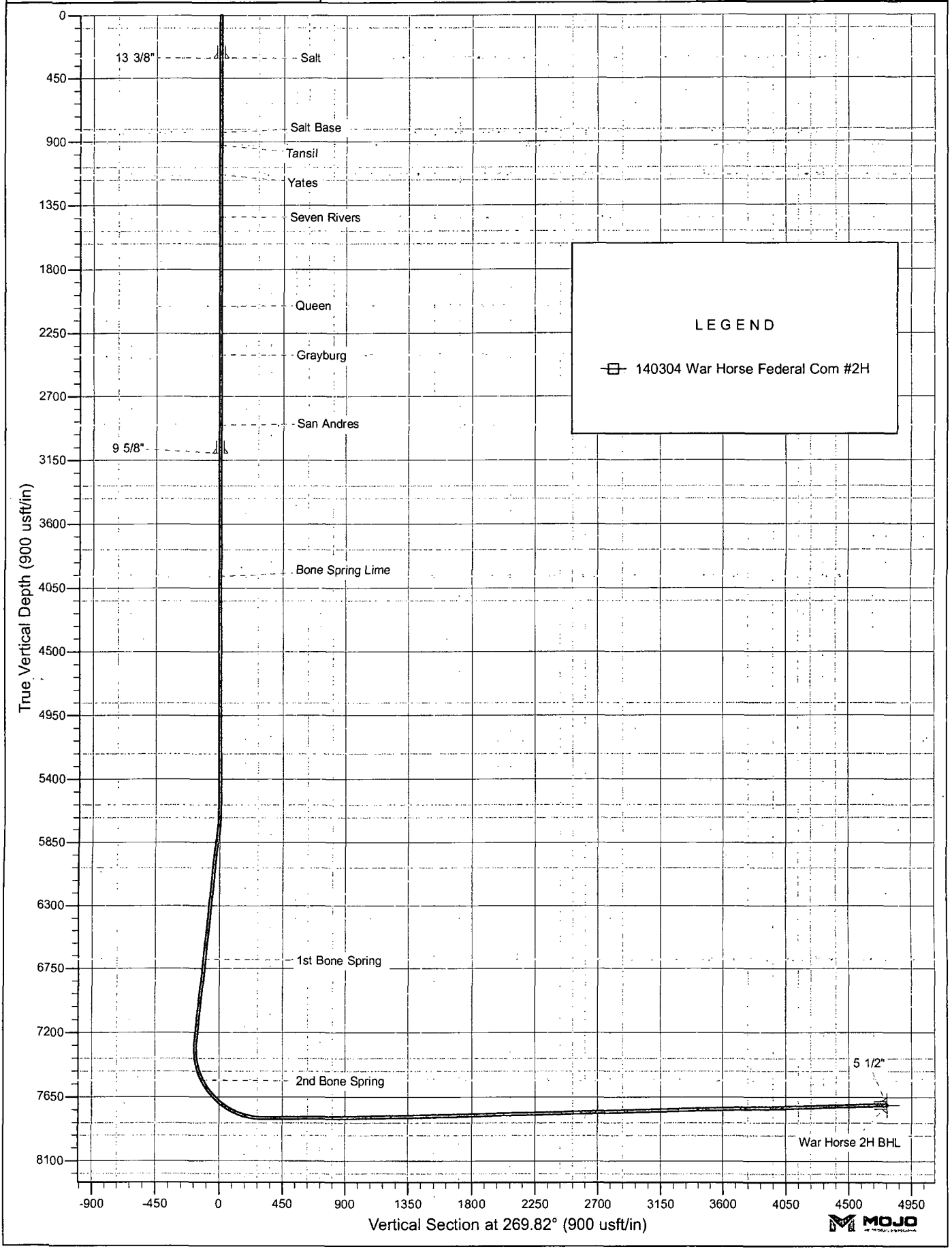
MOJO

Project: Mustang
Site: Mustang Section 21
Well: War Horse Federal Com #2H
Wellbore: War Horse Federal Com #2H
Design: War Horse Federal Com #2H

MURCHISON OIL & GAS, INC.

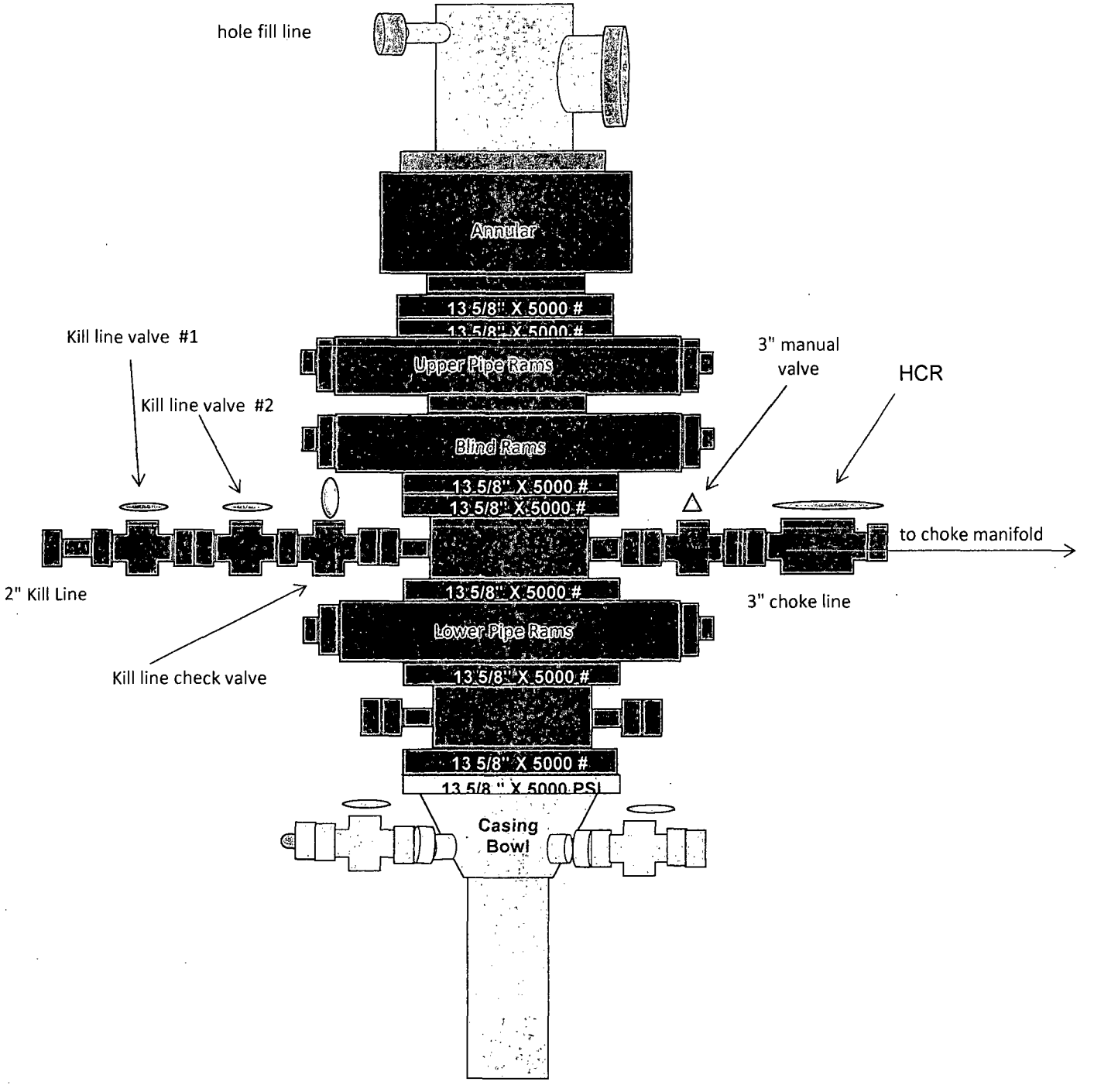
Azimuths to Grid North
True North: -0.14°
Magnetic North: 7.41°

