

BLM 4/4

ATS-10-627

OCD-HOBBS

R-111-POTASH

Form 3160-3  
(August 2007)

Split Estate

RECEIVED

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
HOBBSOCD

## APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED  
OMB No. 1004-0137  
Expires July 31, 20105. Lease Serial No.  
NMNM 275726. If Indian, Allottee or Tribe Name  
N/A7. If Unit or CA Agreement, Name and No.  
LAGUNA DEEP UNIT NMNM 70966 X

8. Lease Name and Well No.

Laguna Deep Unit Federal #354144

9. API Well No.  
30-025-3994610. Field and Pool, or Exploratory  
TEAS Bone Springs <58960>11. Sec., T. R. M. or Blk. and Survey or Area  
Sec 35, T. 19 S., R. 35 E  
33 rd12. County or Parish  
LEA13. State  
NM1a. Type of work: ☒ DRILL ☐ REENTER1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator Marshall &amp; Winston Incorporated

3a. Address P.O. Box 50880  
Midland, TX 79710-08803b. Phone No. (include area code)  
(432) 684-6373

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

At surface 2310 FSL 330 FEL Unit 2

At proposed prod. zone 2310 FSL 330 FWL Unit 2

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

Approx. 35 miles west of Hobbs, 35 miles east of Carlsbad, 20 miles west of Eunice, (NM)

15. Distance from proposed\*  
location to nearest  
property or lease line, ft.  
(Also to nearest drig. unit line, if any)SL: 330' west of State Lse, 2310  
N. of Unit line, BH: 330' E. of st.l.s16. No. of acres in lease  
320.0017. Spacing Unit dedicated to this well  
160 acres18. Distance from proposed location\*  
to nearest well, drilling, completed,  
applied for, on this lease, ft.19. Proposed Depth  
9800' Horizontal @ 8400'  
MOL for Bone Springs20. BLM/BIA Bond No. on file  
NM 087721. Elevations (Show whether DF, KDB, RI, GL, etc.)  
3597' GL22. Approximate date work will start\*  
07/30/201023. 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

Vernon D. Dyer

Name (Printed/Typed)

Vernon D. Dyer

Date

06/14/2010

Title

AGENT: Please contact Vernon D. Dyer at (575) 420-0355 or Gary Gourley at (575) 623-5880 for questions of data concerning this APD.

Approved by (Signature)

/s/ Linda S. C. Rundell

Name (Printed/Typed)

/s/ Linda S. C. Rundell

Date

SEP 27 2010

Title

STATE DIRECTOR

Office

NM STATE 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.

Capitan Controlled Water Basin

KZ 11/3/10

SEE ATTACHED FOR  
CONDITIONS OF APPROVALApproval Subject to General Requirements  
& Special Stipulations Attached

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OCD-HOBBS RECEIVED

SEP 30 2010

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

**SUNDRY NOTICES AND REPORTS ON WELLS**  
**Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.**

5. Lease Serial No. NMNM 27572

6. If Indian, Allottee or Tribe Name  
N/A

**SUBMIT IN TRIPLICATE - Other instructions on page 2.**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator Marshall and Winston Incorporated

3a. Address P.O. Box 50880  
Midland, Texas 79710-0880  
3b. Phone No. (include area code) (432) 684-6373

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
SHL: 2310' FSL & 330' FEL BHL: 2310' FSL & 330' FWL Section 35, T. 19 S., R. 33 E

7. If Unit of CA/Agreement, Name and/or No.  
Laguna Deep Unit NMNM 70966

8. Well Name and No.  
Laguna Deep Unit Federal 35 -1H

9. API Well No. Not assigned yet

10. Field and Pool or Exploratory Area  
Teas Bone Springs

11. Country or Parish, State  
Lea

**12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other Correct typo error on 3160-3.
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

1. Need to correct typo error on the 3160-3 APD submitted on this well. The BOPE and casig head will be nipped up with a 3,000 BOPE system. The BOPE will be tested in accordance with Onshore Orders. The BOPE will be tested to 2,000 psi prior to drilling our of surface casing shoe. The BOPE shall be tested to 3,000 psi priot to drilling our from the 9 5/8" shoe and thereafter. The BOPE schematic needs to be corrected to indicate a 3,000 psi BOP and H2S trim as well.

2. The Range location for this well is in Range 33 East , not R. 35 E as shown on the 3160-3.

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Vernon D. Dyer

Title AGENT

Signature

*Vernon D. Dyer*

Date 06/21/2010

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved by

/s/ Linda S. C. Rundell

STATE DIRECTOR

Title

Date

SEP 27 2010

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

NM STATE OFFICE

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.

