12-85

OCD Artesia OCD Artesia

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: NMNM98807 BHL VO5557 (STATE LEASE

6 If Indian, Allotee or Tribe Name
N/A

1a Type of work. ☑ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No.
N/A 125965 per #

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

8 Lease Name and Well No
CARBON VALLEY 25 FED COM #8H [37485]

2 Name of Operator MURCHISON OIL & GAS, INC

9 API Well No
30-015-39851

3a. Address 1100 MIRA VISTA BLVD.
PLANO, TX 75093-4698

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

10. Field and Pool, or Exploratory
DOG CANYON; WOLFCAMP [19970]

4 Location of Well (Report location clearly and in accordance with any State requirements *)
At surface 1780' FSL & 300' FEL, LOT I
At proposed prod zone 1930' FSL & 330' FWL, LOT L

11 Sec, T R. M or Blk and Survey or Area
SEC. 25, T16S, R27E

14 Distance in miles and direction from nearest town or post office*
APPROXIMATELY 11 MILES NE OF ARTESIA, NEW MEXICO

12 County or Parish
EDDY

13 State
NM

15 Distance from proposed* location to nearest property or lease line ft (Also to nearest drlg. unit line, if any)
300' FEL NON-STANDARD

16 No of acres in lease
200

17 Spacing Unit dedicated to this well
160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
200' SOUTH (1) 141' CARBON VALLEY 25 FED #1 (2) 67' #5H AT TD

19 Proposed Depth
10,768' MD; 6,333' TVD

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

21 Elevations (Show whether DF, KDB, RT, GL, etc.)
3,509' GL

22. Approximate date work will start*
01/12/2012

23. Estimated duration
30 - 45 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) DARRICK STALLINGS
Date 10/21/11

Title
VICE PRESIDENT OPERATIONS

Approved by (Signature) /s/ Don Peterson
Name (Printed/Typed)
Date JAN 19 2012

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)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

RECEIVED
JAN 23 2012
NMOCD ARTESIA

Approval Subject to General Requirements & Special Stipulations Attached

Roswell Controlled Water Basin

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, New Mexico 87505

RECEIVED
JAN 23 2012
NMOCD ARTESIA

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-39857	17970	DOG CANYON; WOLF CAMP
Property Code	**Property Name**	**Well Number**
37485	CARBON VALLEY 25 FEDERAL COM	8H
OGRID No.	**Operator Name**	**Elevation**
15363	MURCHISON OIL & GAS, INC.	3509'

Surface Location

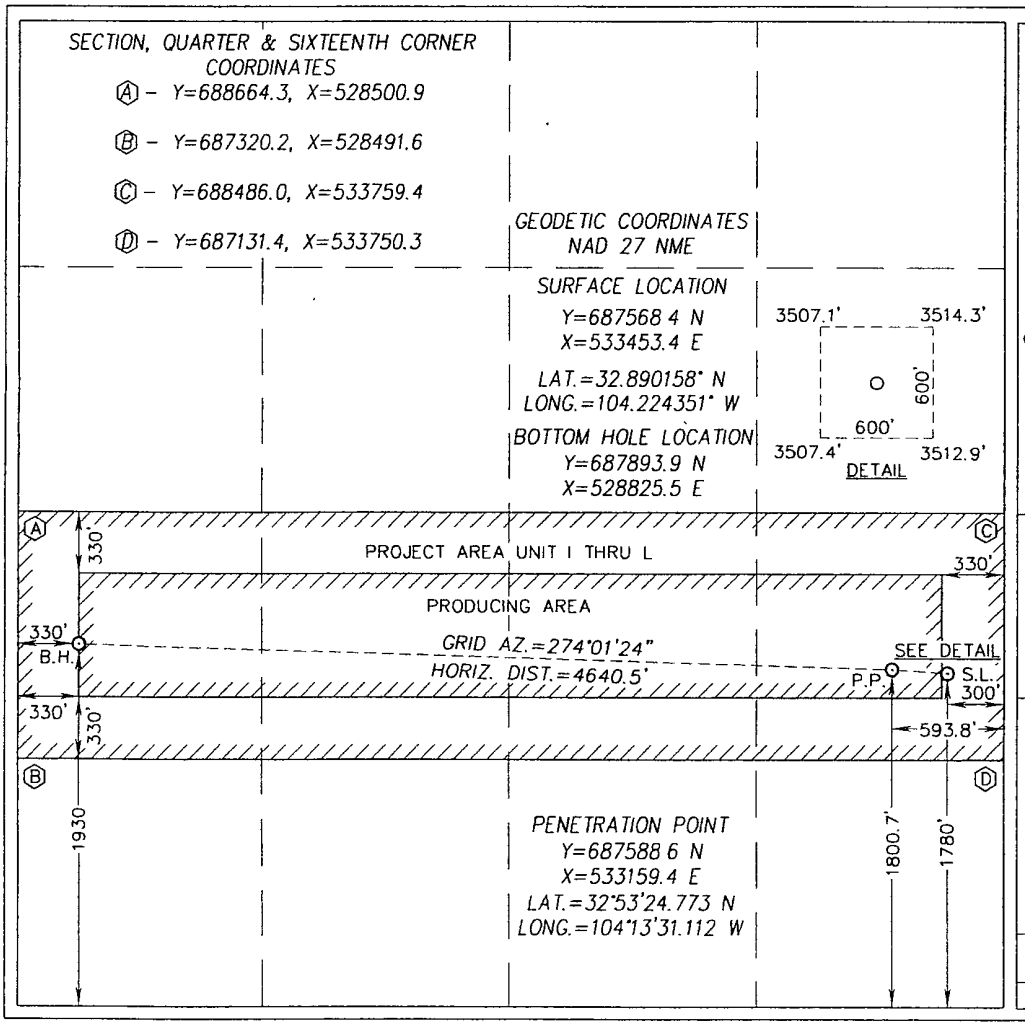
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	25	16-S	27-E		1780	SOUTH	300	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	25	16-S	27-E		1930	SOUTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	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



OPERATOR CERTIFICATION

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

Signature — Date: 10/24/11

Darrick Stallings
Printed Name

dstallings@jdmii.com
E-mail Address

SURVEYOR CERTIFICATION

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

AUGUST 24, 2011
Date of Survey

Signature & Seal of Professional Surveyor:

RONALD J. EIDSON
NEW MEXICO
3239
REGISTERED PROFESSIONAL SURVEYOR

10/21/2011

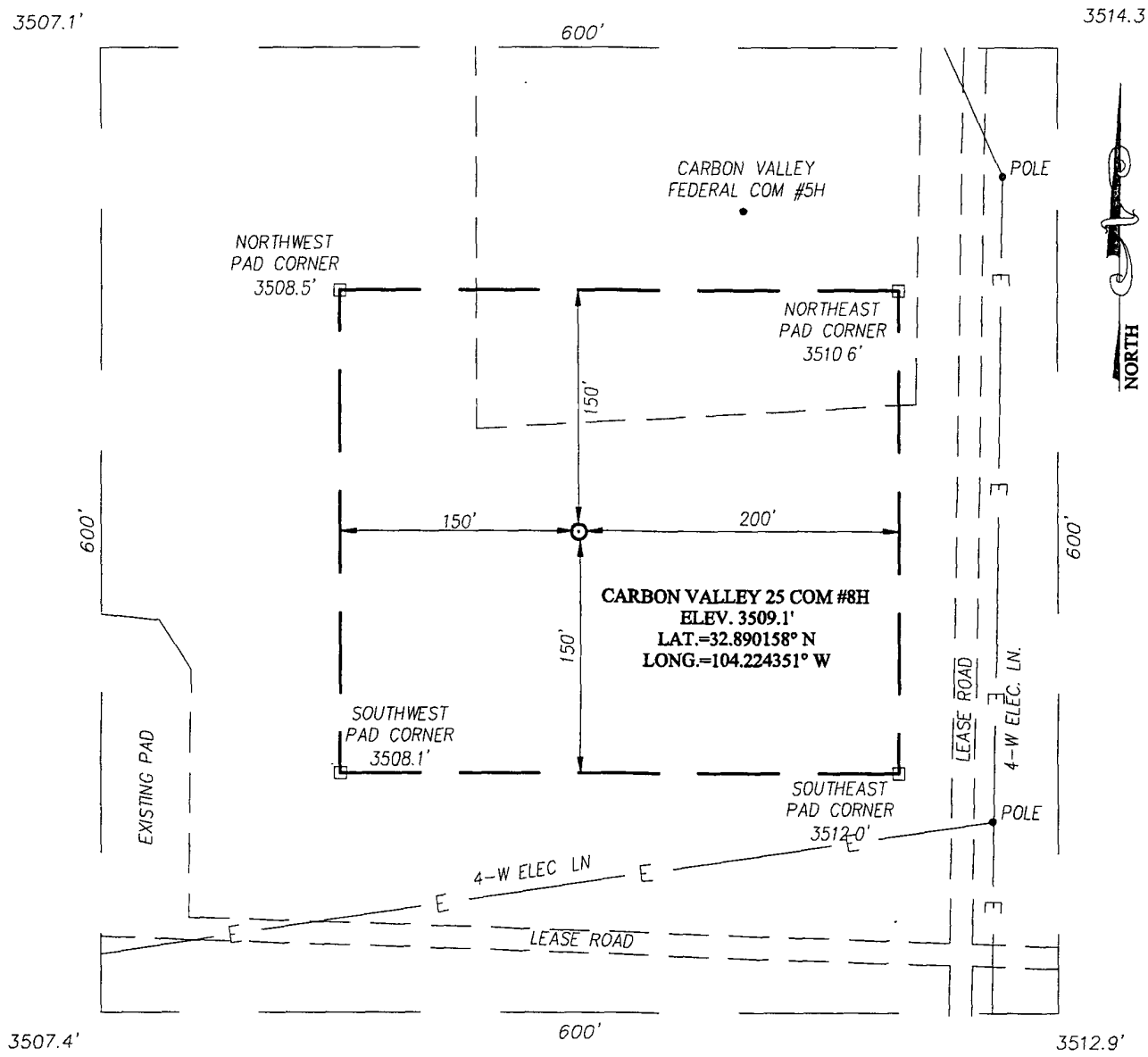
Certificate Number ..... Gary L. Eidson 12641
Ronald J. Eidson 3239

ACR REL: 11.15.2011 WSC W.O. 11 11 2176

EXHIBIT B-1

SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M.

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S HWY #82 AND CO RD #202 (SOUTHERN UNION), GO NORTH ON CO. RD #202 APPROX 2.6 MILES; TURN LEFT AND GO NORTHWEST APPROX. 2.4 MILES. TURN LEFT AND GO NORTH APPROX. 0.1 MILE TO A "Y" INTERSECTION. VEER RIGHT AND GO NORTHWEST APPROX. 1.6 MILES. TURN LEFT AND GO WEST APPROX. 0.1 MILE. TURN RIGHT AND GO NORTH APPROX. 0.4 MILES TURN LEFT AND GO WEST APPROX. 0.4 MILES. TURN RIGHT AND GO NORTH APPROX.. 0.1 MILE THE LOCATION STAKE IS APPROX. 240 FEET WEST OF LEASE ROAD.

100 0 100 200 Feet

Scale: 1"=100'

PROVIDING SURVEYING SERVICES SINCE 1946

JOHN WEST SURVEYING COMPANY

412 N DAL PASO

HOBBS, N M. 88240

(575) 393-3117

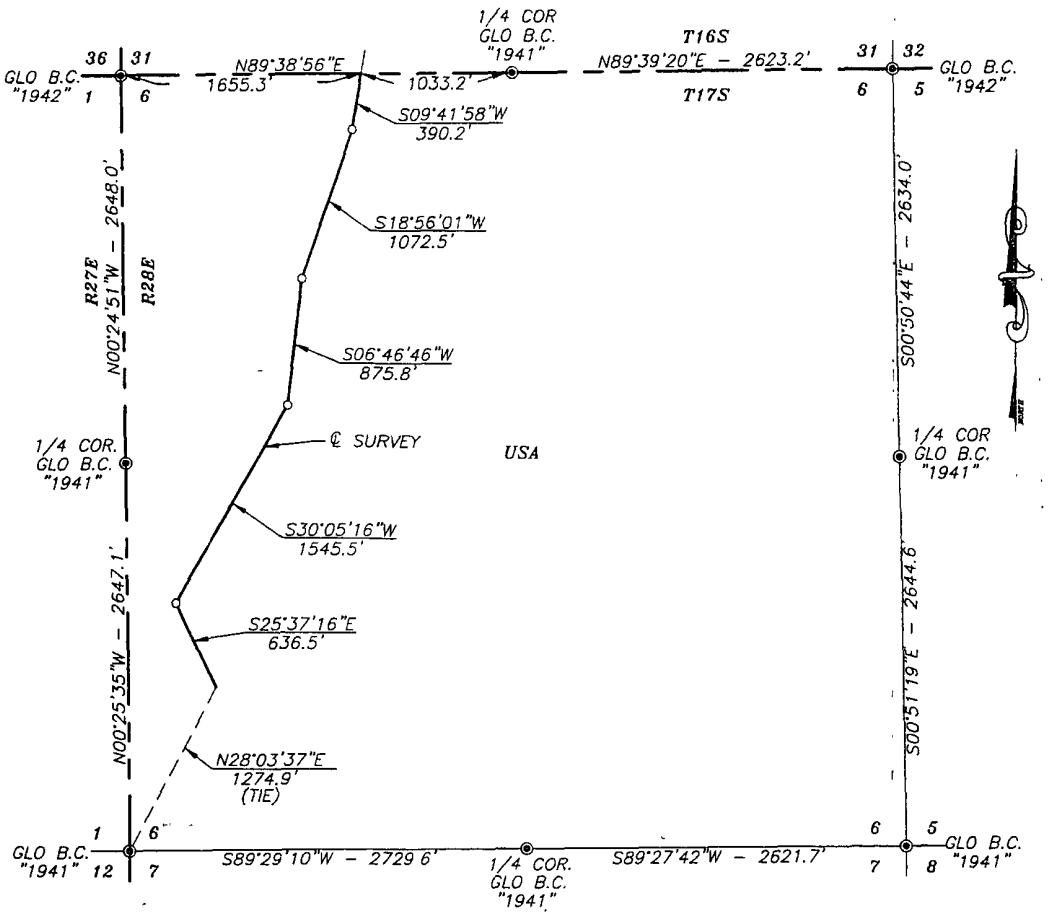
MURCHISON OIL & GAS, INC.

CARBON VALLEY 25 FFEDERAL COM #8H WELL LOCATED 1780 FEET FROM THE SOUTH LINE AND 300 FEET FROM THE EAST LINE OF SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date 8/24/11	Sheet 1 of 1 Sheets		
W.O. Number: 11.11.1848	Dr. By. LA	Rev 1:	
Date: 9/8/11	Rel W O :.	11111848	Scale 1"=100'

EXHIBIT B-2

SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



DESCRIPTION

A STRIP OF LAND 50.0 FEET WIDE AND 4520.5 FEET OR 0.856 MILES IN LENGTH CROSSING USA LAND IN SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO AND BEING 25.0 FEET LEFT AND 25.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY

NOTE: *BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.*

1000 0 1000 2000 FEET

Scale:1"=1000'

I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO

Ronald J. Eidson 12-28-09

RONALD J EIDSON N.M. P.S. No. 3239

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

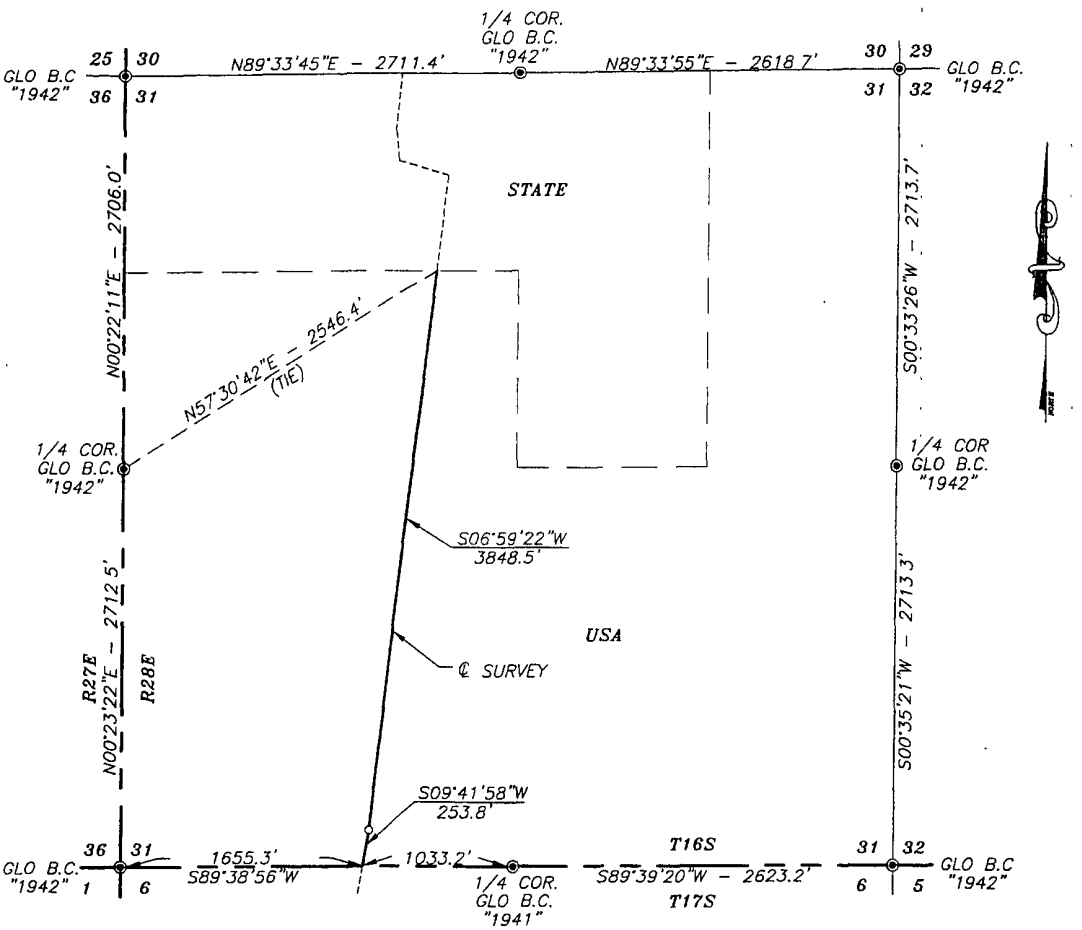
MURCHISON OIL & GAS, INC.