Magnetic Field
Strength: 48619.1snT
Dip Angle: 60.51°
Date: 12/12/2013
Model: IGRF2010

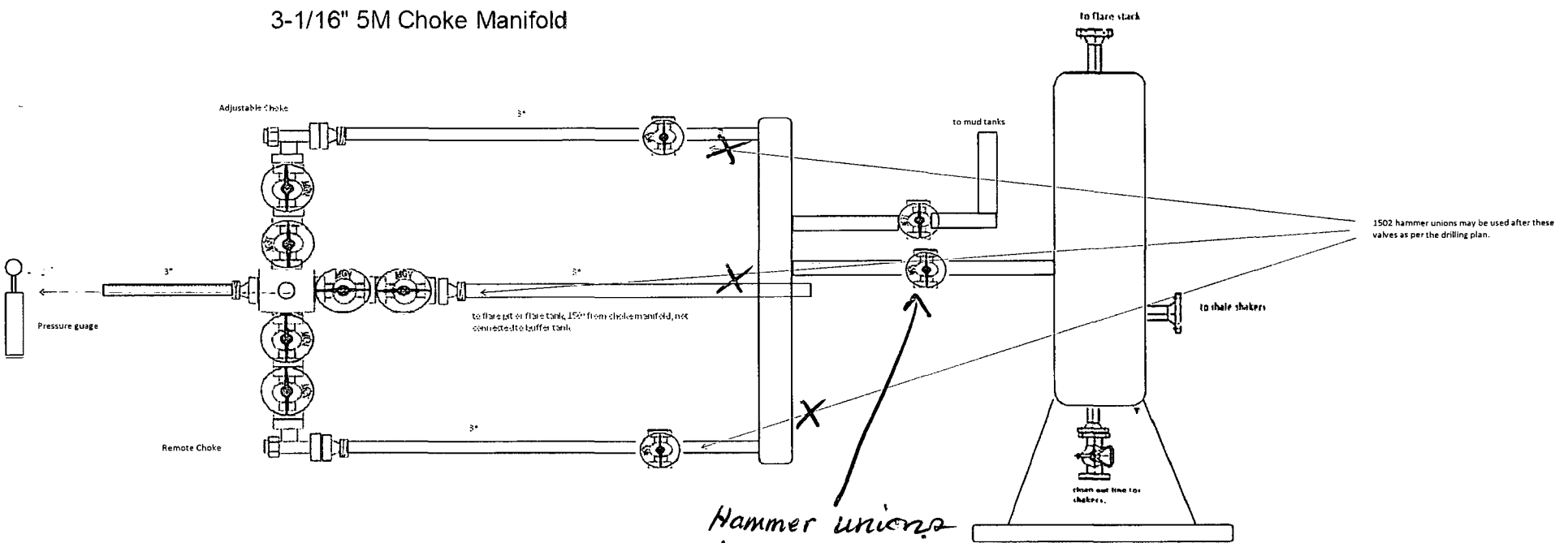


MOJO

13-5/8" 5M BOP stack

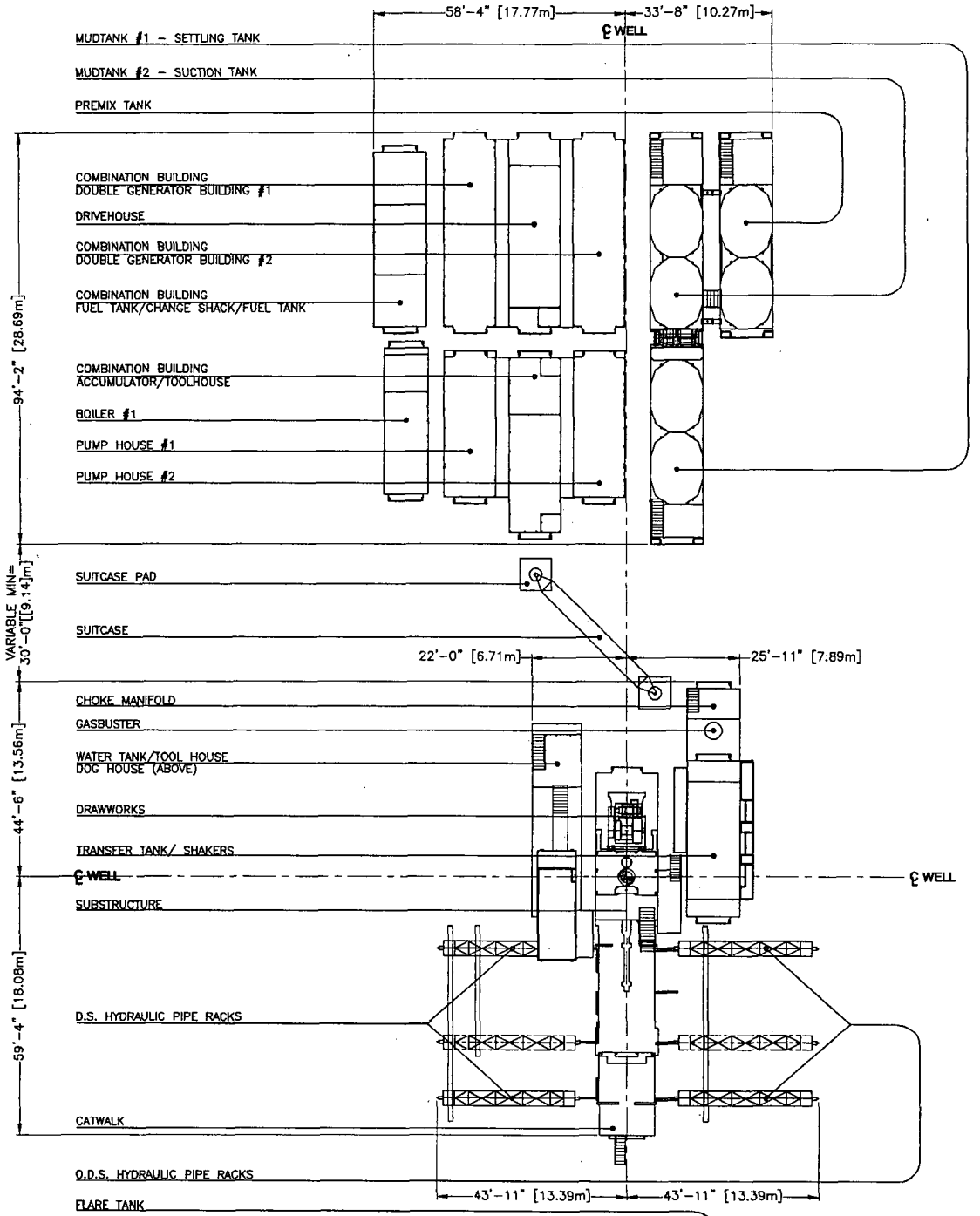


3-1/16" 5M Choke Manifold



RIG LAYOUT

RIG 827SSE



MINIMUM LOCATION SIZE FROM HOLE CENTER	
TO CROWN END	180'-6" (55m)
TO BACK OF RIG	178'-0" (54m)
TO DOG HOUSE SIDE	98'-6" (30m)
TO SUMP SIDE	65'-6" (20m)

℄ WELL

11 O'CLOCK
164'-0" (50m)
FROM
WELL CENTER

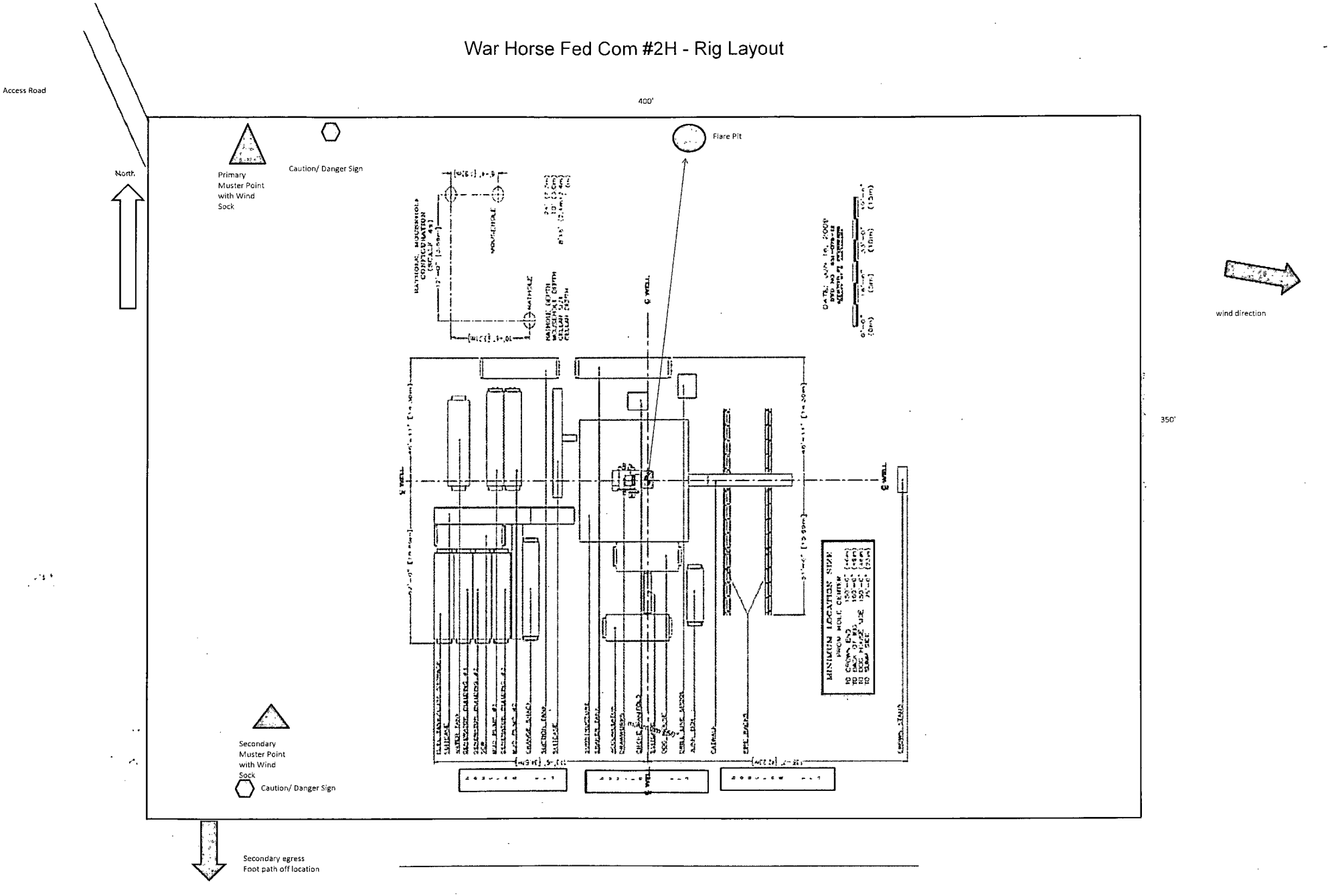
DATE: FEBRUARY 5, 2009
DWG NO.: 851-825-12
APPROVED BY ENGINEERING

0'-0" (0m) 16'-6" (5m) 33'-0" (10m) 49'-6" (15m)

PRECISION DRILLING

CALGARY, ALBERTA, CANADA

War Horse Fed Com #2H - Rig Layout



Murchison Oil and Gas, Inc.

7250 Dallas Parkway, Ste. 1400,
Plano, TX 75024

H2S Drilling Operations Plan

War Horse Federal Com 2H

Eddy County, New Mexico

Prepared by: Steve Morris; Gary Cooper

Date: 03/04/2014; Revised 6/5/15

Table of Contents

H2S Contingency Plan Section

Scope:

This contingency plan provides an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release, of following the accidental release of a potentially hazardous volume of hydrogen sulfide. The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas (H2S).

Objective:

Prevent any and all accidents, and prevent the uncontrolled release of H2S into the atmosphere.

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

Implementation: This plan, with all details, is to be fully implemented 1000' before drilling into the first sour zone.

Emergency Response Procedure: This section outlines the conditions and denotes steps to be taken in the event of an emergency.

Emergency Equipment and Procedure: This section outlines the safety and emergency equipment that will be required for the drilling of this well.

Training Provisions: This section outlines the training provisions that must be adhered to 1000' before drilling into the first sour zone.