(Instructions on page 2)

RECEIVED

State of New Mexico

DISTRICT I

1625 N. FRENCH DR., HOBBS, NM 88240

Energy, Minerals and Natural Resources Department

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

DISTRICT II

1301 W. GRAND AVENUE, ARTESIA, NM 88210

SEP 30 2010

HOBBS

OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.

Santa Fe, New Mexico 87505

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV

1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number <b>30-D25-39946</b>	Pool Code <b>58960</b>	Pool Name <b>Teas Bone Spring</b>
Property Code <b>38335</b>	Property Name <b>LAGUNA DEEP UNIT FEDERAL 35</b>	Well Number <b>1H</b>
OGRID No. <b>14187</b>	Operator Name <b>MARSHALL &amp; WINSTON, INC.</b>	Elevation <b>3597'</b>

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	35	19-S	33-E		2310	SOUTH	330	EAST	LEA

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	35	19-S	33-E		2310	SOUTH	330	WEST	LEA
Dedicated Acres <b>160</b>	Joint or Infill	Consolidation Code	Order No.						

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

<p>GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=588407.4 N X=717823.5 E</p> <p>LAT.=32.615643° N LONG.=103.625905° W</p> <p>BOTTOM HOLE LOCATION Y=588384.4 N X=713203.0 E</p>		<p>DETAIL</p> <p>3597.6' 3596.2'</p> <p>600'</p> <p>600'</p> <p>3595.9' 3596.7'</p>	<p>OPERATOR CERTIFICATION</p> <p>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.</p> <p><i>Vernon D. Dyce</i> 6/14/2010 Signature Date</p> <p>VERNON D. DYCE Printed Name</p>
<p>GRID AZ. = 269°42'51"</p> <p>HORZ. DIST. = 4621.6'</p>		<p>SEE DETAIL</p> <p>330'</p> <p>B.H.</p> <p>2310'</p> <p>S.L.</p> <p>2310'</p>	<p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>JANUARY 11, 2010</p> <p>Date Surveyed Rev. Date: 1/15/10 LA</p> <p>Signature &amp; Seal of Professional Surveyor</p> <p><i>Ronald J. Eidson</i> 01/15/2010</p> <p>40-11-0052</p> <p>Certificate No. GARY EIDSON 12641 RONALD J. EIDSON 3239</p>

DRILLING PROGNOSIS  
MARSHALL & WINSTON, INC.  
LAGUNA DEEP FEDERAL 35-1H  
LEA COUNTY, NEW MEXICO

**RECEIVED**  
SEP 30 2010  
HOBBSDO

DRILLING PLAN PREVIEW:

LOCATION:

SH: 2310' FSL & 330' FEL, Sec. 35, T-19-S, R-33-E, Lea County, New Mexico.  
BH: 2310' FSL & 330' FWL, Sec. 35, T-19-S, R-33-E, Lea County, New Mexico.

ELEVATION: 3597' GL

GEOLOGIC NAME OF SURFACE FORMATION: Quaternary Alluvium Deposits

PROPOSED TD: Bone Springs Carbonate 9360' TVD

SURFACE OWNER: Kenneth Smith, 267 Smith Road, Hobbs, NM 88240, (575) 390-1247

BLM LEASE NO.: NMNM 27572

API NUMBER: 30-005-

DRILLING CONTRACTOR: Patterson 46 UTI, Kyle Hollingsworth (432) 528-5978

DIRT CONTRACTOR: Badger BMB Services, Lewis Sparkman (575) 706-6684

CEMENTING SERVICES: BJ Services, Artesia (575) 746-3140

DRILLING MUD AND EQUIPMENT: MI Swaco, Todd Passmore, (432) 238-9560 (c),  
CLS, Mike Harrington, (432) 425-6622 (c)

CASING: Padre Tubular, Sid Stallings (713)-751-0877

MUDLOGGER: Morco Geological Services. Corky Stewart (800) 748-2340 (8-5:00)  
(575) 361-1270 (cell)

DST Rig Testers: TBA

OPENHOLE LOGS: Schlumberger

WELLHEAD EQUIPMENT: Downing Wellhead, Inc. David (432) 687-0778

WATER HAULER: VMJ Services. Frank (575) 602-8551 (c)

SOLIDS DISPOSAL: Gandy Corporation, Wayne Tramell  
(575) 370-2480 (o), (575) 370-4560 (c)

WATERLINE: TBA

FLOAT EQUIPMENT: S & K Float Equipment Judson Bennett (432) 631-6301

LINER HANGER: TIW, Jimmy Stringer (432) 528-3494

DRILLING PROCEDURE:

1. Set 40' of 20" conductor pipe and cement to surface.
2. MIRU Patterson 46. **Notify BLM -- Roswell of intent to spud and of all casing, cementing and BOP tests.**
3. Drill 17-1/2" hole and set 13 3/8" casing at 1390' & cement to surface per BJ well recommendation. Notify BLM if cement does not circ. to surface.
4. Wait on cement for 18 hrs. NU 3000# casing head and BOP. Test head to 2000#. Test BOP to 2000#.
5. Mudlogger will be on hole at about 2500 MD
6. Drill 12-1/4" hole and set 9-5/8" casing to 4,850'. Run 9-5/8" N-80 40# from bottom to surface.