SURVEY OF AN ACCESS ROAD CROSSING
SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 12/4/09	Sheet 1 of 1 Sheets
W.O. Number. 09.13.1335	Drawn By: LA
Date: 12/24/09	09131335

EXHIBIT B-3

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



DESCRIPTION

A STRIP OF LAND 50.0 FEET WIDE AND 4102.3 FEET OR 0.777 MILES IN LENGTH CROSSING USA LAND IN SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO AND BEING 25.0 FEET LEFT AND 25.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY

NOTE: *BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.*

1000 0 1000 2000 FEET

Scale:1"=1000'

I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO

NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR 3239

Ronald J. Eidson 12-28-09

RONALD J. EIDSON NM PS No. 3239

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

MURCHISON OIL & GAS, INC.

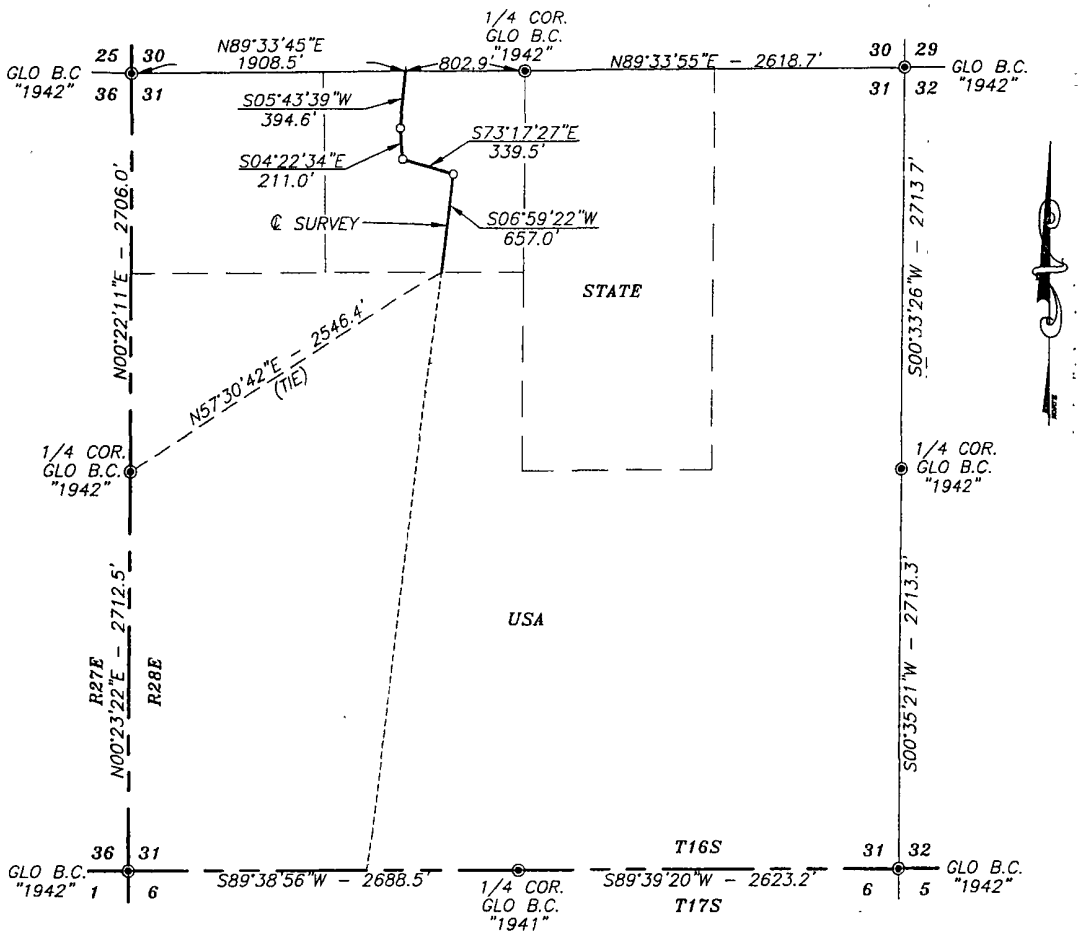
SURVEY OF AN ACCESS ROAD CROSSING
SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 12/4/09	Sheet 1 of 1 Sheets
W.O. Number: 09.13.1335	Drawn By: LA
Date. 12/24/09	09131335

EXHIBIT B-4

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.



DESCRIPTION

A STRIP OF LAND 20.0 FEET WIDE CROSSING STATE OF NEW MEXICO LAND IN SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET RIGHT AND 15 0 FEET LEFT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT ON THE NORTH LINE OF SAID SECTION, WHICH LIES S89°33'45"W 802.9 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION; THEN S05°43'39"W 394.6 FEET; THEN S04°22'34"E 211.0 FEET, THEN S73°17'27"E 339.5 FEET, THEN S06°59'22"W 657.0 FEET TO A POINT ON THE SOUTH LINE OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION, WHICH LIES N57°30'42"E 2546.4 FEET FROM THE WEST QUARTER CORNER OF SAID SECTION

SAID STRIP OF LAND BEING 1602.1 FEET OR 97.10 RODS IN LENGTH, CONTAINING 0.736 ACRES MORE OR LESS AND BEING ENTIRELY LOCATED IN THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER.

NOTE: *BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.*

1000 0 1000 2000 FEET

Scale.1"=1000'

I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

Ronald J. Eidson 12-28-09

RONALD J. EIDSON N.M. P.S. No. 3239

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

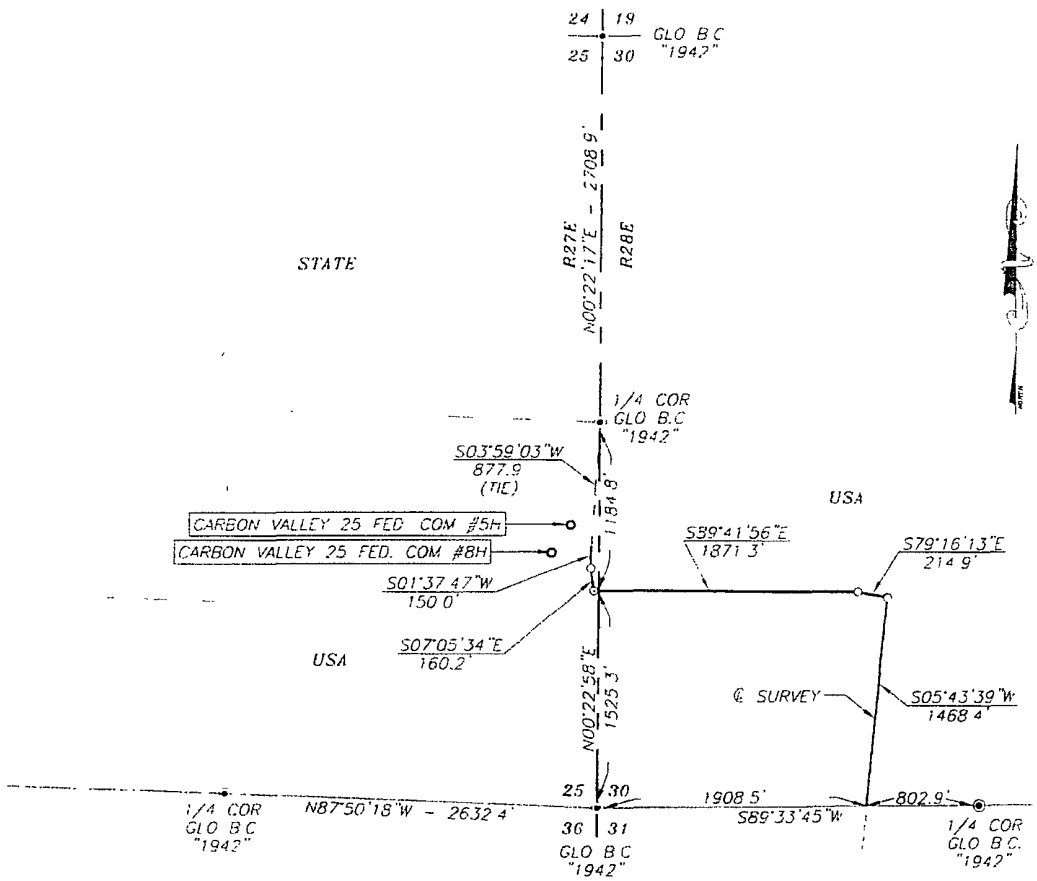
MURCHISON OIL & GAS, INC.

SURVEY OF AN ACCESS ROAD CROSSING
SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 12/4/09	Sheet 1 of 1 Sheets
W.O. Number: 09.13.1335	Drawn By: LA
Date: 12/24/09	09131335

EXHIBIT B-5

SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M.
SECTION 30, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, NEW MEXICO



DESCRIPTION

A STRIP OF LAND 50.0 FEET WIDE AND 3864.8 FEET OR 0.732 MILES IN LENGTH CROSSING USA LAND IN SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST AND SECTION 30, TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY NEW MEXICO AND BEING 25.0 FEET LEFT AND 25.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

NOTE. *BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983 DISTANCES ARE SURFACE VALUES.*

1000 0 1000 2000 FEET
Scale 1"=1000

I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO

10/21/2011
RONALD J. EIDSON NM P.S. No. 3239

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

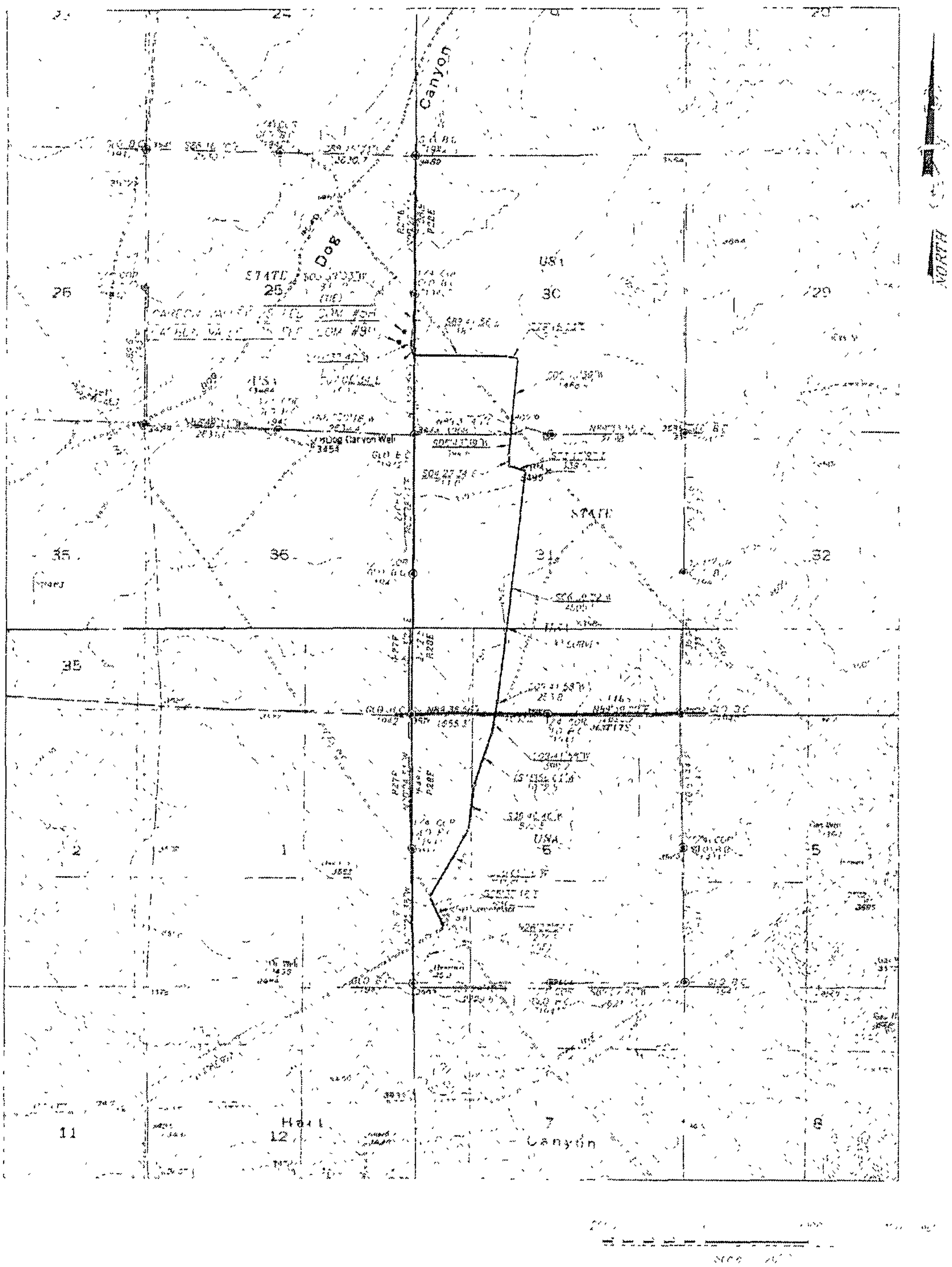
MURCHISON OIL & GAS, INC.

SURVEY OF AN ACCESS ROAD CROSSING
SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST,
SECTION 30, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date 12/4/09		Sheet 1 of 1 Sheets	
W.O. Number. 11.11.2175		Drawn By dsr	
Date: 10/03/11	11.13.2002	09131335	

EXHIBIT B-6

SECTIONS 30 & 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.,



NOTE

[illegible]

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS N.M. 88240
(575) 393-3117

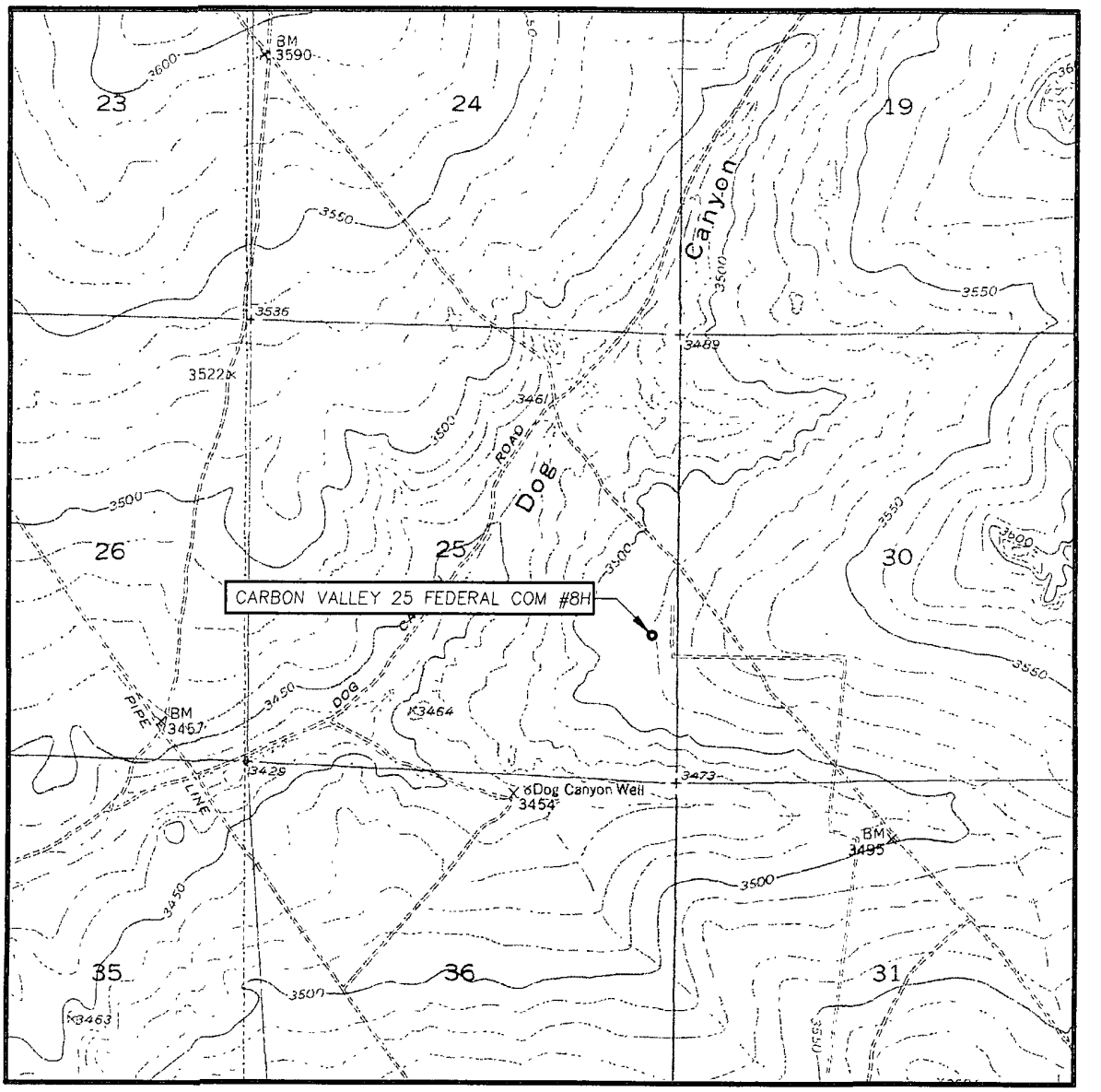
MURCHISON OIL & GAS, INC.