Emergency Call Lists: Included are the telephone numbers of all persons that would need to be contacted, should an H2S emergency occur.

Briefing: This section deals with the briefing of all persons involved with the drilling of this well.

Public Safety: Public safety personnel will be made aware of the drilling of this well.

Check Lists: Status check lists and procedural check lists have been included to ensure adherence to the plan.

General Information: A general information section has been included to supply support information.

Emergency Procedures Section

Emergency Procedures

I. **In the event of any evidence of H2S level above 10 ppm, take the following steps immediately:**
   A. Secure breathing apparatus.
   B. Order non-essential personnel out of the danger zone.
   C. Take steps to determine if the H2S level can be corrected or suppressed, and if so, proceed with normal operations.

II. **If uncontrollable conditions occur, proceed with the following:**
   A. Take steps to protect and/or remove any public downwind of the rig, including partial evacuation or isolation. Notify necessary public safety personnel and the New Mexico Oil & Gas of the situation.
   B. Remove all personnel to the safe briefing area.
   C. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation.
   D. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety measures.

III. **Responsibility:**
   A. The company approved supervisor shall be responsible for the total implementation of the plan.
   B. The company approved supervisor shall be in complete command during any emergency.
   C. The company approved supervisor shall designate a backup supervisor in the event that he/she is not available.

Emergency Procedure Implementation

I. **Drilling or Tripping:**
   A. All Personnel
      1. When alarm sounds, don escape unit and report to upwind safe briefing area.
      2. Check status of other personnel (buddy system).
      3. Secure breathing apparatus.
      4. Wait for orders from supervisor.
   B. Drilling Foreman
      1. Report to the upwind safe briefing area.
      2. Don breathing apparatus and return to the point of release with the Tool pusher of Driller (buddy system).
      3. Determine the concentration of H2S.
      4. Address the situation and take appropriate control measures.
   C. Tool Pusher
      1. Report to the upwind safe briefing area.
      2. Don breathing apparatus and return to the point of release with the Drilling Foreman or the Driller (buddy system).

3. Determine the concentration.
4. Address the situation and take appropriate control measures.

D. Driller
1. Check the status of other personnel (in a rescue attempt, always use the buddy system).
2. Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.
3. Assume the responsibility of the Drilling Foreman and the Tool Pusher until they arrive, in the event of their absence.

E. Derrick Man and Floor Hands
1. Remain in the upwind safe briefing area until otherwise instructed by a supervisor.

F. Mud Engineer
1. Report to the upwind safe briefing area.
2. When instructed, begin check of mud for PH level and H2S level.

G. Safety Personnel
1. Don breathing apparatus.
2. Check the status of all personnel.
3. Wait for instructions from Drilling Foreman or Tool Pusher.

II. Taking a Kick:

A. All personnel report to the upwind safe briefing area.
B. Follow standard BOP procedures.

III. Open Hole Logging:

A. All unnecessary personnel should leave the rig floor.
B. Drilling Foreman and Safety personnel should monitor the conditions and make necessary safety equipment recommendations.

IV. Running Casing or Plugging:

A. Follow "Drilling or Tripping" procedures.
B. Assure that all personnel have access to protective equipment.

Simulated Blowout Control Drills

All drills will be initiated by activating alarm devices (air horn). One long blast on the air horn for ACTUAL and SIMULATED blowout control drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

Drill #1	On-bottom Drilling
Drill #2	Tripping Drill Pipe

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire put drill assignment. The times must be recorded on the IADC Driller's log as "Blowout Control Drill".

Drill No.:		
Reaction Time to Shut-in:	minutes,	seconds.
Total Time to Complete Assignment:	minutes,	seconds.

I. Drill Overviews:
   A. Drill No. 1 – On-bottom Drilling
      1. Sound the alarm immediately.
      2. Stop the rotary and hoist the Kelly joint above the rotary table.
      3. Stop the circulatory pump.
      4. Close the drill pipe rams.
      5. Record casing and drill pipe shut-in pressures and pit volume increases.
   B. Drill No. 2 – Tripping Drill Pipe:
      1. Sound the alarm immediately.
      2. Position the upper tool joint just above the rotary table and set the slips.
      3. Install a full opening valve inside blowout preventer tool in order to close the drill pipe.
      4. Close the drill pipe rams.
      5. Record the shut-in annular pressure.

II. Crew Assignments
   A. Drill No. 1 – On-bottom Drilling:
      1. Driller
         a) Stop the rotary and hoist the Kelly joint above the rotary table.
         b) Stop the circulatory pump.
         c) Check flow.
         d) If flowing, sound the alarm immediately.
         e) Record the shut-in drill pipe pressure.
         f) Determine the mud weight increase needed or other courses of action.
      2. Derrick Man
         a) Open choke line valve at BOP.
         b) Signal Floor Man #1 at accumulator that choke line is open.
         c) Close choke upstream valve after pipe rams have been closed.
         d) Read the shut-in annular pressure and report readings to Driller.
      3. Floor Man #1
         a) Close the pipe rams after receiving the signal from the Derrick Man.
         b) Report to Driller for further instructions.
      4. Floor Man #2
         a) Notify the Tool Pusher and Operator Representative of the H2S alarms.
         b) Check for open fires and, if safe to do so, extinguish them.
         c) Stop all welding operations.
         d) Turn-off all non-explosive proof lights and instruments.

e) Report to Driller for further instructions.

5. Tool Pusher
   a) Report to the rig floor.
   b) Have a meeting with all crews.
   c) Compile and summarize all information.
   d) Calculate the proper kill weight.
   e) Ensure that proper well procedures are put into action.
6. Operator Representative
   a) Notify the Drilling Superintendent.
   b) Determine if an emergency exists and if so, activate the contingency plan.

B. Drill No. 2 – Tripping Pipe:

1. Driller
   a) Sound the alarm immediately when mud volume increase has been detected.
   b) Position the upper tool joint just above the rotary table and set slips.
   c) Install a full opening valve or inside blowout preventer tool to close the drill pipe.
   d) Check flow.
   e) Record all data reported by the crew.
   f) Determine the course of action.
2. Derrick Man
   a) Come down out of derrick.
   b) Notify Tool Pusher and Operator Representative.
   c) Check for open fires and, if safe to do so, extinguish them.
   d) Stop all welding operations.
   e) Report to Driller for further instructions.

3. Floor Man #1
   a) Pick up full opening valve or inside blowout preventer tool and slab into tool join above rotary table (with Floor Man #2)
   b) Tighten valve with back-up tongs.
   c) Close pipe rams after signal from Floor Man #2.
   d) Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.
   e) Report to Driller for further instructions.
4. Floor Man #2
   a) Pick-up full opening valve or inside blowout preventer tool and tab into tool joint above rotary table (with Floor Man #1)
   b) Position back-up tongs on drill pipe.
   c) Open choke line valve at BOP.
   d) Signal Floor Man #1 at accumulator that choke line is open.
   e) Close choke and upstream valve after pipe rams have been closed.
   f) Check for leaks on BOP stack and choke manifold.

g) Read annular pressure.
h) Report readings to the Driller.