TOPO OF AN ACCESS ROAD CROSSING SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, SECTION 6 TOWNSHIP 17 SOUTH, RANGE 28 EAST, SECTIONS 30 & 31, TOWNSHIP 16 SOUTH RANGE 28 EAST, N.M.P.M., N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date 12/1/09	Sheet 1 of 1 Sheets
W.O. Number 11.11.2175	Drawn By ACS
Date 10/20/11 Rev	11112175 Rel. W.O. 09.2133

EXHIBIT C-1

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
DIAMOND MOUND, N.M. – 10'

SEC 25 TWP 17-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 1780' FSL & 300' FEL

ELEVATION 3509'

OPERATOR MURCHISON OIL & GAS, INC

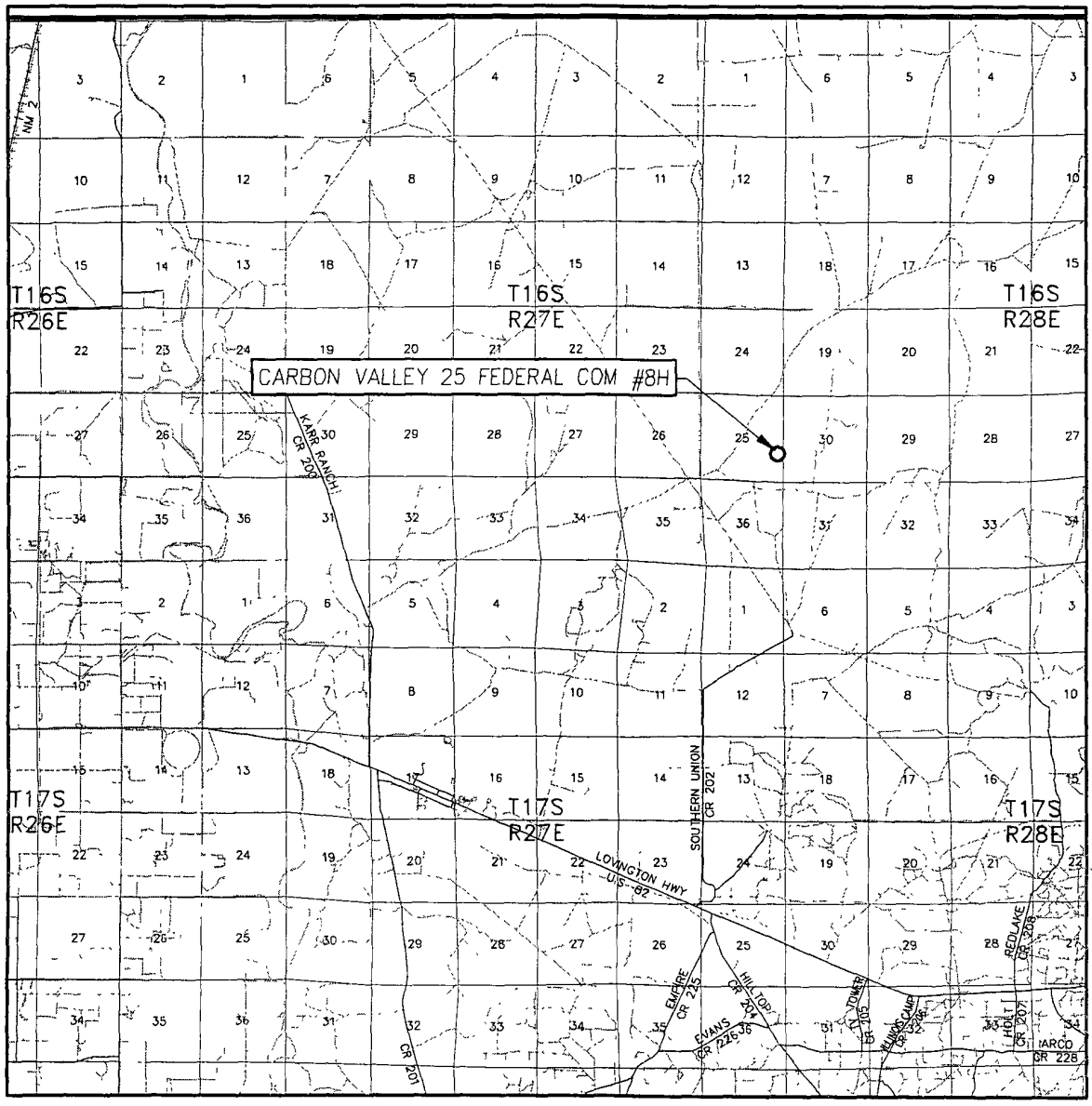
LEASE CARBON VALLEY 25 FED COM

U.S.G.S. TOPOGRAPHIC MAP
DIAMOND MOUND, N.M.

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

EXHIBIT C-2

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 25 TWP. 16-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 1780' FSL & 300' FEL

ELEVATION 3509'

OPERATOR MURCHISON OIL & GAS, INC.

LEASE CARBON VALLEY 25 FEDERAL COM

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N DAL PASO
HOBBS, N.M. 88240
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EXHIBIT C-3
AERIAL PHOTO

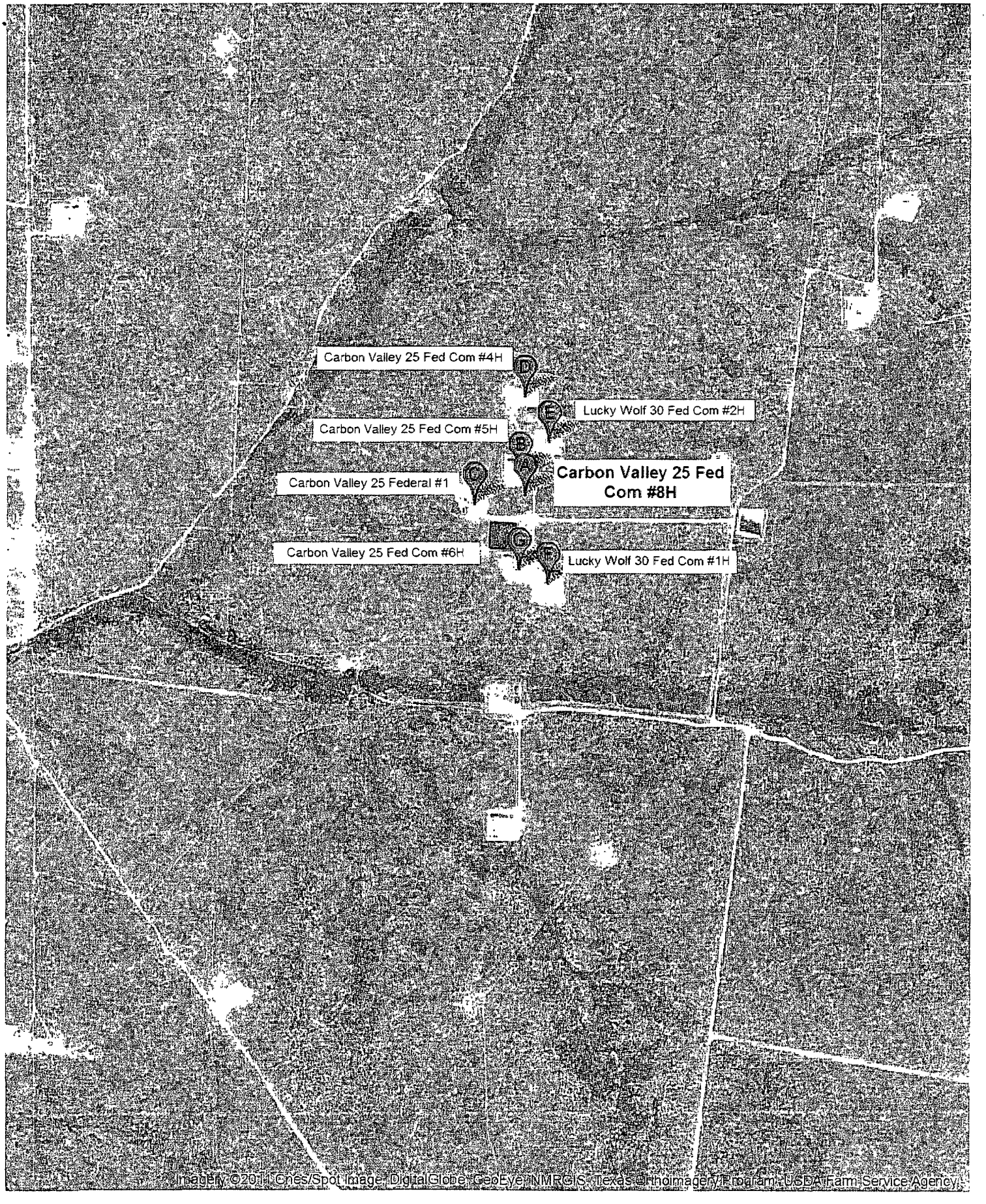


EXHIBIT D
1-MILE RADIUS MAP

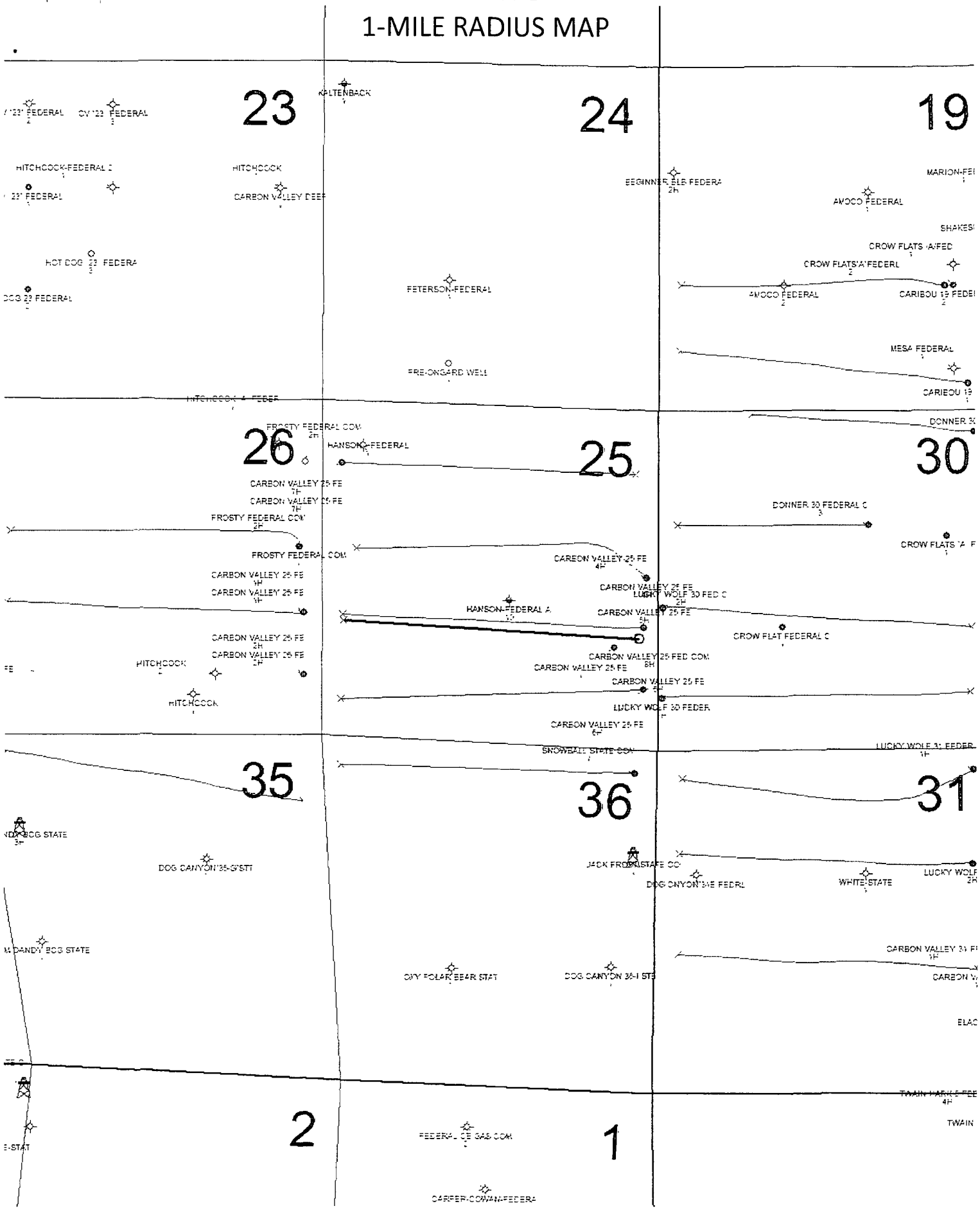
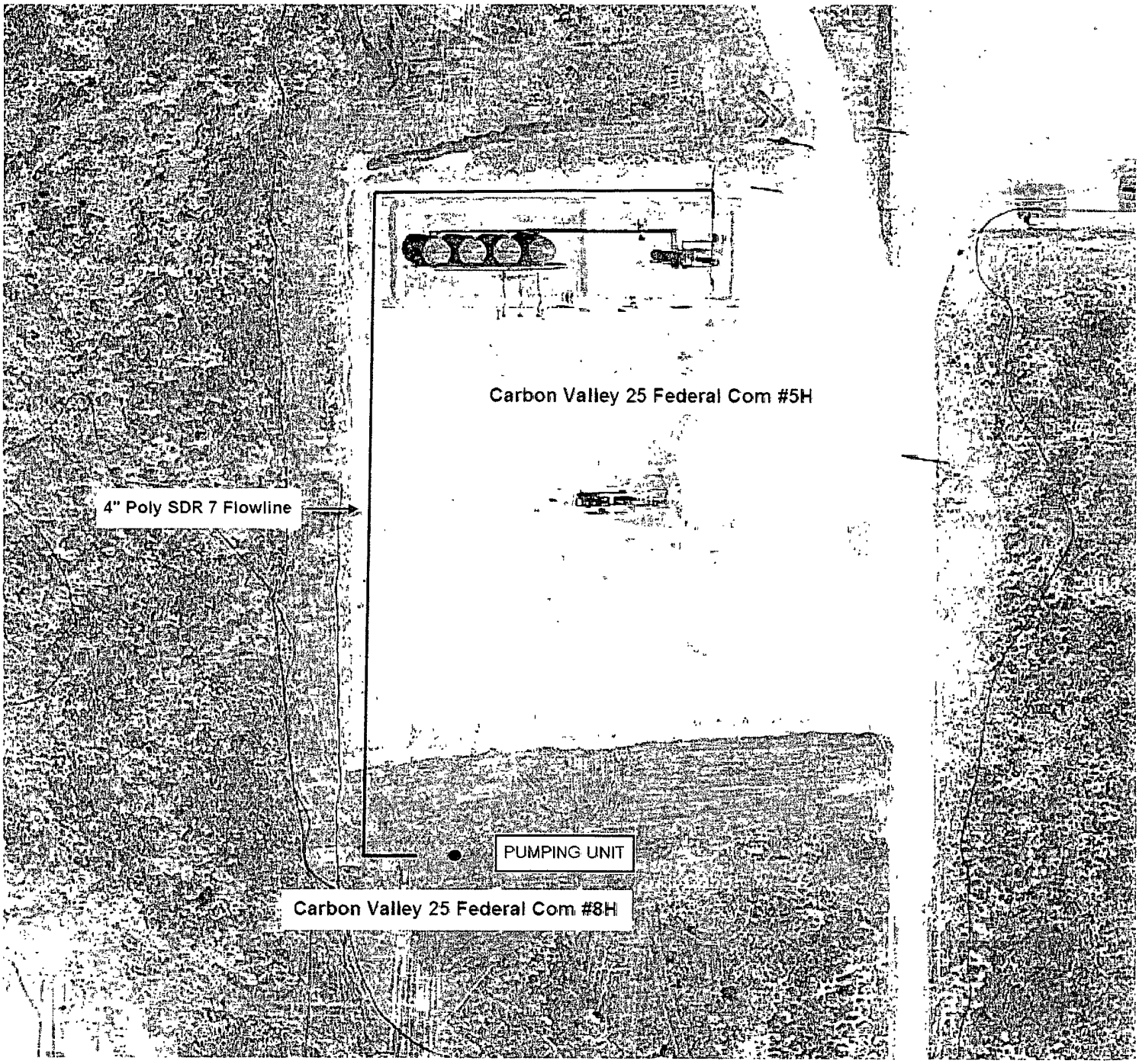


EXHIBIT F-1
PRODUCTION FACILITY LAYOUT



ATTACHMENT TO FORM 3160-3
Murchison Oil & Gas, Inc.
Carbon Valley 25 Fed Com #8H
SL: 1780' FSL & 300' FEL, UNIT I
BHL: 1930' FSL & 330' FWL, UNIT L
Sec 25, T16S, R27E
Eddy County, New Mexico

1. OBJECTIVE

Murchison Oil & Gas plans to drill a Wolfcamp horizontal well at a surface location of 1780' FSL & 300' FEL, Unit I in Section 25, T16S, R27E. This well will be located 200' south of the Carbon Valley 25 Fed Com #5H well drilled and completed in 2010. However during the completion, the well experienced a casing failure in the heel of the lateral and therefore the majority of the horizontal was not stimulated. This proposed well, the Carbon Valley 25 Fed Com #8H will be drilled in a similar fashion and next to the Carbon Valley 25 #5H well and will be completed in the portion of the lateral that was not adequately stimulated in the #5H well. After completing this proposed well, it is believed that we can effectively produce the 160 acre proration unit from these two wellbores.

2. ESTIMATED FORMATION TOPS OF IMPORTANT GEOLOGIC MARKERS

	DEPTH (RKB)	SUBSURFACE
Yates	151'	+ 3376'
Queen	856'	+ 2671'
Premier	1624'	+ 1903'
San Andres	1668'	+ 1859'
Glorieta	3105'	+ 422'
Yeso	3196'	+ 331'
Tubb	4420'	- 893'
Abo	5140'	- 1613'
Wolfcamp	6283'	- 2756'

PROPOSED BHL DEPTHS: TVD 6,333' and MD 10,768'

Note: No pilot hole will be drilled. Horizontal KOP @ 5,856' +/- TVD

3. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL, OR GAS

Anticipated Formation Tops: RKB +/- 3527' Ground Elevation: 3509'

Fresh Water	100' – 120'	Dewey Lake
Fresh Water	190' – 215'	Yates Sandstone
Fresh Water	340' – 360'	Seven Rivers Carbonate
Fresh Water	515' – 525'	Bowers Sand (Seven Rivers)
Oil/Gas	1668'	San Andres
Oil/Gas	3105'	Glorieta
Oil/Gas	3196'	Yeso
Oil/Gas	4420'	Tubb
Oil/Gas	5140'	Abo
Oil/Gas	6283'	Wolfcamp

4. CASING PROGRAM See COA

Casing Size	Hole Size	From To	Weight	Grade	Joint	Condition	Purpose
20"		0' – 40'	Struct	LP			Conductor
9-5/8"	12-1/4"	0' – 1,100'	36.0#	J-55	ST&C	New	Surface
7"	8-3/4"	0' – 5,540'	26.0#	P-110	LT&C	New	Intermediate
7"	8-3/4"	5,540' – 6,505'	26.0#	P-110	BT&C	New	Intermediate
4-1/2"	6-1/8"	6,300–10,779'	11.6#	HCP-110	BT&C	New	Prod Liner

Casing Size	Burst Rating, psi	Safety Factor	Collapse Rating, psi	Safety Factor	Tension Rating, 1000 lbs.	Safety Factor
9-5/8"	3,520	3.20	2,020	3.72	394	9.95
7"	9,960	1.25	6,210	2.10	693	4.68
7"	9,960	1.25	6,210	2.10	830	4.68
4-1/2"	10,690	1.26	8,650	2.57	367	5.00

Equivalent or adequate grades and weights of casing may be substituted at time casing is run, depending on availability.

SAFETY FACTOR ANALYSIS

SURFACE CASING:

Tension — Calculated using weight of casing times landing depth without utilizing buoyancy effects

Collapse — Calculated with full internal evacuation and a collapse force equal to the greatest mud gradient in which the casing will be run. The effects of axial load on collapse will be considered.

Burst — In all cases a conservative fracture pressure will be used such that it represents the upper limit of potential fracture gradients up to a 1.0 psi/ft. gradient. The effects of tension on burst will not be utilized.

INTERMEDIATE CASING.

Tension — Calculated using weight of casing times landing depth without utilizing buoyancy effects. The tension rating used is the conservative LT&C rating while running the BT&C pipe through the curve.

Collapse — Calculated with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run. The effects of axial load on collapse will be considered

Burst — Maximum surface treating pressure during fracturing will be limited to 85% of the rated burst pressure.

PRODUCTION CASING:

Tension — Calculated using weight of casing times landing depth without utilizing buoyancy effects

Collapse — Calculated with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run. The effects of axial load on collapse will be considered.

Burst — Maximum surface treating pressure will be limited to 85% of the rated burst pressure which is controlled by the intermediate casing during fracturing operations.

5. PRESSURE CONTROL EQUIPMENT:

Blowout Preventer (See Attached Diagrams)

An 11" double 5,000 psi BOP equivalent to Diagram 1 shall be nipple up and in place prior to drilling the surface casing shoe. However, if the drilling rig has a 13 5/8", 5,000 psi BOP stack we may elect to use it instead of the 11" BOP. A 5,000 psi annular type preventer shall be part of the BOP stack along with an 11" by 11" 5,000 psi drilling spool. The drilling spool shall have two side outlets with a 3" minimum diameter line to the choke manifold and a 2" minimum diameter line on the kill side. Pressure testing will comply with the "minimum standards and enforcement provisions for well control equipment testing" in the Onshore Oil & Gas Order No.2, Drilling Operations requirements. After setting the 9 5/8" casing, the blowout preventers and related control equipment shall be pressure tested to 5000 psi. The annular type preventer shall be tested to 50% of the rated working pressure or 2500 psi. Any equipment failing to test satisfactorily shall be repaired or replaced. The results of these tests shall be recorded in the driller's log. As a minimum these tests will be performed:

a) Upon installation
b) After any component changes or when any seal subject to test pressure is broken
c) Following any related repairs
d) As required by well conditions or at every 15 day intervals.

The BOP's will be maintained and ready for use until drilling operations are completed. The pipe and blind rams shall be activated on each trip and the annular preventer shall be functionally operated at least weekly.

Kill & Choke Lines & Choke Manifold (see Attached Diagrams)

The kill line will be a 2" minimum size line with both a block valve and check valve in the line. The choke line shall be at least 3" in diameter and have a minimum of 2 block valves installed with one of those valves being remotely operated. The choke manifold shall meet or exceed the requirements for a 5,000 psi rated configuration similar to the attached choke manifold diagram. The manifold will have one adjustable choke and one remotely operated choke that can be isolated from the choke line for replacement or repair. These chokes will be at least 2" in diameter. The block valves shall be at least 2" in diameter and full opening. A pressure gauge will also be located on the manifold that can be read at all times and designed for drilling fluid service. The bleed line from the manifold will be 3" and the two choke lines coming off the manifold will be at least 2".

Kelly cock & Safety valve

A Kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

Pressure Accumulator System

The 5,000 psi system accumulator shall have a minimum requirement with sufficient capacity to operate all rams and the annual preventer and retain a minimum of 200 psi above the precharge pressure. In addition, the fluid reservoir capacity shall be double the usable fluid volume and the fluid shall be kept at the level consistent with the manufacturer's recommendations.

6. MUD PROGRAM

Depth from 0' to 1,100'

Fresh water/ native mud system. Wt. from 8.4 to 8.6 ppg and a viscosity of 28-34 sec. Will have lime for PH control and paper for seepage available if needed Lost circulation material may be required.

Depth from 1,100' to 6,200'

Cut brine mud with a weight from 8.4 to 8.8 ppg and a viscosity of 28 -29 sec No control water loss & lime for PH control

Mud up with XCD Polymer mud system. Wt. from 9.0 to 9.5 ppg, viscosity of 32-40 sec. & WL from 8-10 cc.

Sufficient mud materials will be kept on location at all times in order to combat lost circulation, or unexpected kicks. In order to run open-hole logs and casing, the viscosity and water loss may have to be adjusted to meet these needs.

A mud test will be performed every 24 hours after "mudding up" to determine the mud qualities and its ability to clean & stabilize the hole and to control the well as applicable.

Mud system monitoring equipment shall be installed and operative. This equipment will remain in use until the production casing is run and cemented. Monitoring equipment shall consist of the following:

A recording pit level indicator.
A pit volume totalizer.
A stroke counter and flow sensor.

7. TECHNICAL STAGES OF OPERATION

A. Drill Stem Testing: None planned.

B. Logging:

- Two man mud logging unit from 1,100' to TD
- The vertical hole may be logged above kickoff w/ GR/Dual Laterolog/Neutron Density/Caliper

C. Conventional Coring: None anticipated.

D. Cement:

9 5/8" Surface Casing - Cementing Program
Cement lead with 200 sacks of Interfill Class C + additives with yield = 2.45 cu.ft./sack, tail with 175 sacks Premium Plus + additives with yield = 1.34 cu.ft./sack; sufficient volume of cement will be pumped to ensure cement is circulated to surface. If cement does not circulate, will run a temperature survey to find actual top of cement and run 1" tubing into annulus and pump cement as necessary to achieve circulation to surface.

7" Intermediate Casing - Cementing Program

Cement lead with 325 sacks of Interfill Class H + additives with yield = 2.77 cu.ft./sack, tail with 300 sacks Super Class H + additives with yield = 1.61 cu.ft./sack; sufficient volume of cement will be pumped to ensure cement is circulated to surface.

4.5" Production Liner - Cementing Program

Plan to utilize 4-1/2" 11 6# HCP-110 BTC Peak completion liner system or equivalent from liner hanger packer @ +/- 6,300' to TD of 10,779' MD. No cement required.

- The calculated excess cement percentages are as follows;

a. Surface Casing: 110% Excess

b. Intermediate Casing: 40% Excess

c. Production Liner: Uncemented

E. Directional Drilling:

Murchison Oil & Gas, Inc. plans to drill the intermediate hole and the curve with an 8 ¾" bit. The kickoff point is expected to be +/- 5,856' and the curve will be drilled building angle at 12.0 deg/100'. The intermediate portion of the hole will TD at the end of the tangent at about +/- 6,500' MD, right above the top of the wolfcamp. 7" casing will then be set and cemented back to surface. We then plan to drill out of the 7" Intermediate casing with a 6-1/8" bit. The 6 1/8" directional hole will then be drilled until the end of the curve at +/- 6,611 MD (6,333' TVD). A +/- 4300' lateral will then be drilled in the Wolfcamp extending across section 25 from east to west. The bottom hole location is anticipated to be at 1,930' FSL & 330' FWL of section 25, therefore ending up 50' away from the BHL on the Carbon Valley 25 Fed Com #5H. This #8H well is a replacement for the toe & middle section of the lateral in the #5H well that was only stimulated in the heel of the horizontal well due to casing integrity issues. The Carbon Valley 25 Fed Com #8H is being drilled and will be completed only in the portion of the lateral that did not receive adequate stimulation in the Carbon Valley 25 Fed Com #5H. A 4 ½", 11.6# liner will be run and installed in the lateral section. The liner will be hung at a depth of +/- 6,300' or no lower than 100' above the intermediate casing shoe. The lateral will not be cemented and completed open hole utilizing a multi-stage port & packer ball drop system.

8. ANTICIPATED RESERVOIR CONDITIONS

No abnormal temperatures or pressures are anticipated. Low levels of H2S have been monitored in producing wells in the area, so H2S may be present while drilling the well. An H2S Plan is attached to the Drilling Program. Maximum anticipated bottom hole pressure is 2800 psi based on normal 0.44 psi/ft pressure gradient observed in offset wells. Anticipated bottom hole temperature is 150 degrees Fahrenheit.

9. OTHER PERTINENT INFORMATION

A. Auxiliary Equipment
- Upper and lower Kelly cocks. Full opening stab in valve on the rig floor.

B. Anticipated Starting Date
- Upon approval
- 25 days drilling operations with drilling rig
- 3 days completion operations with drilling rig
- 30 days after that to complete the well and construct production facilities.

Murchison Oil & Gas(Compass 2003)

Eddy County (NAD27)
Carbon Valley '25' Fed Com
#8H
OH

Plan: Plan #2

Pathfinder X & Y Report

05 October, 2011

PATHFINDER
A Schlumberger Company

Pathfinder

Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	Murchison Oil & Gas(Compass 2003)	**Local Co-ordinate Reference:**	Well #8H
Project:	Eddy County (NAD27)	**TVD Reference:**	KB = 22 @ 3532 0usft (Patterson #74)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	KB = 22 @ 3532 0usft (Patterson #74)
Well:	#8H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #2	**Database:**	EDM 5000 1 Single User Db

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

Site	Carbon Valley '25' Fed Com				
Site Position		**Northing**	690,393 100 usft	**Latitude**	32° 53' 52 565 N
From	Map	**Easting**	528,843 100 usft	**Longitude**	104° 14' 21 704 W
Position Uncertainty	0 0 usft	**Slot Radius**	13-3/16 "	**Grid Convergence**	0 05 °

Well	#8H					
Well Position	**+N/-S**	0 0 usft	**Northing**	687,567 930 usft	**Latitude**	32° 53' 24 565 N
	+E/-W	0 0 usft	**Easting**	533,453 226 usft	**Longitude**	104° 13' 27 667 W
Position Uncertainty		0 0 usft	**Wellhead Elevation**	usft	**Ground Level**	3,510 0 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	9/27/2011	7 90	60 68	48,915

Design	Plan #2				
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	274 03	

Survey Tool Program	**Date** 10/5/2011			
From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0 0	10,767 8	Plan #2 (OH)	MWD	MWD - Standard

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Design:	Plan #2	**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	-3,532 0	0 0	0 0	0 0	0 00	687,567.93	533,453 23
100 0	0 00	0.00	100.0	-3,432 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
200 0	0 00	0 00	200 0	-3,332 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
300 0	0 00	0 00	300 0	-3,232 0	0.0	0 0	0 0	0 00	687,567 93	533,453 23
400 0	0 00	0 00	400 0	-3,132 0	0.0	0 0	0 0	0 00	687,567 93	533,453 23
500 0	0 00	0 00	500 0	-3,032 0	0 0	0 0	0 0	0 00	687,567 93	533,453.23
600 0	0 00	0.00	600 0	-2,932 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
700.0	0 00	0 00	700 0	-2,832 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
800 0	0 00	0.00	800 0	-2,732 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
900 0	0.00	0.00	900 0	-2,632 0	0 0	0.0	0 0	0 00	687,567 93	533,453 23
1,000 0	0 00	0 00	1,000 0	-2,532.0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
1,100.0	0 00	0 00	1,100 0	-2,432 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
1,200 0	0 00	0 00	1,200 0	-2,332 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
1,300.0	0 00	0 00	1,300.0	-2,232 0	0.0	0 0	0 0	0 00	687,567 93	533,453 23
1,400 0	0 00	0 00	1,400.0	-2,132 0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
1,500 0	0 00	0 00	1,500 0	-2,032 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
1,600 0	0.00	0 00	1,600 0	-1,932 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
1,700 0	0 00	0 00	1,700 0	-1,832 0	0 0	0.0	0 0	0 00	687,567 93	533,453 23
1,800.0	0.00	0 00	1,800 0	-1,732 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
1,900 0	0 00	0 00	1,900 0	-1,632 0	0 0	0 0	0 0	0 00	687,567.93	533,453 23
2,000 0	0 00	0.00	2,000 0	-1,532 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
2,100 0	0.00	0 00	2,100.0	-1,432 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
2,200 0	0 00	0.00	2,200 0	-1,332 0	0 0	0.0	0.0	0 00	687,567 93	533,453 23
2,300 0	0 00	0 00	2,300 0	-1,232 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
2,400 0	0 00	0 00	2,400 0	-1,132 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
2,500.0	0 00	0 00	2,500 0	-1,032.0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
2,600 0	0 00	0 00	2,600 0	-932 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23