5. Tool Pusher
   a) Report to the rig floor.
   b) Have a meeting with all of the crews.
   c) Compile and summarize all information.
   d) See that proper well kill procedures are put into action.
6. Operator Representative
   a) Notify Drilling Superintendent.
   b) Determine if an emergency exists, and if so, activate the contingency plan

Ignition Procedures

Responsibility:

The decision to ignite the well is responsibility of the DRILLING FOREMAN in concurrence with the STATE POLICE. In the event of the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

Instructions for Igniting the Well:

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and must use a full body harness and attach a retrievable safety line to the D-Ring in the back. One man must monitor the atmosphere for explosive gases with the LEL monitor, while the Drilling Foreman is responsible for igniting the well.
2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.
3. Ignite from upwind and do not approach any closer than is warranted.
4. Select the ignition site best suited for protection and which offers an easy escape route.
5. Before igniting, check for the presence of combustible gases.
6. After igniting, continue emergency actions and procedures as before.
7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

NOTE: After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide, which is also highly toxic. Do not assume the area is safe after the well is ignited.

Training Program

When working in an area where Hydrogen Sulfide (H2S) might be encountered, definite training requirements for all personnel must be carried out. The Company Supervisor will ensure that all personnel at the well site have had adequate training in the following:

1. Hazards and Characteristics of Hydrogen Sulfide.
2. Physicals effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4. H2S detection, emergency alarm and sensor location.
5. Emergency rescue.
6. Resuscitators.
7. First aid and artificial resuscitation.
8. The effects of Hydrogen Sulfide on metals.
9. Location safety.

Service company personnel and visiting personnel must be notified if the zone contains H2S, and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

Emergency Equipment Requirements

Lease Entrance Sign:

Should be located at the lease entrance with the following information:

CAUTION- POTENTIAL POISON GAS HYDROGEN SULFIDE

Well Control Equipment:

- A flare line will be located a minimum of 150' from the wellhead to be ignited by a flare gun.
- The choke manifold will include a remotely operated choke.
- A mud/gas separator will be installed to separate gas from the drilling mud.

Mud Program:

The drilling mud program has been designed to minimize the volume of hydrogen sulfide (H2S) circulated to surface. The operator will have the necessary mud products on location to minimize the hazards while drilling in H2S-bearing zones.

Metallurgy:

- All drill strings , casings, tubing, wellhead equipment , the blowout preventer , the drilling spool, kill lines, choke manifold and lines, and all valves shall be suitable for H2S service.
- All elastomers used for packing and seals shall be H2S trim.

Respiratory Equipment:

- Fresh air breathing equipment should be placed at the safe briefing areas and should include the following: Two SCBA's will be placed at each briefing area. A moveable breathing air trailer with 2 SCBA's, 5 work/escape units, ample breathing air hose and manifolds will be on location. The breathing air hose will be installed on the rig floor and derrick along with breathing air manifolds so that it will not restrict work activity. All employees that may wear respiratory will complete a MEQ and be quantitative fit tested 1000' prior to the 1st zone that may contain H2S.

Windsocks or Wind Streamers:

- A minimum of two 10" windsocks located at strategic locations so that they may be seen from any point on location. More will be used if necessary for wind consciousness.
- Wind streamers (if preferred) should be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location).

Hydrogen Sulfide Detector and Alarms:

- 1 - Four channel H2S monitor with audible and visual alarms, strategically located to be seen and heard by all employees working on the well site. All sensors will be bump tested or calibrated if necessary on a weekly basis. The alarms will be set to visually alarm at 10 PPM and audible at 14 PPM.
- Four (4) sensors located as follows: #1 -Rig Floor, #2 & #3- Bell Nipple, #4- End of flow line where wellbore fluid is discharged.
- Portable color metric tube detector with tubes will be stored in the Tool Pusher trailer.

Well Condition Sign and Flags:

The Well Condition Sign with flags should be placed a minimum of 150' before entry to the location. It should have three (3) color coded flags (green, yellow and red) that will be used to denote the following location conditions:

GREEN - Normal Operating Conditions

YELLOW - Potential Danger

RED - Danger, H2S Gas Present

Auxiliary Rescue Equipment:

- Stretcher (drilling contractor)
- 2- 100' OSHA approved Rescue lines (drilling contractor)
- First Aid Kit properly stocked (drilling contractor)

Mud Inspection Equipment:

Garret Gas Train or Hach Tester for inspection of Hydrogen Sulfide in the drilling mud system.

Fire Extinguishers:

Adequate fire extinguishers shall be located at strategic locations (provided by drilling contractor)

Blowout Preventer:

- The well shall have hydraulic BOP equipment for the anticipated BHP.
- The BOP should be tested upon installation.
- BOP, Choke Line and Kill Line will be tested as specified by Operator in the Drilling Prognosis. All tests will meet or exceed BLM orders.

Confined Space Monitor:

There should be a portable multi-gas monitor with at least 3 sensors (02, LEL & H2S). This instrument should be used to test the atmosphere of any confined space before entering. It should also be used for atmospheric testing for LEL gas before beginning any type of Hot Work. Proper calibration documentation will need to be provided. (Supplied by Drilling Contractor)

Communication Equipment:

- Proper communication equipment such as cell phones or 2 -way radios should be available at the rig.
- Radio communication shall be available for communication between the company man's trailer, rig floor and the tool pusher's trailer.
- Communication equipment shall be available on the vehicles.

Special Control Equipment:

- Hydraulic BOP equipment with remote control on the ground.
- Rotating head at the surface casing point.
- BOP, Choke Manifold and Process Flow Diagrams (see the attached - previously submitted)
- Patriot Rig #5 SM Choke Manifold Equipment (see the attached - previously submitted)

Evacuation Plan:

- Evacuation routes should be established prior to spudding the well.
- Should be discussed with all rig personnel.

Designated Areas:

Parking and Visitor area:

- All vehicles are to be parked at a pre-determined safe distance from the wellhead.
- Designated smoking area.

Safe Briefing Areas:

- Two safe briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.
- Personal protective equipment should be stored at both briefing areas or if a moveable cascade trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both briefing areas should be accessible.

NOTES:

- Additional equipment will be available at the Murchison Oil & Gas, Inc. Carlsbad, New Mexico office.
- Additional personal H2S monitors are available for all employees on location.
- Automatic Flare Igniters are recommended for installation on the rig.

CHECK LISTS

Status Check List

Note: Date each item as they are implemented.