Pathfinder

Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	Murchison Oil & Gas(Compass 2003)	**Local Co-ordinate Reference:**	Well #8H
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Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #2	**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)
2,700 0	0 00	0 00	2,700 0	-832 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
2,800 0	0 00	0 00	2,800 0	-732 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
2,900.0	0 00	0 00	2,900 0	-632 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
3,000 0	0.00	0 00	3,000.0	-532 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
3,100 0	0 00	0 00	3,100 0	-432.0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
3,200 0	0 00	0 00	3,200 0	-332.0	0 0	0 0	0 0	0 00	687,567 93	533,453.23
3,300 0	0 00	0 00	3,300 0	-232.0	0.0	0 0	0 0	0 00	687,567 93	533,453 23
3,400 0	0 00	0 00	3,400.0	-132 0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
3,500 0	0 00	0 00	3,500 0	-32 0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
3,600 0	0 00	0 00	3,600 0	68 0	0 0	0 0	0 0	0.00	687,567 93	533,453 23
3,700 0	0 00	0 00	3,700 0	168 0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
3,800 0	0 00	0 00	3,800 0	268 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
3,900 0	0 00	0 00	3,900 0	368.0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,000 0	0 00	0.00	4,000 0	468 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,100.0	0 00	0 00	4,100 0	568.0	0 0	0 0	0 0	0.00	687,567.93	533,453.23
4,200 0	0 00	0 00	4,200.0	668 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,300 0	0 00	0 00	4,300 0	768 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,400 0	0 00	0 00	4,400 0	868 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,500 0	0 00	0 00	4,500 0	968.0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,600 0	0 00	0 00	4,600 0	1,068 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,700.0	0 00	0 00	4,700.0	1,168 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
4,800 0	0 00	0 00	4,800 0	1,268 0	0 0	0.0	0 0	0 00	687,567 93	533,453 23
4,900 0	0 00	0 00	4,900 0	1,368 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
5,000 0	0 00	0 00	5,000 0	1,468 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
5,100 0	0 00	0.00	5,100 0	1,568 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
5,200 0	0 00	0 00	5,200 0	1,668.0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
5,300 0	0 00	0.00	5,300 0	1,768 0	0 0	0 0	0 0	0.00	687,567 93	533,453.23

Pathfinder

Pathfinder X & Y Report

PATHFINDER
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Design:	Plan #2	**Database:**	EDM 5000 1 Single User Db

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5,400 0	0.00	0 00	5,400 0	1,868 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
5,500 0	0 00	0 00	5,500 0	1,968.0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
5,600 0	0 00	0 00	5,600 0	2,068.0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
5,700 0	0 00	0 00	5,700 0	2,168 0	0 0	0 0	0 0	0 00	687,567 93	533,453 23
5,800 0	0 00	0 00	5,800 0	2,268.0	0 0	0 0	0 0	0 00	687,567.93	533,453 23
5,856 0	0.00	0 00	5,856 0	2,324 0	0 0	0 0	0.0	0 00	687,567 93	533,453 23
5,875 0	2 28	274 03	5,875 0	2,343 0	0 0	-0 4	0 4	12 00	687,567 96	533,452 85
5,900 0	5.28	274 03	5,899 9	2,367 9	0 1	-2 0	2 0	12 00	687,568.07	533,451 20
5,925 0	8 28	274 03	5,924 8	2,392 8	0 3	-5 0	5 0	12 00	687,568 28	533,448 26
5,950 0	11 28	274 03	5,949.4	2,417 4	0 6	-9 2	9 2	12 00	687,568 58	533,444 03
5,975 0	14 28	274 03	5,973 8	2,441.8	1.0	-14 7	14 8	12 00	687,568.97	533,438 51
6,000 0	17 28	274.03	5,997 8	2,465.8	1.5	-21 5	21.6	12 00	687,569 44	533,431 73
6,025 0	20 28	274.03	6,021 5	2,489.5	2 1	-29 5	29 6	12 00	687,570.01	533,423.70
6,050 0	23 28	274.03	6,044 7	2,512 7	2 7	-38 8	38 9	12 00	687,570 66	533,414 45
6,075 0	26 28	274 03	6,067 4	2,535 4	3.5	-49.2	49 4	12 00	687,571 40	533,404 00
6,100 0	29 28	274 03	6,089 5	2,557 5	4 3	-60 9	61.0	12 00	687,572 22	533,392 38
6,125 0	32.28	274 03	6,111.0	2,579 0	5 2	-73 6	73 8	12 00	687,573 11	533,379 62
6,150 0	35 28	274 03	6,131 8	2,599 8	6 2	-87 5	87 7	12 00	687,574 09	533,365 75
6,175 0	38 28	274 03	6,151 8	2,619 8	7 2	-102 4	102 7	12 00	687,575 14	533,350 82
6,200 0	41 28	274.03	6,171.0	2,639 0	8 3	-118 4	118 7	12 00	687,576 27	533,334 87
6,225 0	44 28	274.03	6,189 3	2,657 3	9.5	-135 3	135 6	12.00	687,577 46	533,317 93
6,250 0	47 28	274 03	6,206 8	2,674 8	10 8	-153.2	153 5	12 00	687,578 72	533,300 06
6,275 0	50 28	274 03	6,223 3	2,691 3	12 1	-171 9	172 3	12 00	687,580 04	533,281 30
6,300 0	53 28	274 03	6,238 7	2,706 7	13 5	-191.5	192 0	12.00	687,581 42	533,261 71
6,325 0	56 28	274 03	6,253.1	2,721 1	14 9	-211 9	212 4	12 00	687,582 85	533,241 34
6,350 0	59 28	274 03	6,266.5	2,734 5	16 4	-233.0	233 6	12 00	687,584 34	533,220 25
6,375 0	62 28	274 03	6,278 7	2,746 7	17.9	-254 7	255 4	12 00	687,585 87	533,198 49

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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)
6,400 0	65 28	274 03	6,289 7	2,757 7	19 5	-277 1	277 8	12 00	687,587 45	533,176 12
6,425 0	68 28	274 03	6,299 6	2,767.6	21 1	-300 0	300 8	12 00	687,589 06	533,153 20
6,450 0	71 28	274.03	6,308 2	2,776 2	22 8	-323 4	324 2	12 00	687,590 71	533,129 80
6,475 0	74 28	274.03	6,315.6	2,783.6	24.5	-347 2	348 1	12 00	687,592 39	533,105 98
6,500 0	77.28	274 03	6,321 7	2,789.7	26 2	-371 4	372 3	12 00	687,594 09	533,081 81
6,525 0	80.28	274 03	6,326 6	2,794 6	27 9	-395 9	396.9	12 00	687,595.81	533,057 35
6,550 0	83.28	274 03	6,330 2	2,798.2	29.6	-420 6	421.6	12 00	687,597.55	533,032 67
6,575 0	86 28	274.03	6,332.5	2,800 5	31 4	-445 4	446 5	12 00	687,599 30	533,007 84
6,600 0	89.28	274.03	6,333.4	2,801 4	33 1	-470 3	471 5	12 00	687,601.06	532,982 93
6,611 6	90 67	274 03	6,333.4	2,801.4	33 9	-481 8	483.0	12 00	687,601 87	532,971 39
6,700.0	90 67	274 03	6,332 4	2,800 4	40.2	-570 0	571 5	0 00	687,608 08	532,883.18
6,800 0	90.67	274 03	6,331.2	2,799 2	47 2	-669 8	671 5	0 00	687,615 11	532,783 43
6,900.0	90 67	274 03	6,330.1	2,798 1	54.2	-769.5	771 4	0 00	687,622 14	532,683 69
7,000 0	90 67	274 03	6,328 9	2,796 9	61.2	-869 3	871 4	0.00	687,629 16	532,583 94
7,100 0	90 67	274.03	6,327.7	2,795 7	68 3	-969 0	971 4	0.00	687,636 19	532,484 20
7,200 0	90 67	274.03	6,326 6	2,794.6	75 3	-1,068 8	1,071 4	0 00	687,643 21	532,384 45
7,300 0	90 67	274 03	6,325.4	2,793 4	82 3	-1,168 5	1,171 4	0 00	687,650 24	532,284 70
7,400 0	90 67	274 03	6,324 2	2,792 2	89 3	-1,268 3	1,271 4	0.00	687,657 27	532,184 96
7,500 0	90.67	274 03	6,323 1	2,791.1	96 4	-1,368 0	1,371 4	0 00	687,664 29	532,085 21
7,600 0	90 67	274.03	6,321 9	2,789 9	103 4	-1,467 8	1,471 4	0 00	687,671 32	531,985 47
7,700 0	90.67	274.03	6,320.7	2,788 7	110 4	-1,567 5	1,571 4	0 00	687,678 34	531,885.72
7,800 0	90 67	274 03	6,319 6	2,787 6	117 4	-1,667 3	1,671 4	0 00	687,685.37	531,785.97
7,900 0	90 67	274 03	6,318.4	2,786 4	124 5	-1,767 0	1,771 4	0 00	687,692.40	531,686.23
8,000 0	90 67	274 03	6,317.3	2,785 3	131.5	-1,866 7	1,871 4	0 00	687,699 42	531,586 48
8,100 0	90 67	274.03	6,316.1	2,784 1	138.5	-1,966 5	1,971 4	0.00	687,706 45	531,486 73
8,200 0	90 67	274 03	6,314 9	2,782 9	145 5	-2,066 2	2,071 4	0 00	687,713 48	531,386.99
8,300 0	90 67	274.03	6,313.8	2,781 8	152 6	-2,166 0	2,171 4	0 00	687,720 50	531,287 24

Company:	Murchison Oil & Gas(Compass 2003)	**Local Co-ordinate Reference:**	Well #8H
Project:	Eddy County (NAD27)	**TVD Reference:**	KB = 22 @ 3532 0usft (Patterson #74)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	KB = 22 @ 3532 0usft (Patterson #74)
Well:	#8H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #2	**Database:**	EDM 5000 1 Single User Db

Planned Survey

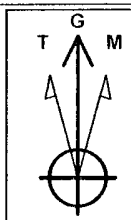
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
8,400 0	90 67	274 03	6,312 6	2,780 6	159.6	-2,265.7	2,271 3	0 00	687,727 53	531,187 50
8,500 0	90 67	274 03	6,311 4	2,779 4	166 6	-2,365 5	2,371 3	0 00	687,734 55	531,087.75
8,600 0	90 67	274 03	6,310 3	2,778 3	173 7	-2,465.2	2,471 3	0 00	687,741 58	530,988.00
8,700 0	90 67	274 03	6,309 1	2,777 1	180.7	-2,565.0	2,571 3	0 00	687,748.61	530,888 26
8,800 0	90 67	274 03	6,307 9	2,775 9	187 7	-2,664.7	2,671 3	0 00	687,755 63	530,788 51
8,900 0	90.67	274 03	6,306 8	2,774 8	194 7	-2,764 5	2,771 3	0 00	687,762 66	530,688 77
9,000 0	90 67	274 03	6,305 6	2,773 6	201.8	-2,864 2	2,871 3	0 00	687,769.68	530,589 02
9,100 0	90 67	274 03	6,304 4	2,772 4	208.8	-2,964 0	2,971 3	0 00	687,776 71	530,489 27
9,200.0	90 67	274.03	6,303 3	2,771 3	215 8	-3,063 7	3,071 3	0 00	687,783 74	530,389 53
9,300.0	90 67	274 03	6,302 1	2,770 1	222 8	-3,163 4	3,171 3	0 00	687,790 76	530,289 78
9,400 0	90 67	274 03	6,300 9	2,768 9	229 9	-3,263 2	3,271 3	0 00	687,797 79	530,190.04
9,500 0	90 67	274 03	6,299.8	2,767 8	236 9	-3,362 9	3,371.3	0 00	687,804 81	530,090 29
9,600 0	90 67	274.03	6,298 6	2,766 6	243 9	-3,462 7	3,471.3	0.00	687,811.84	529,990.54
9,700 0	90 67	274 03	6,297 4	2,765 4	250 9	-3,562 4	3,571 3	0 00	687,818 87	529,890 80
9,800 0	90 67	274 03	6,296 3	2,764 3	258 0	-3,662 2	3,671 2	0 00	687,825 89	529,791 05
9,900 0	90 67	274 03	6,295 1	2,763 1	265 0	-3,761 9	3,771 2	0 00	687,832 92	529,691 31
10,000 0	90 67	274.03	6,293.9	2,761 9	272 0	-3,861 7	3,871 2	0 00	687,839 95	529,591 56
10,100 0	90 67	274 03	6,292.8	2,760.8	279 0	-3,961 4	3,971 2	0 00	687,846 97	529,491 81
10,200 0	90 67	274 03	6,291 6	2,759.6	286 1	-4,061 2	4,071 2	0 00	687,854 00	529,392 07
10,300 0	90 67	274 03	6,290 5	2,758 5	293.1	-4,160 9	4,171 2	0 00	687,861 02	529,292 32
10,400 0	90 67	274 03	6,289 3	2,757 3	300 1	-4,260.7	4,271 2	0 00	687,868 05	529,192 58
10,500 0	90 67	274 03	6,288 1	2,756 1	307.1	-4,360.4	4,371 2	0 00	687,875 08	529,092.83
10,600 0	90 67	274 03	6,287 0	2,755 0	314 2	-4,460 1	4,471.2	0 00	687,882 10	528,993 08
10,700 0	90 67	274 03	6,285.8	2,753 8	321 2	-4,559.9	4,571.2	0 00	687,889 13	528,893 34
10,767 9	90 67	274 03	6,285 0	2,753 0	326 0	-4,627 6	4,639 1	0 00	687,893 90	528,825 58

Company:	Murchison Oil & Gas(Compass 2003)	**Local Co-ordinate Reference:**	Well #8H
Project:	Eddy County (NAD27)	**TVD Reference:**	KB = 22 @ 3532 0usft (Patterson #74)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	KB = 22 @ 3532 0usft (Patterson #74)
Well:	#8H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #2	**Database:**	EDM 5000 1 Single User Db

Checked By: _____ Approved By: _____ Date: _____

Murchison Oil & Gas

Project: Eddy County (NAD27)
Site: Carbon Valley '25' Fed Com
Well: #8H
Wellbore: OH
Plan: Plan #2 (#8H/OH)



Azimuths to Grid North
True North: -0.06°
Magnetic North: 7.84°

Magnetic Field
Strength: 48915 0snT
Dip Angle: 60.68°
Date: 9/27/2011
Model: IGRF2010

PATHFINDER
A Schlumberger Company

WELL DETAILS #8H

Ground Elevation 3510 0
RKB Elevation KB = 22 @ 3532 0usft (Patterson #74)
Rig Name Patterson #74

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0 0	0 0	687567 929	533453 226	32° 53' 24 565 N	104° 13' 27 667 W	

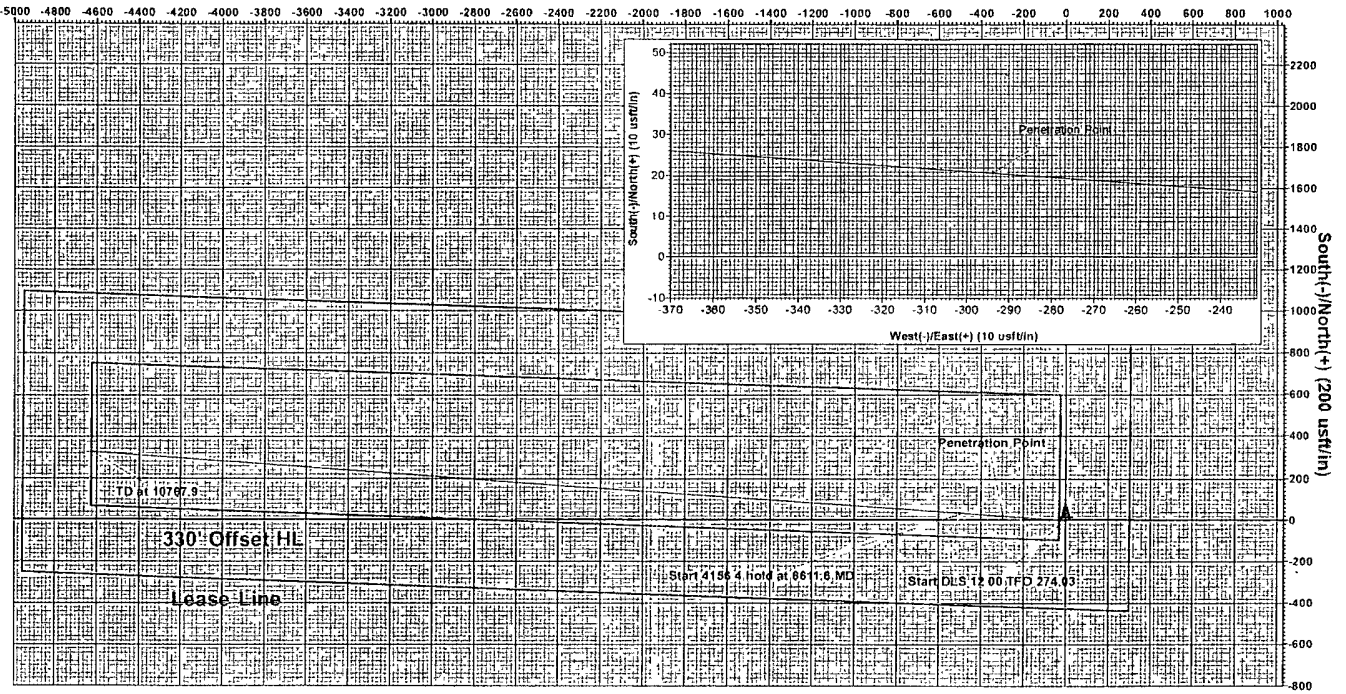
SECTION DETAILS

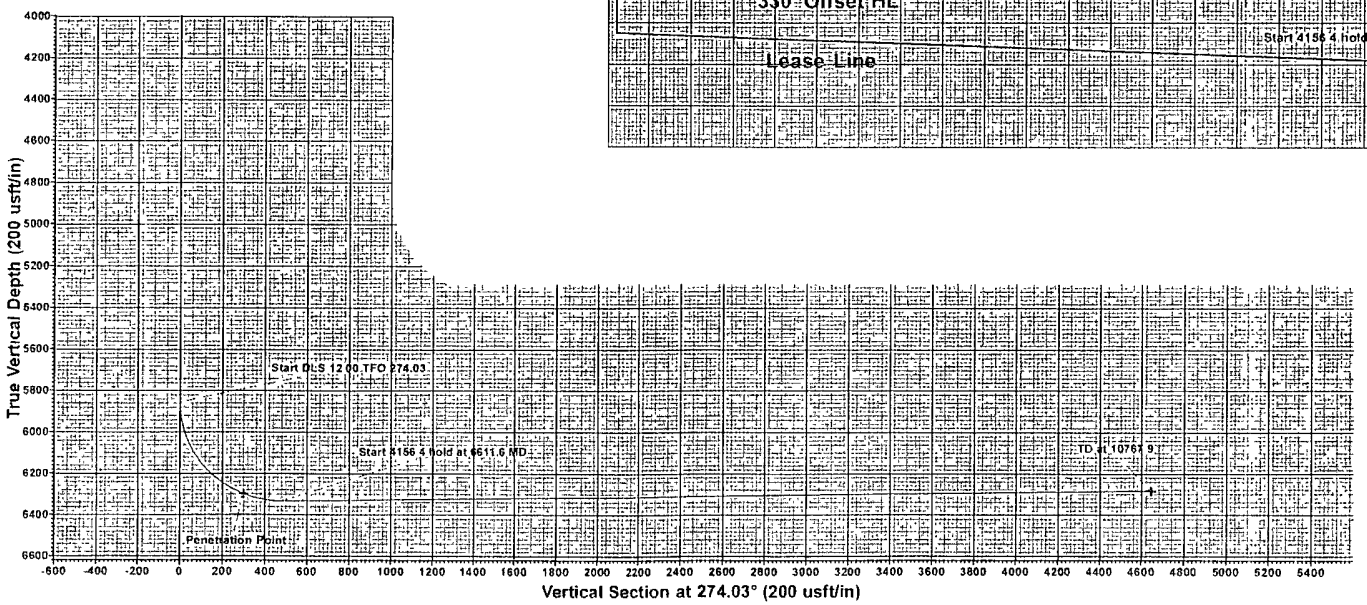
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 00	0 0	
2	5856 0	0 00	0 00	5856 0	0 0	0 0	0 00	0 00	0 0	
3	6611 6	90 67	274 03	6333 4	33 9	-481 8	12 00	274 03	483 0	
4	10767 9	90 67	274 03	6285 0	326 0	-4627 6	0 00	0 00	4639 1	PBHL (8H)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL (8H)	6285 0	326.0	-4627 6	687893 901	528825 577	Point
Penetration Point	6297 0	20.7	-293 8	687588 627	533159 454	Point

West(-)/East(+) (200 usft/in)





PROJECT DETAILS. Eddy County (NAD27)
Geodetic System. US State Plane 1927 (Exact solution)
Datum NAD 1927 (NADCON CONUS)
Ellipsoid Clarke 1866
Zone New Mexico East 3001
System Datum Mean Sea Level
Local North Grid

Plan Plan #2 (8H/OH)
Created By Sam Biffle Date 16 09, October 05 2011
Checked _____ Date _____

EXHIBIT G-1
Carbon Valley 25 Fed Com #8H

BOP STACK

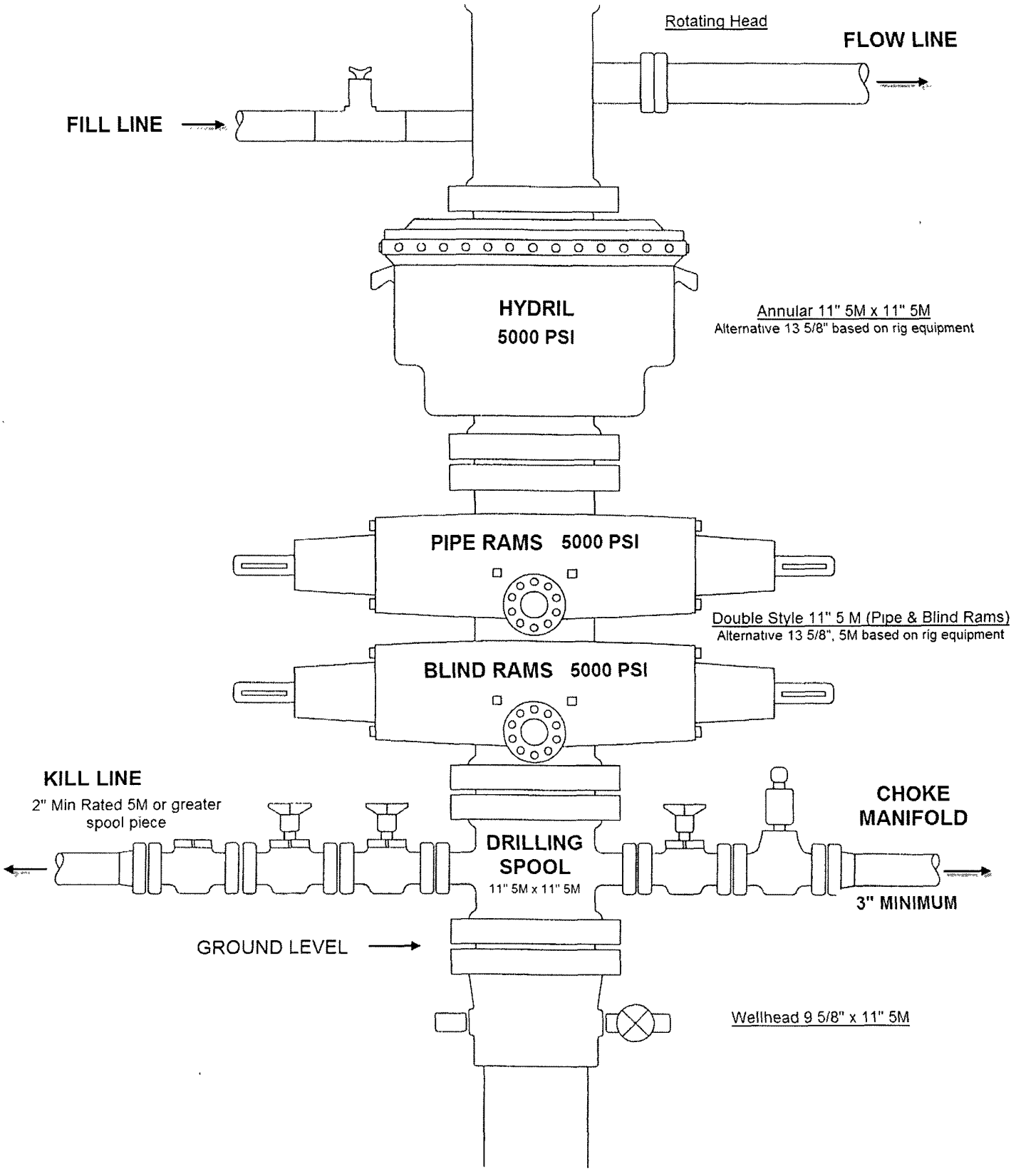
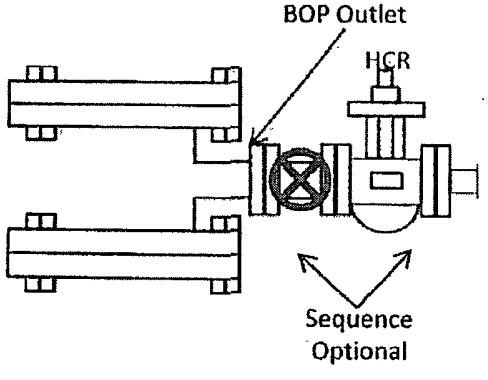


EXHIBIT G-2

CARBON VALLEY 25 FEDERAL COM
#8H
Choke Manifold



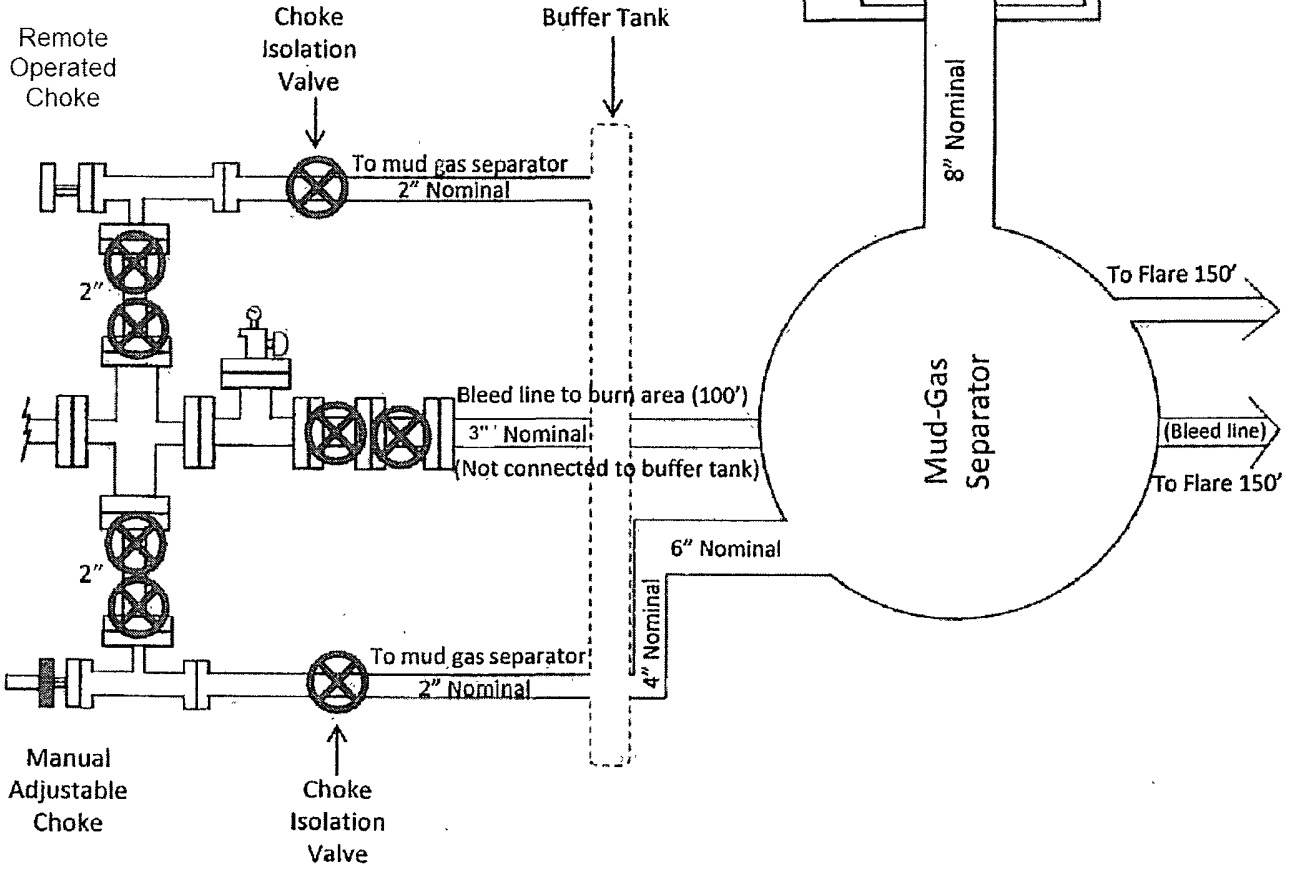
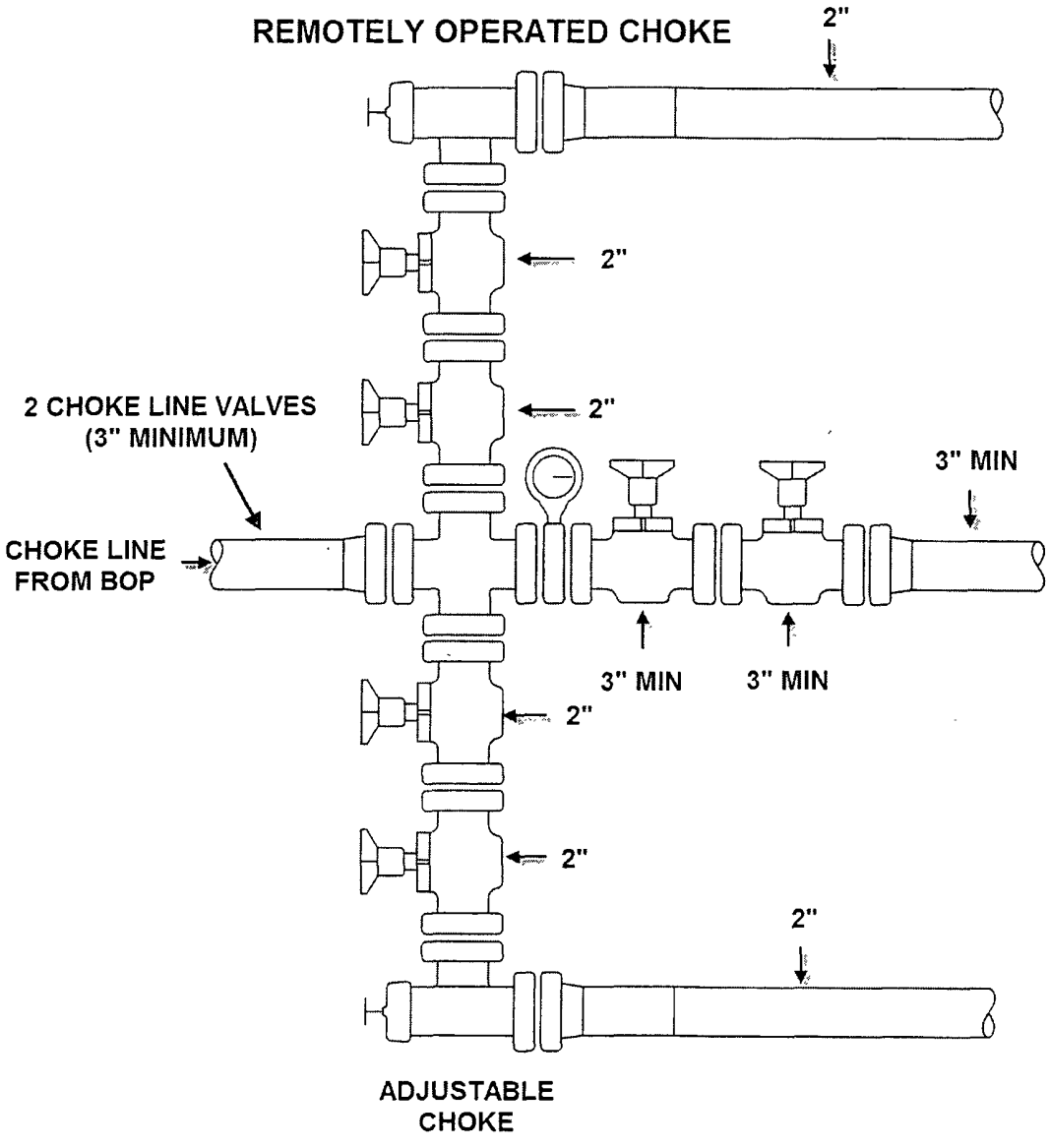


EXHIBIT G-3

CARBON VALLEY 25 FEDERAL COM #8H
CHOKE MANIFOLD (5M PSI DESIGN)



MURCHISON OIL & GAS, INC.

HYDROGEN SULFIDE (H2S) CONTINGENCY PLAN FOR DRILLING/COMPLETING/WORKOVER/FACILITY WITH THE EXCEPTION OF H2S IN EXCESS OF 100 PPM

MURCHISON OIL & GAS, INC.
NEW DRILL WELL
CARBON VALLEY 25 FEDERAL COM 8H
SL: 1780' FSL & 300' FEL, Lot I
BHL: 1930' FSL & 330' FWL, Lot L
SEC 25, T16S, R27E
EDDY COUNTY, NEW MEXICO

This well/facility is not expected to have H2S, but the following is submitted as requested.