1. Sign at location entrance.
2. Two (2) wind socks (in required locations).
3. Wind Streamers (if required).
4. SCBA's on location for all rig personnel and mud loggers.
5. Air packs, inspected and ready for use.
6. Spare bottles for each air pack (if required).
7. Cascade system for refilling air bottles.
8. Cascade system and hose line hook up.
9. Choke manifold hooked-up and tested. (Before drilling out surface casing.)
10. Remote Hydraulic BOP control (hooked-up and tested before drilling out surface casing).
11. BOP tested (before drilling out surface casing).
12. Mud engineer on location with equipment to test mud for H2S.
13. Safe Briefing Areas set-up.
14. Well Condition sign and flags on location and ready.
15. Hydrogen Sulfide detection system hooked-up & tested.
16. Hydrogen Sulfide alarm system hooked-up & tested.
17. Stretcher on location at Safe Briefing Area.
18. 2-100' OSHA Approved Life Lines on location.
19. 1-20# Fire Extinguisher in safety trailer.
20. Confined Space Monitor on location and tested.
21. All rig crews and supervisor trained (as required).
22. Access restricted for unauthorized personnel.
23. Drills on H2S and well control procedures.
24. All outside service contractors advised of potential H2S on the well.
25. NO SMOKING sign posted.
26. H2S Detector Pump w/tubes on location.
27. 25mm Flare Gun on location w/flares.
28. Automatic Flare Igniter installed on rig.

Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to insure that they have not been tampered with.
3. Check pressure on the supply air bottles to make sure they are capable of recharging.
4. Make sure all of the Hydrogen Sulfide detection systems are operative.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that they are fully charged and operational. This requires that the air cylinder be opened and the mask assembly be put on and tested to make sure that the regulators and masks are properly working. Negative and positive pressure should be conducted on all masks.
2. BOP skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all breathing air mask assemblies to see that straps are loosened and turned back, ready to use.
5. Check pressure on cascade air cylinders to make sure they are fully charged and ready to use for refill purposes if necessary.
6. Check all cascade system regulators to make sure they work properly.
7. Perform breathing drills with on-site personnel.
8. Check the following supplies for availability:
   - Stretcher
   - Safety Belts and ropes.
   - Spare air bottles.
   - Spare oxygen bottles (if resuscitator required).
   - Gas Detector Pump and tubes.
   - Emergency telephone lists.
9. Test the Confined Space Monitor to verify the batteries are good and that the unit is in good working condition and has been properly calibrated according to manufacturer's recommendations.

Briefing Procedures

The following scheduled briefings will be held to ensure the effective drilling and operation of this project:

Pre-Spud Meeting

Date: Prior to spudding the well.

Attendance: Drilling Supervisor
Drilling Engineer
Drilling Foreman
Rig Tool Pushers
Mud Engineer
All Safety Personnel
Key Service Company Personnel

Purpose: Review and discuss the well program, step-by-step, to ensure complete understanding of assignments and responsibilities.

Evacuation Plan

General Plan

The direct lines of action prepared by MOGI SAFETY, to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foremen, Tool Pusher or Driller) determine that Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the Area Map.
2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company approved safety personnel that have been trained in the use of the proper emergency equipment will be utilized.
4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

NOTE: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.

5. After the discharge of gas has been controlled, "Company" safety personnel will determine when the area is safe for re-entry.

Emergency Assistance Telephone List

PUBLIC SAFETY: 911 or

Eddy County Sheriff or Police ..... (575) 746-9888

Eddy County Emergency Management..... (575) 887-7551

Hospital ..... (575) 492-5000

Ambulance 911

Department of Public Safety..... (392) 392-5588

Oil Conservation Division ..... (575) 748-1823

New Mexico Energy, Minerals & Natural Resources Department ..... (575) 748-1283

MOGI Emergnecy Call List:

Rusty Cooper .....(972) 322-7466

Greg Boans .....(575) 706-0667

The geologic zones that will be encountered during drilling may contain hazardous quantities of H2S. The accompanying map illustrates the affected areas of the community. The residents within this radius will be notified via a hand delivered written notice describing the activities, potential hazards, and conditions of evacuation, evacuation drill siren alarms and other precautionary measures.

Evacuee Description:

Residents: THERE ARE NO RESIDENTS WITHIN 3000' ROE.

Notification Process:

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

Evacuation Plan:

All evacuees will migrate laterally toward the wind direction.

Murchison Oil and Gas will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local and emergency medical service as necessary.

MAPS AND PLATS

See the attached map showing the 3000' ROE clarification.

Surface Use Plan of Operations

Introduction

The following surface use plan of operations will be followed and carried out once the APD is approved. No other disturbance will be created other than what was submitted in this surface use plan. If any other surface disturbances are needed after the APD is approved, a BLM approved sundry notice or right of way application will be acquired prior to any new surface disturbances.

Before any surface disturbance is created, stakes or flagging will be installed to mark boundaries of permitted areas of disturbance, including soils storage areas. As necessary, slope, grade, and other construction control stakes will be placed to ensure construction in accordance with the surface use plan. All boundary markers will be maintained in place until final construction cleanup is completed. If disturbance boundary markers are disturbed or knocked down, they will be replaced before construction proceeds.

If terms and conditions are attached to the approved APD and amend any of the proposed actions in this surface use plan, we will adhere to the terms and conditions.

1. Existing Roads

a. The existing access road route to the proposed project is depicted on the Aerial Access Route Map (Exhibit E) attached with the APD. A new road will be routed to the War Horse Federal Com 2H as shown on Exhibit E. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done, unless otherwise noted in the New or Reconstructed Access Roads sections of this surface plan.

b. The Existing access road route to the proposed project does not cross lease or unit boundaries, so a BLM right-of –way grant will not be acquired for this proposed road route.

c. Existing oil and gas roads utilized to access the proposed project will be maintained by crowning, clearing ditches, and fixing potholes. All existing structures on the entire access route such as cattle guards, other range improvement projects, culverts etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use.

2. New or Reconstructed Access Roads

a. A new access road will be needed for this project. See the survey plats Exhibits K-1 through K-4 for the location of the access road. A BLM representative concurred with the road location during the on-site.

b. The access road will be 925 feet in length.

c. The maximum driving width of the access road will be 14 feet. The maximum width of surface disturbance when constructing the access road will not exceed 30 feet.

d. No cattle guards will be installed for this project.

e. No BLM right-of-way is needed for the road since it is on lease.

3. Location of Existing Wells

a. A 1 mile radius map is attached with the APD (Exhibit F).