TABLE OF CONTENTS

I. GENERAL H2S EMERGENCY ACTIONS

In the event of any evidence of H2S emergency, the following plan will be initated:

1. All personnel will immediately evacute to an upwind, and if possible, uphill "Safe Area."
2. If for any reason a person must enter the hazardous area, they must wear a SCBA (self-contained breathing apparatus).
3. Always use the "Buddy System."
4. Isolate the well/problem if possible.
5. Account for all personnel.
6. Display the proper colors warning all unsuspecting personnel of the danger at hand.
7. Contact the company representative as soon as possible, if not at the location (use the enclosed call list as instructed.)

At this point, the company representative will evaluate the situation and coordinate the necessary duties to bring the situation under control, and if necessary, the notification of emergency response agencies and residents.

II. EMERGENCY PROCEDURES FOR AN UNCONTROLLABLE RELEASE OF H2S

1. All personnel will don the self-contained breathing apparatus (SCBA).
2. Remove all personnel to the "safe area," always use the buddy system.
3. Contact company representative if not on location.
4. Set in motion the steps to protect and/or remove the general public to any upwind 'safe area." Maintain strict security and safety procedures while dealing with the source.
5. No entry to any unauthorized personnel.
6. Notify the appropriate agencies:

City Police -	City Streets
State Police -	State Roads
County Sheriff -	County Roads

7. Call the NMOCD.

If at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harm's way, he will immediately notify public safety personnel.

III. EMERGENCY CALL LIST

	OFFICE	CELL	HOME
DOUG DIETRICH	432-686-2063	432-210-6190	432-687-3401
MIKE HUBER	575-628-3932	575-706-4209	
RANDY FORD	432-682-0440	432-599-2222	432-684-4334

IV. EMERGENCY RESPONSE NUMBERS

Eddy County, New Mexico

State Police	888-442-6677
Eddy County Sheriff – Carlsbad	575-396-3611
Eddy County Emergency Management – Carlsbad	575-887-7551
State Emergency Response Center (SERC)	575-476-9620
Artesia Police/Fire/Ambulance Department	575-746-5000
New Mexico Oil Conservation Division – Artesia	575-748-1283
Callaway Safety Equipment, Inc.	575-392-2973

V. PROTECTION OF THE GENERAL (ROE) RADIUS OF EXPOSURE

In the event greater than 100 ppm H2S is present, the ROE calculations will be done to determine if the following conditions exist and whether the Plan must be activated:

- 100 ppm at any public area (any place not associated with this site).
- 500 ppm at any public road (any road the general public may travel).
- 100 ppm radius of 3000' will be assumed if there is insufficient data to do the calculations, and there is a reasonable expectation that H2S could be present in concentrations greater that 100 ppm in the gas mixture.

Calculation for the 100 ppm ROE: **(H2S concentrations in decimal form)**

ROE = [(1.589)(H2S concentration)(Q)] (^0.6258)

10,000 ppm + = 0.1
1,000 ppm + = .001

Calculation for the 500 ppm ROE: **(H2S concentrations in decimal form)**

ROE = [(0.4546)(H2S concentration)(Q)] (^0.6258)

100 ppm + = .0001
10 ppm + = .00001

EXAMPLE: If a well/facility has been determined to have 650 ppm H2S in the gas mixture and the well/facility is producing at a gas rate of 200 MCFD, then:

ROE for 100 ppm	ROE=[(1.589)(.00065)(200,000)] (^0.6258) ROE=28.1'
ROE for 500 ppm	ROE=[(.4546)(.00065)(200,000)] (^0.6258) ROE=12.8'

These calculations will be forwarded to the appropriate NMOCD district office when applicable.

VI. PUBLIC EVACUATION PLAN

When the supervisor has determined that the general public will be involved, the following plan will be implemented:

1. Notification of the emergency response agencies of the hazardous condition and implement evacuation procedures.
2. A trained person in the H2S safety shall monitor with detection equipment the H2S concentration, wind and area of exposure. This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. All monitoring equipment shall be UL approved for use in Class I Groups A, B, C, & D, Divison I hazardous locations. All monitors will have a minimum capability of measuring H2S, oxygen, and flammable values.
3. Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.
4. The company representative shall stay in communication with all agencies throughout the duration of the situation and inform such agencies when the situation has been contained and the affected area is safe to enter.

VII. PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION

The decision to ignite a well should be a last resort with one, if not both, of the following conditions:

1. Human life and/or property are endangered.
2. There is no hope of bringing the situation under control with the prevailing conditions at the site.

Instructions for Igniting the Well:

1. Two people are required. They must be equipped with positive pressure, self contained breathing apparatus and "D"-ring style, full body, OSHA approved safety harness. Non-flammable rope will be attached.
2. One of the people will be a qualified safety person who will test the atmosphere for H2S, oxygen and LFL. The other person will be the designated company representative.
3. Ignite upwind from a distance no closer than necessary. Make sure that the ignition site has the maximum escape avenue available. A 25mm flare gun with a range of approximately +/- 500 feet shall be used to ignite the gas.
4. Before igniting, check for the presence of combustible gases.
5. After igniting, continue emergency actions and procedures as before.

VIII. REQUIRED EMERGENCY EQUIPMENT

1. Breathing Apparatus

- Rescue Packs (SCBA) – 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
- Work/Escape Packs – 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
- Emergency Escape Packs – 4 packs shall be stored in the doghouse for emergency evacuation.

2. Signage and Flagging

- One Color Code Condition Sign will be placed at the entrance to the site, reflecting the possible conditions at the site.
- A Colored Condition flag will be on display reflecting the condition at the site at that time.

3. **Briefing Area**
    - Two perpendicular areas will be designated by signs and readily accessible.

4. **Windsocks**
    - Two windsocks will be placed in strategic locations, visible from all angles.

5. **H2S Detectors and Alarms**
    - The stationary detector with three (3) sensors will be placed in the upper doghouse if equipped, set to visually alarm @ 10 ppm and audible alarm @ 15 ppm. Calibrate a minimum of every 30 days or as needed. The three sensors will be placed in the flowing places: (Gas sample tubes will be stored in the safety trailer):
        - o Rig floor
        - o Bell Nipple
        - o End of flow line or where well bore fluid is being discharged.

6. **Auxilary Rescue Equipment**
    - Stretcher
    - Two OSHA full body harnesses
    - 100' of ⅝" OSHA approved rope
    - One 20 lb. Class ABC fire extinguisher
    - Communication via cell phones on location and vehicles on location.

IX. USING SELF-CONTAINED BREATHING AIR EQUIPMENT (SCBA)

1. SCBA should be worn when any of the following are performed:
    - Working near the top or on top of a tank.
    - Disconnecting any line where H2S can reasonably be expected.
    - Sampling air in the area to determine if toxic concentrations of H2S exist.
    - Working in areas where over 10 ppm of H2S has been detected.
    - At any time there is a doubt of the level of H2S in the area.
2. All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.
3. Facial hair and standard eyeglasses are not allowed with SCBA.
4. Contact lenses are never allowed with SCBA.
5. When breaking out any line where H2S can reasonably be expected.
6. After each use, the SCBA unit shall be cleaned, disinfected, serviced and inspected.
7. All SCBA shall be inspected monthly.

X. RESCUE & FIRST AID FOR VICTIMS OF H2S POISONING

- Do not panic.
- Remain calm and think.
- Put on breathing apparatus.
- Remove the victim to the safe breathing area as quickly as possible, upwind and uphill from source or crosswind to achieve upwind.
- Notify emergency response personnel.
- Provide artificial respiration and/or CPR as necessary.
- Remove all contaminated clothing to avoid further exposure.
- A minimum of two (2) personnel on location shall be trained in CPR and First Aid.

XI. TOXIC EFFECTS OF H2S POISONING

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity – 1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic than Carbon Monoxide. Occupational exposure limits for Hydrogen Sulfide and other gasses are compared below in Table 1. Toxicity table for H2S and physical effects are shown in Table II.

Table 1

Permissible Exposure Limits of Various Gasses

Common Name	Symbol	Sp. Gravity	TLV	STEL	IDLH
Hydrogen Cyanide	HCN	.94	4.7 ppm	C	
Hydrogen Sulfide	H2S	1.192	10 ppm	15 ppm	100 ppm
Sulfide Dioxide	SO2	2.21	2 ppm	5 ppm	
Chlorine	CL	2.45	.5 ppm	1 ppm	
Carbon Monoxide	CO	.97	25 ppm	200 ppm	
Carbon Diodide	CO2	1.52	5000 ppm	30,000 ppm	
Methane	CH4	.55	4.7% LEL	14% UEL	

Definitions

A. **TLV** – Threshold Limit Value is the concentration employees may be exposed to based on a TWA (time weighted average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Government Hygienists) and regulated by OSHA.

B. **STEL** – Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupation Exposure Limit). The OEL for H2S is 19 PPM.

C. **IDHL** – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H2S is 100 PPM.

D. **TWA** – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed to based on a TWA.

Table II

Toxicity Table of H2S

Percent %	PPM	Physical Effects
.0001	1	Can smell less that 1 ppm.
.001	10	TLV for 8 hours of exposure.
.0015	15	STEL for 15 minutes of exposure.
.01	100	Immediately Dangerous to Life and Health. Kills sense of smell in 3-5 mins.
.02	200	Kills sense of smell quickly, may burn eyes and throat.
.05	500	Dizziness, cessation of breathing begins in a few minutes.
.07	700	Unconscious quickly, death will result if not rescued promptly.
.10	1000	Death will result unless rescued promptly. Artificial resuscitation may be necessary.

XII. PHYSICAL PROPERTIES OF H2S

The properties of all gases are usually described in the context of seven (7) major categories:

COLOR
ODOR
VAPOR DENSITY
EXPLOSIVE LIMITS
FLAMMABILITY
SOLUBILITY (IN WATER)
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

COLOR – TRANSPARENT
Hydrogen Sulfide is colorless, so it is invisible. This fact simply means that you cannot rely on your eyes to detect its presence, a fact that makes the gas extremely dangerous to be around.

ODOR – ROTTEN EGGS
Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs." For this reason, it earned its common name "sour gas." However, H2S, even in low concentrations is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192
Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H2S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

EXPLOSIVE LIMITS – 4.3% to 46%
Mixed with the right proportion of air or oxygen, H2S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

FLAMMABILITY
Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO2), another hazardous gas that irritates the eyes and lungs.

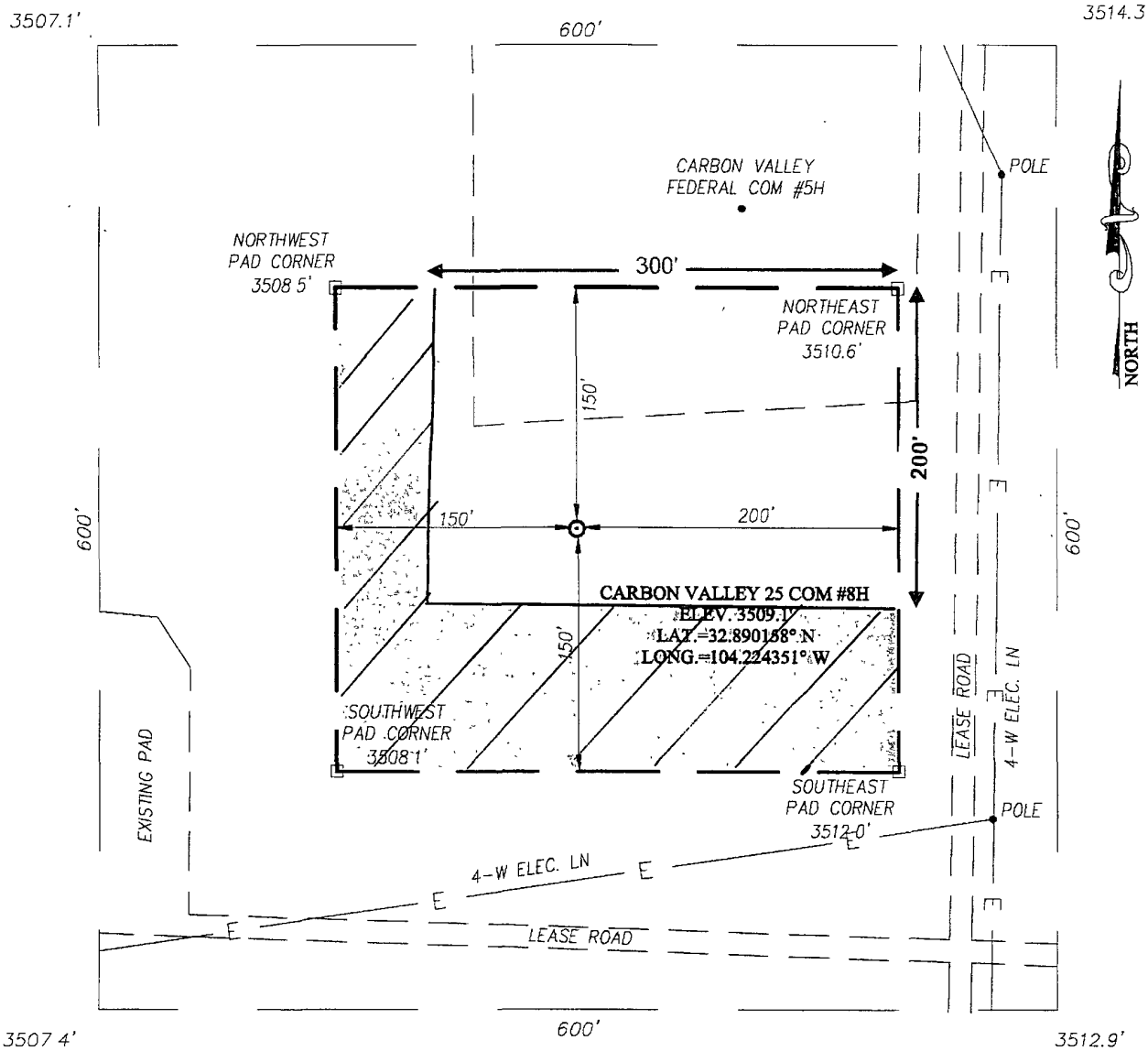
SOLUBILITY – 4 to 1 RATIO WITH WATER
Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion, and sludge. The solubility of H2S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H2S may release the gas into the air.

BOILING POINT – (-76^0 degrees Fahrenheit)
Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found in gas.

EXHIBIT F-2
INTERIM RECLAMATION

SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M.

EDDY COUNTY NEW MEXICO



Redistributed Top Soil

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U S HWY. #82 AND CO. RD #202 (SOUTHERN UNION), GO NORTH ON CO RD #202 APPROX 2 6 MILES, TURN LEFT AND GO NORTHWEST APPROX. 2 4 MILES. TURN LEFT AND GO NORTH APPROX 0.1 MILE TO A "Y" INTERSECTION VEER RIGHT AND GO NORTHWEST APPROX. 1.6 MILES TURN LEFT AND GO WEST APPROX. 0.1 MILE. TURN RIGHT AND GO NORTH APPROX. 0 4 MILES TURN LEFT AND GO WEST APPROX 0 4 MILES TURN RIGHT AND GO NORTH APPROX. 0 1 MILE. THE LOCATION STAKE IS APPROX. 240 FEET WEST OF LEASE ROAD.

100 0 100 200 Feet

Scale: 1"=100'

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N M 88240
(575) 393-3117

MURCHISON OIL & GAS, INC.

CARBON VALLEY 25 FFEDERAL COM #8H WELL
LOCATED 1780 FEET FROM THE SOUTH LINE
AND 300 FEET FROM THE EAST LINE OF SECTION 25,
TOWNSHIP 16 SOUTH, RANGE 27 EAST, N M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date. 8/24/11	Sheet 1 of 1 Sheets		
W.O. Number. 11.11.1848	Dr. By: LA	Rev 1	
Date: 9/8/11	Rel. W.O..	11111848	Scale 1"=100'

MURCHISON OIL & GAS, INC.
SURFACE USE AND OPERATIONS PLAN

Carbon Valley 25 Federal Com 8H
SL: 1780' FSL & 300' FEL, UNIT I
BHL: 1930' FSL & 330' FWL, UNIT L
Sec. 25, T16S, R27E
Eddy County, New Mexico

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above-described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved, and the procedures to be followed in rehabilitating the surface after completion of the operations so that a complete appraisal can be made of the environmental effect associated with the operations.

1. EXISTING ROADS

EXISTING ROADS:

a. The well site and elevation plat for the proposed well are reflected on Form C-102: Well Location and Acreage Dedication Plat. The well was staked by John West Surveying Company.
b. Exhibits C-1 through C-3 are portions of a topo map, road map and an aerial map showing the proposed well site and roads in the vicinity.
c. Exhibits B-2 through B-6 are section plats showing the existing roadway that will be used to access the lease from County Road 202 (Southern Union). Murchison Oil & Gas, Inc. currently has Right of Way Permits (NM-123402 and R-31590) for the proposed route.
d. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

DIRECTIONS:

From the intersection of U.S. Hwy. 82 and Co. Rd. 202 (Southern Union), go north on Co. Rd. #202 approximately 2.6 miles; turn left and go northwest approximately 2.4 miles. Turn left and go north approximately 0.1 mile to a "Y" intersection. Veer right and go northwest approximately 1.6 miles. Turn left and go west approximately 0.1 mile. Turn right and go north approximately 0.4 mile. Turn left and go west approximately 0.4 mile. Turn right and go north approximately 0.1 mile. The location stake is approximately 240 feet west of lease road.