4. Location of Existing and/or Proposed Production Facilities

a. All permanent, lasting more than 6 months, above ground structures including but not limited to pump jacks, storage tanks, barrels, pipeline risers, meter housing, etc., that are not subject to safety requirements will be painted a non-reflective paint color that blends in with the surrounding landscape. The paint color will be one of the colors from the BLM Standard Environmental Colors chart selected by the BLM authorized officer.
b. Production from the proposed well will be contained in the War Horse Federal Com 1H (30-015-41013) battery.
c. A buried pipeline to transport production will be installed from the proposed well to the War Horse Federal Com 1H battery (Facility Diagram – Exhibit H is attached).
    i. We plan to bury a 2.875 inch steel pipeline from the proposed well to the production facility. The pipeline will be 2,388.72 feet long. The disturbance width will be 30 feet, with an additional 10 feet of temporary working space requested at corners. The maximum working pressure of the pipeline will be 7,260 psi; however we will not operate this pipeline at an internal pressure in excess of 250 psi.
    ii. Exhibits J-1, J-2, J-3 and J-4 depict the proposed production pipeline route from the well to the production facility.
    iii. The buried pipeline is on lease, so no right-of-way is needed.
d. If any plans change regarding the production facility or other infrastructure (pipeline, electric line, etc.), we will submit a sundry notice or right-of-way (if applicable) prior to installation or construction.
e. An electric line will be applied for through a sundry notice or BLM right-of-way at a later date.

5. Location and Types of Water

a. The source and location of the water supply are as follows: The well will be drilled with a combination of fresh water and brine water based mud systems. The water will be obtained from commercial suppliers in the area and piped or hauled to the location by transport trucks over an existing road. Any temporary pipelines will be applied for on a Sundry Notice.

6. Construction Materials

a. Construction material that will be used to build the well pad and road will be caliche.
b. All material required for construction of the drill pad and access roads will be obtained from private, state, or federal pits. If the well pad is flipped to acquire caliche underneath the well pad, Murchison shall stay within the approved well pad area when performing these operations. A federal mineral material permit will be

acquired prior to flipping the location for caliche or acquiring caliche from a federal pit.

7. Methods of Handling Waste

a. Drilling fluids and produced oil and water from the well during completion operations will be stored safely and disposed of properly in an NMOCD-approved disposal facility.
b. Garbage and trash produced during drilling and completion operations will be collected in a trash bin and disposed of properly at a state approved site. All trash on and around the well site will be collected for disposal.
c. Human waste and grey water will be properly contained and disposed of properly at a disposal facility.
d. After drilling and completion operations, trash, chemicals, salts, frac sand and other waste material will be removed and disposed of properly at a disposal site.
e. The well will be drilled utilizing a temporary pit with on-site burial of dry waste solids. The location of the proposed pit lies within the pad location and is further described in the C-144 Permit Package.

8. Ancillary facilities

a. No ancillary facilities will be needed for this proposed project.

9. Well Site Layout

a. The proposed drilling pad was staked and surveyed by a professional surveyor. Exhibit A attached with the APD depicts the drilling pad layout as staked.
b. The rig layout diagram is attached to the APD (Exhibit G).
c. Topsoil Salvaging:
Grass, shrubs, and small woody vegetation, such as sagebrush will be excavated as the topsoil is removed. Large woody vegetation will be stripped and stored separately and re-spread evenly on the site following topsoil re-spreading. Topsoil depth is defined as the top layer of soil that contains 80% of the roots. In areas to be heavily disturbed, the top 6 inches of soil material will be stripped and stockpiled on the perimeter of the well location and along the perimeter of the access road to control run-on and run-off, to keep topsoil viable, and to make redistribution of topsoil more efficient during interim reclamation. Stockpiled topsoil should include vegetative material. Topsoil will be clearly segregated and stored separately from sub-soils. Contaminated soil will not be stockpiled, but properly treated and handled prior to topsoil salvaging.

10. Plans for Surface Reclamation

a. Reclamation Objectives:
    i. The objective of interim reclamation is to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control

erosion; and minimize habitat and forage loss, visual impact, and weed infestation, during the life of the well or facilities.

ii. The long-term objective of final reclamation is to return the land to a condition approximating that which existed prior to disturbance. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, and wildlife habitats. To ensure that the long-term objective will be reached through human and natural processes, actions will be taken to ensure standards are met for site stability, visual quality, hydrological functioning, and vegetative productivity.

iii. The BLM will be notified at least 3 days prior to commencement of any reclamation procedures.

iv. If circumstances allow, interim reclamation and/or final reclamation actions will be completed no later than 6 months from when the final well on the location has been completed or plugged. We will request written permission from the BLM if more time is needed.

b. Interim Reclamation

i. Interim reclamation will be performed on the well site after well #6H, the second planned well on this location, has been drilled and completed. An interim reclamation plat is attached (Exhibit I).

ii. Within 30 days of well completion, the well location and surrounding areas will be cleared of, and maintained free of, all materials, trash, and equipment not required for production.

iii. In areas planned for interim reclamation, all the surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.

iv. The areas planned for interim reclamation will then be re-contoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be re-contoured to above ratios during interim reclamation.

v. Topsoil will be evenly re-spread and aggressively re-vegetated over the entire disturbed area not needed for all-weather operations including cuts and fills. To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

vi. Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area.

vii. The interim reclamation will be monitored periodically to ensure that vegetation has reestablished and that erosion is controlled.

c. Final Reclamation (well pad, buried pipelines, etc.)

i. Prior to final reclamation procedures, the well pad, road, and surrounding area will be cleared of material, trash, and equipment.
ii. All surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.
iii. All disturbed areas, including roads, pipelines, pads, production facilities, and interim reclaimed areas will be re-contoured to the contour existing prior to initial construction or a contour that blends indistinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to re-contouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful re-vegetation.
iv. After all the disturbed areas have been properly prepared, the areas will be seeded with the proper BLM seed mixture, free of noxious weeds. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.
v. Proper erosion control methods will be used on the entire area to control erosion, runoff and siltation of the surrounding area.
vi. All unused equipment and structures including pipelines, electric line poles, tanks, etc. that serviced the well will be removed.
vii. All reclaimed areas will be monitored periodically to ensure that re-vegetation occurs, that the area is not re-disturbed, and that erosion is controlled.

11. Surface Ownership

a. The surface ownership of the proposed project is the State of New Mexico. **Owner**: State; **Tenant**: Bogle, Ltd.
b. A surface use agreement was obtained from the OCD regarding the proposed project.
c. A good faith effort will be made to provide a copy of the APD Surface Use Plan of Operations to the OCD.

12. Other Information

a. No other information is needed at this time.

13. Maps and Diagrams

a. Land Survey Plats – Exhibits A, B, C, D & E
b. Wells Within One Mile Radius of the PSHL and PBHL – Exhibit F
c. Rig Layout Diagram – Exhibit G
d. Production Facility Layout – Exhibit H
e. Interim Reclamation Plat – Exhibit I
f. Pipe Line Plat – Exhibits J-1, J-2, J-3 & J-4
g. New Access Road Plat – Exhibits K-1, K-2, K-3 & K-4

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Murchison Oil and Gas, Inc.
LEASE NO.:	NMNM030752
WELL NAME & NO.:	War Horse Fed Com 2H
SURFACE HOLE FOOTAGE:	1700' FNL & 175' FEL
BOTTOM HOLE FOOTAGE	1700' FNL & 330' FWL
LOCATION:	Section 21, T.18S., R29E., 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)

Communitization Agreement
A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. 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.**

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

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14 feet 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.

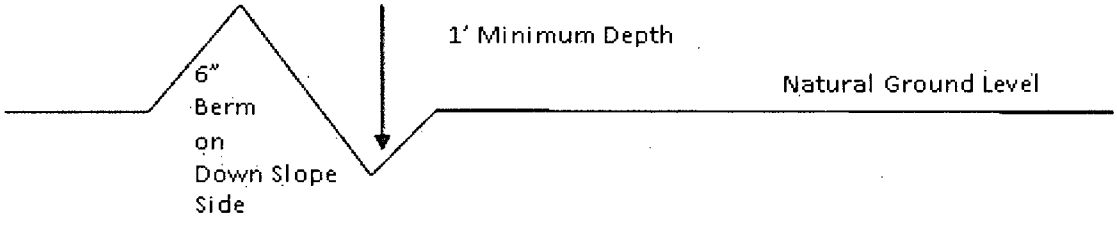
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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:

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

Cattleguards

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards 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 cattleguards that are in place and are utilized during lease operations.

Fence Requirement

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

Public Access

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

Construction Steps

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

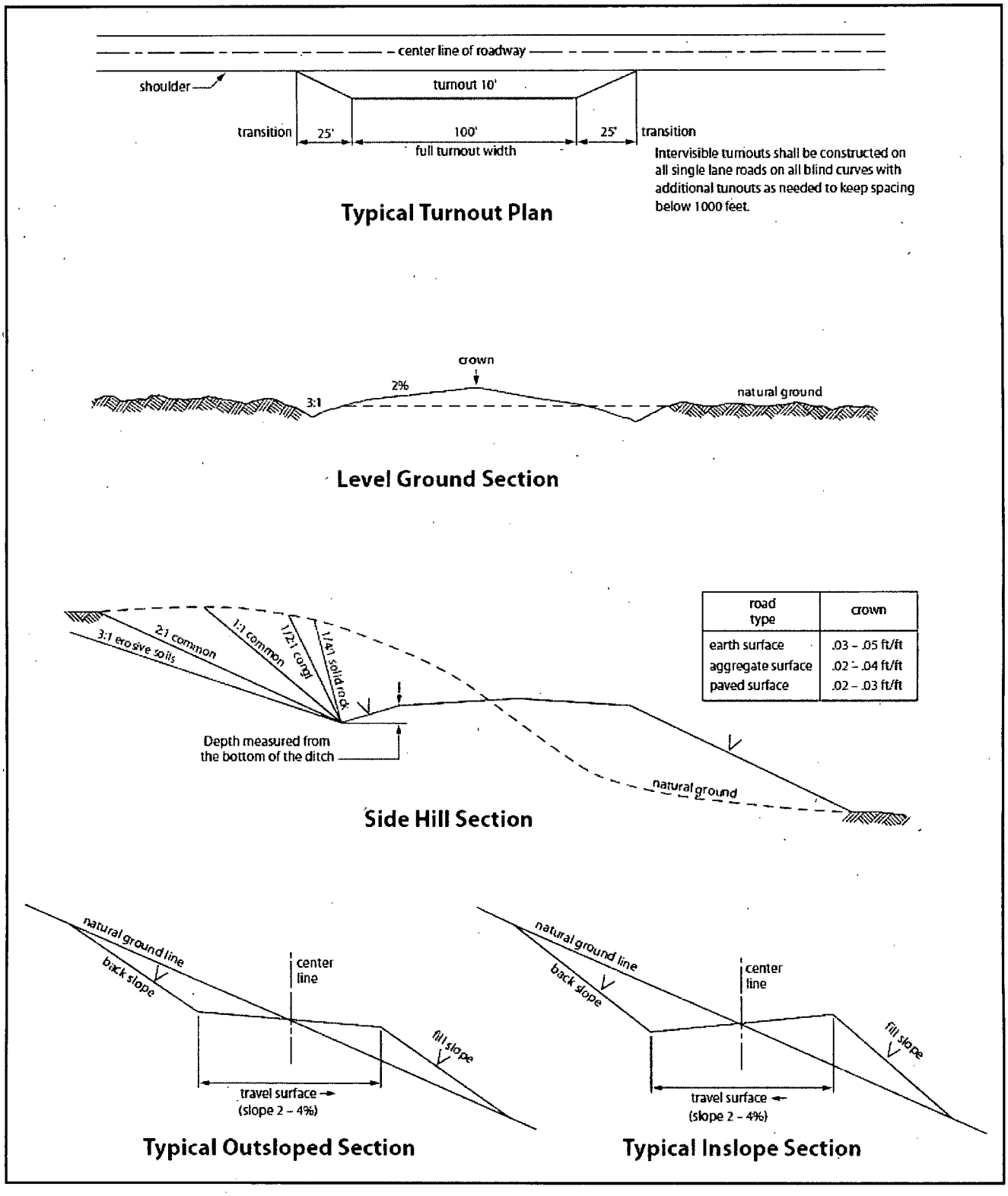


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

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

1. **Hydrogen Sulfide has been encountered within one mile of the Bottom Hole Location in an unknown formation. Operator proposed a response plan that includes the monitoring and response to any sour zones encounter, which in this case may be the Delaware. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

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

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

B. CASING

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

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

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.

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

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

Possibility of water flows in the Salado and in the Artesia Group.
Possibility of lost circulation in the Rustler, in the Delaware and in the Bone Spring.

1. The **13-3/8** inch surface casing shall be set at approximately **262** feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

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

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

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

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

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **3100** feet, is:

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

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

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

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

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

C. PRESSURE CONTROL

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

2. **Variance approved for operator to use 1502 (15,000 psi) hammer unions downstream of the choke manifold buffer Tank to connect to the mud/gas separator. These hammer unions must be no higher than 3-4 feet above ground level and the stamped 1502 must be visible for the inspector to check. No**

substitutions for the 1502 will be approved. Operator may be required to show manufacturer data for the 1502

3. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

    a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

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. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall

have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

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

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

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

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

KGR 08182015

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

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

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

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

B. PIPELINES

BURIED PIPELINE STIPULATIONS

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

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

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

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

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

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

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

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

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

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

( ) seed mixture 1	( ) seed mixture 3
(X) seed mixture 2	( ) seed mixture 4
( ) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

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

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

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

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

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

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

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.

b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

IX. 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).

X. 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).

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

Seed Mixture 2, for Sandy Sites

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

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

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

Species	lb/acre
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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