ACCESS ROADS

Length and Width

No new access roads will be constructed. Murchison Oil & Gas, Inc. has agreements with the surface owners for right-of-way for the lease road to the proposed well.

Surface Material

Six inches of caliche and water, compacted and graded.

Maximum Grade

Less than three percent

Turnouts

None needed

Drainage Design

N/A

Culverts

None needed

Gates and Cattle Guards

None required

2. LOCATION OF EXISTING WELLS

The locations of existing wells within a 1 mile radius are shown on Exhibit D.

3. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

If the well is productive:

a. A 4" poly SDR 7 flowline will be run north and then east to connect to the production facilities of Carbon Valley 25 Federal Com #5H as shown on Exhibit F-1. The flowline and piping will be installed according to API specifications.
b. If electricity is needed, power will be obtained from Central Valley Electric, and they will submit a separate plan and ROW for service to the well location.
c. Original topsoil from the well site will be returned to the location, and the site will be recontoured as close as possible to the original state.

4. LOCATION AND TYPE OF WATER SUPPLY

The well will be drilled using a combination of water mud systems as outlined in the Drilling Program. The water will be obtained from commercial water stations in the area and hauled to the location by transport truck using the existing roads shown on Exhibit C-1 through C-3. If a commercial fresh water source is nearby, fast line may be laid along existing road ROWs and fresh water pumped to the well. No water well will be drilled on the location.

5. SOURCE OF CONSTRUCTION MATERIALS

Caliche required for the construction of the location pad and access road will be obtained from caliche on the location or from the nearest BLM-approved pit.

6. METHODS OF HANDLING WASTE DISPOSAL

a. The well will be drilled using a closed loop system (see Exhibit H).
b. All drilling fluid will be circulated over shaker(s) with cuttings discharged into roll off container. Fluid and fines below shaker(s) will be circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container. Fluid will be continuously re-circulated through equipment with polymer added to aid separation of cutting fines.
c. Roll-off containers will be lined and de-watered with fluids re-circulated into system.
d. Cuttings will be hauled to one of the following, depending on which rig is available to drill well:
   CRI (permit number NM-01-0006)
   GMI (permit number NM-01-0019)
e. Water produced from the well during completion will be held temporarily in steel tanks and then taken to a NMOCD approved commercial disposal facility.
f. Garbage and trash produced during drilling or completion operations will be collected in trash cages or trash bins and hauled to an approved landfill.
g. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days.

7. ANCILLARY FACILITIES

None required.

8. WELL SITE LAYOUT

a. Exhibit E shows the proposed well site layout with dimensions of the pad layout.
b. The ground surface at the drilling location is essentially flat.
c. V Door direction is east.
d. Topsoil, if available, will be stockpiled on the south side of the location until it is needed for interim reclamation.
e. Exhibit E-1 shows the proposed orientation of the closed loop system. No permanent living facilities are planned, but a temporary foreman/tool pusher's trailer will be on location during the drilling operations.

9. PLANS FOR RESTORATION OF THE SURFACE

a. Interim reclamation will take place after the well is completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. Any stockpiled topsoil will be spread over reclaimed area and reseeded with a BLM–approved seed mixture. Exhibit F-2 shows the final pad size after reclamation: 300' x 200'.
b. Final reclamation will take place if the well is not productive. Upon plugging and abandoning the well, all caliche will be removed from the well pad and access road, and surface will be contoured to match the original topography as much as possible. Caliche will be recycled for road repair or reused for another well pad on the same lease. If any topsoil remains, it will be spread out and reseeded with a BLM-approved seed mixture.

10. SURFACE OWNERSHIP

a. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface has multiple uses, primarily grazing of livestock and oil and gas production.
b. The surface tenant for this site is Bogle Ltd. Co., LLC, 7331 Cherokee Road, Dexter, NM 88230, 575-734-5442.

OTHER INFORMATION

Topography

The land surface at the well site is small, rolling hills.

Soil

Loamy soil shallow to caliche and raw Gypsum.

Flora and Fauna

The vegetation consists of creosote, mesquite, yucca, prickly pear, Mormon tea, cane cholla, pencil cholla, horse crippler and various grasses. Faunal species include pronghorn antelope, mule deer, coyote, badger, rabbits, and various snakes, small mammals, birds and reptiles.

Ponds and Streams

There are no rivers, lakes, ponds, or streams in the area.

Residences and Other Structures

There are no residences within one mile of the proposed well site.

Archaeological, Historical, and Cultural sites

A Cultural Resources Examination conducted by Rebecca L. Hill and Stephen Smith, Boone Arch Services of NM, on October 17, 2011 has been sent to the BLM Office.

OPERATOR'S REPRESENTATIVES

Doug Dietrich, Engineering Manager
300 N. Marienfeld, Suite 300
Midland, TX 79701
Office Phone: (432) 686-2063
Cell Phone: (432) 210-6190

Mike Huber, Production Foreman
110 Shaw
Carlsbad, NM 88220
Office Phone: (575) 628-3932
Cell Phone: (575) 706-4209

Randy Ford, Drilling Supervisor
415 W. Wall Street, Suite 1700
Midland, TX 79701
Office Phone: (432) 682-0440
Cell Phone: (432) 559-2222

EXHIBITS

A	Form C-102 Well Location & Acreage Dedication Map
B-1 thru B-6	Well Site, Existing Access Road
C-1 thru C-3	Vicinity Map (Topographical), Location Verification Map, Aerial Map
D	1-Mile Radius Map
E-1 thru E-3	Proposed Well Pad Layout Map
F-1	Production Facilities
F-2	Interim Reclamation Map
G-1 thru G-3	BOPE and Choke Manifold Schematics
H	Closed Loop System Diagram

Murchison Oil & Gas, Inc.
Carbon Valley 25 Federal Com 8H
SL: 1780' FSL & 300' FEL, Lot I, Sec. 25, T16S, R27E
BHL: 1930' FSL & 330' FWL, Lot L, Sec. 25, T16S, R27E
Eddy County, New Mexico

CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Murchison Oil & Gas, Inc. and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

10/21/11
Date

Darrick Stallings
VP, Operations
Murchison Oil & Gas, Inc.

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Murchison Oil and Gas, Inc.
LEASE NO.:	NMNM98807
WELL NAME & NO.:	Carbon Valley 25 Fed Com 8H
SURFACE HOLE FOOTAGE:	1780' FSL & 330' FEL
BOTTOM HOLE FOOTAGE	1930' FSL & 330' FWL
LOCATION:	Section 25, T. 16 S., R. 27 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

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

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

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

Tank Battery Liners and Berms:
Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

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

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

Cave/Karst Subsurface Mitigation

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

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

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

Lost Circulation:

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

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

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

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) 234-5972 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 stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 4 inches in depth. The topsoil will be used 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 theCarlsbad 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. 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 (20) feet.

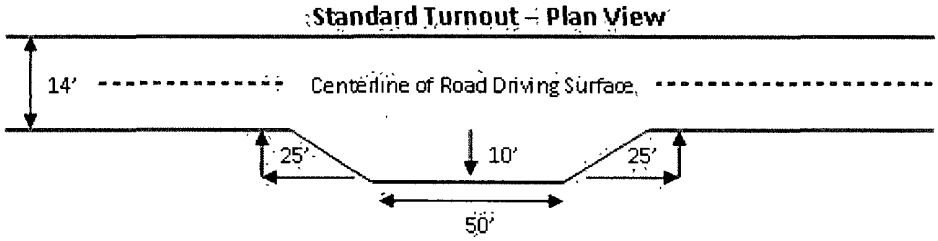
Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

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

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

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

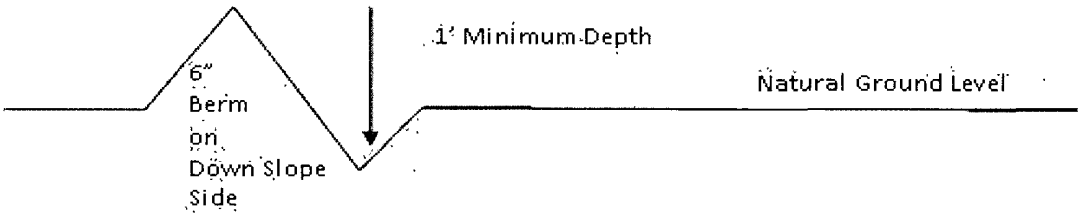
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

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

Culvert Installations
Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road 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 cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

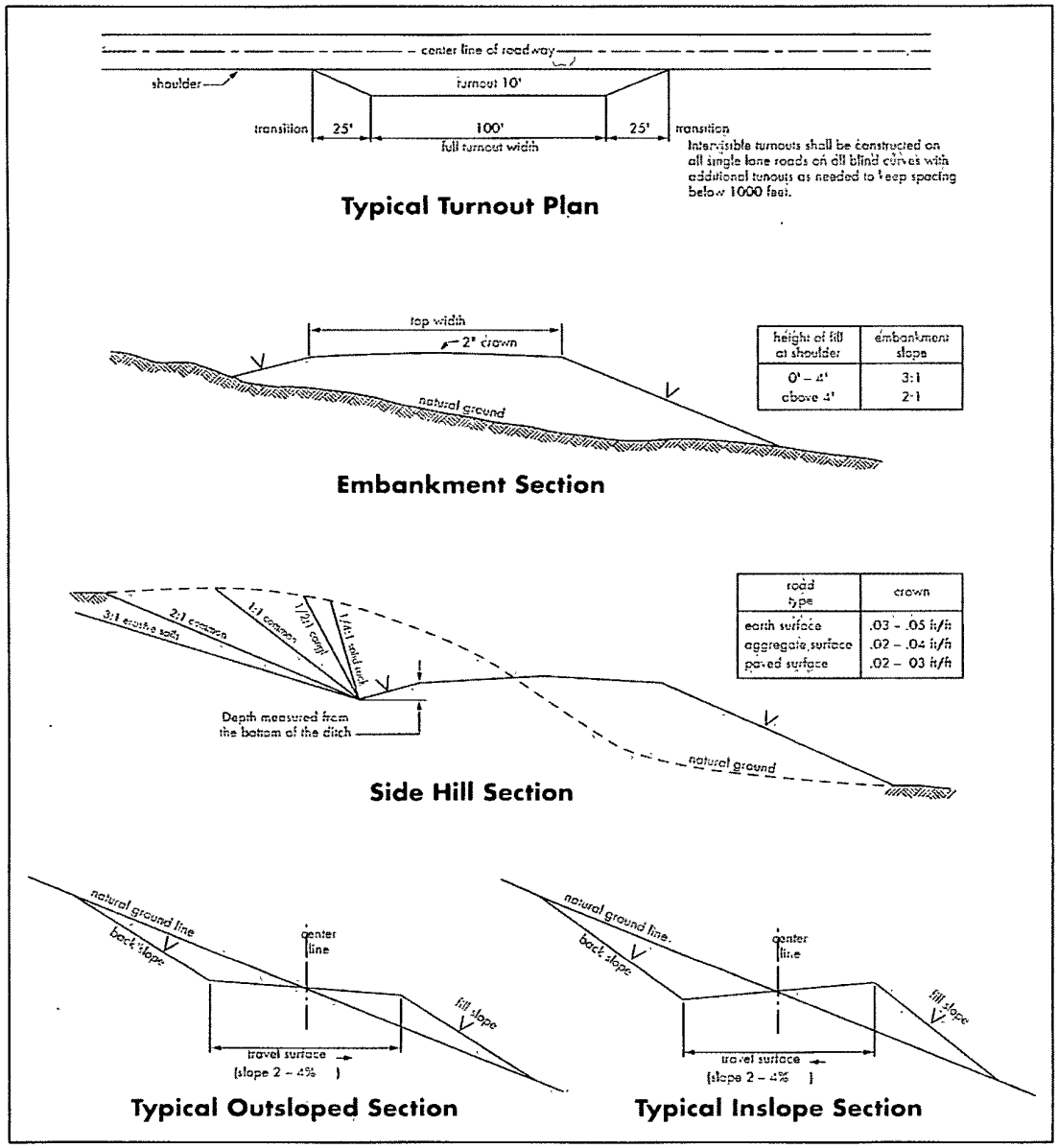
Fence Requirement

Where entry is required 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 fence(s).

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

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

1. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts 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.

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 are located, this does not include the dog house or stairway area.

B. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

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

Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

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

Possible lost circulation in the Tansill, Grayburg, and San Andres formations.
Possible brine flows in the Salado Formation, if encountered.
Possible high pressure gas bursts in the Wolfcamp formation.

HIGH CAVE/KARST – IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE, THE BLM IS TO BE NOTIFIED PRIOR TO RUNNING THE SURFACE CASING. REVISED CEMENTING PROGRAM OR CONTINGENCY CASING MAY BE REQUIRED.

1. The **9-5/8** inch surface casing shall be set at approximately **1100** feet and cemented to the surface. **Casing is to be set in a competent formation, which may be difficult in the Artesia group. Onshore Order II requires casing to be set across a competent bed.**

    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 a 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.

IF LOST CIRCULATION OCCURS WHILE DRILLING THE 8-3/4" HOLE, THE CEMENT PROGRAM FOR THE 7" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.

2. The minimum required fill of cement behind the **7** inch intermediate casing is:

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

3. The minimum required fill of cement behind the **4-1/2** inch production liner is:

   ☒ No cement required. Operator is using Peak Completion Liner.

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

C. PRESSURE CONTROL

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

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

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

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips or where the float does not hold, 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**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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

d. 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.**

e. 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.

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

D. DRILLING MUD

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

E. DRILL STEM TEST

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

F. 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.

CRW 011712

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.

Containment Structures
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

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, Munsell Soil Color Chart # 5Y 4/2

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the APD and attachments, including stipulations, 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 activity of 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. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.

b. Activities of other parties including, but not limited to:

(1) Land clearing.
(2) Earth-disturbing and earth-moving work.
(3) Blasting.
(4) Vandalism and sabotage.

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, 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, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the 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 the holder

of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. 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.

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. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. 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. Signs will be maintained in a legible condition for the life of the pipeline.

14. 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. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (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 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.

C. ELECTRIC LINES (not applied for in APD)

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).

Seed Mixture 4, for Gypsum 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
Alkali Sacaton (Sporobolus airoides)	1.0
DWS Four-wing saltbush (Atriplex canescens)	5.0

DWS: DeWinged Seed

*Pounds of pure live seed:

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

DISTRICT I --- CHECKLIST FOR INTENTS TO DRILL

37485

Operator Murchison O+G OGRID # 15363
Well Name & # Carbon Valley 25 Fed Com #8H Surface Type (F) (S) (P)
Location: UL I, Sect 25, Twnship 16 s, RNG 27 e, Sub-surface Type (F) (S) (P)

A. Date C101 rec'd 1/23/2017 C101 reviewed 1/23/2017
B. 1. Check mark, Information is OK on Forms:
OGRID ✓, BONDING ____, PROP CODE ____, WELL # ____, SIGNATURE ____
2. Inactive Well list as of: 1/23/2017 # wells 0, # Inactive wells 0
a. District Grant APD but see number of inactive wells:
No letter required ✓; Sent Letter to Operator ____, to Santa Fe ____
3. Additional Bonding as of: 1/23/2017
a. District Denial because operator needs addition bonding:
No Letter required ✓; Sent Letter to Operator ____, To Santa Fe ____
b. District Denial because of inactive well list and Financial Assurance:
No Letter required ✓; Sent Letter to Operator ____, To Santa Fe ____

C. C102 YES ✓ NO ___, Signature ✓
1. Pool Dog Canyon; Wolfcamp, Code 17970
a. Dedicated acreage ____, What Units ____
b. SUR. Location Standard ____: Non-Standard Location ____
c. Well shares acres: Yes ___, No ___, # of wells ____ plus this well # ____
2. 2nd. Operator in same acreage, Yes ____, No ✓
Agreement Letter ____, Disagreement letter ____
3. Intent to Directional Drill Yes ✓, No ___
a. Dedicated acreage 160, What Units I-J-K-L
b. Bottomhole Location Standard ✓, Non-Standard Bottomhole ____
4. Downhole Commingle: Yes ____, No ____
a. Pool #2 ____, Code ____, Acres ____
Pool #3 ____, Code ____, Acres ____
Pool #4 ____, Code ____, Acres ____
5. POTASH Area Yes ____, No ✓,
D. Blowout Preventer Yes ✓, No ____,
E. H2S Yes ✓, No ____,
F. C144 Pit Registration Yes ✓, No ____,
G. Does APD require Santa Fe Approval:
1. Non-Standard Location: Yes ____, No ✓, NSL # ____
2. Non-Standard Proration: Yes ____, No ✓, NSP # ____
3. Simultaneous Dedication: Yes ____, No ✓, SD # ____
Number of wells ____ Plus # ____
4. Injection order Yes ____, No ✓; PMX # ____ or WFX # ____
5. SWD order Yes ____, NO ✓; SWD # ____
6. DHC from SF ____; DHC-HOB ____; Holding ____

7. OCD Approval Date 1/23/2017 API #30-015-39857
8. Reviewers TQ