7. Cement 9-5/8" casing to surface per BJ well recommendation. Notify BLM if cement does not circulate to surface.
8. Rig up H2S equipment.
9. Drill 8-3/4" hole to approximately 9,900' TVD. [Probable Dst in Bone Spring carbonate.]
10. Run Open Hole Logs from 9,900' to intermediate casing.
11. When logs are run successfully set open-hole whip-stock at about 9,002' with reference to caliper logs and kick off curve.
12. Trip out of hole and make up 8-3/4" directional BHA to build curve.
13. Trip in hole and build curve at 9,002' unless changed due to open hole logs.
14. Drill curve and land at 9,360' TVD 9,564' TMD will adjust in accordance with logs.
15. Run 7" casing from top to bottom and cement to surface as per BJ well recommendation.
16. Drill a 6-1/8" hole to TD, 9,360' TVD 13,827 MD. (TVD will vary with Shows)
17. Run 4 1/2" liner with liner hanger set at 8,850' MD (150' above KOP).

**DIRECTIONS TO LOCATION:**

From Hobbs take HWY 180/62 West towards Carlsbad for about 28 miles and turn right on Smith Ranch Road (Co. Rd H55). Go north on Smith Ranch Rd. for about 2.1 miles and turn left going south onto caliche lease road. Go south west on lease road for about .7 miles and turn left onto a lease road. Go south for .1 miles and turn left. Go east for .3 miles around the LDU #9 to the location.

**DRILLING PLAN**

1. **GEOLOGIC NAME OF SURFACE FORMATION:** Quaternary Alluvium Deposits

2. **ANTICIPATED FORMATION TOPS:**

Yates	3,200'
Capitan Reef	3,650'
Delaware	5,600'
Bone Spring	8,200'
Bone Spring Sand	9,255'
Bone Spring carbonate pay	9,340'
2nd Bone Spring Sand	9,760'

3. **CASING PROGRAM:**

O.D., In	Depth, MD	Weight, Lb/ft	Grade	Conn.	Pw Collapse Psi	Pw Burst Psi	Pw Tension, Kips	Test, Psi
13-3/8"	Surface To 1390'	54.5	J-55	STC	1,130	1,730	322	N/A
9-5/8"	Surface To 4850'	40.0	N-80	LTC	3,090	5,750	737	1,500
7"	Surface To 9,564'	26.0	P-110	LTC	6,210	9,960	693	1,500
4-1/2"	8850' To 13,827'	11.6	P-110	LTC	7,560	10,690	279	1,500

July 7<sup>th</sup>, 2010  
Gary Gourley  
Oil Field Assistance  
2810 West 23<sup>rd</sup> St  
Roswell, NM  
(575) 623-5880

Copy 3

Debbie McKinney  
Don Peterson  
Assistant Field Manager, Minerals  
BLM, CFO Carlsbad, NM

RE: Additions to APD: **Laguna Deep Federal Unit 35 1H, Lease NM 27572**, 2310'S  
& 330'E, Sec 35, T.19 S., R.33 E., Lea County, NM, submitted on June 14<sup>th</sup>, 2010.

Ms. McKinney,

In regards to your letter 6/25/2010, I am submitting additional information to complete the subject APD for Marshall and Winston Incorporated as operator of this well. This includes an expanded diagram for the closed loop lines, gas separator and anticipated flare line.

Other items explained are:

- 1) New casing will be ~~used~~. GG 7-8-10
- 2) Fresh water sands are anticipated to be encountered at 660', 690' and 720' and Red Beds estimated to be encountered between 1125' to 1200'. The Rustler Anhydrite is anticipated to be between 1250' to 1350'. Surface casing shall be set in the Rustler Anhydrite and above the Top of the Salt.
- 3) The Top of the Salt is expected to be between 1370' to 1425'.  
The Bottom of the Salt is expected to be between 2800' to 2970'.
- 4) A Baker Hughes INTEQ directional survey is included.
- 5) An expanded view diagram of the Closed Loop System incorporating the BOPE, choke manifold, gas separator and flare lines is attached.
- 6) An On-site inspection is pending with Trisha Badbear.

**One original and three copies are attached. Should there be any further questions, call me at (575) 623-5880 or Vernon D. Dyer (agent) at (575) 420-0355.**

Sincerely,



Gary Gourley

Bureau of Land Management  
RECEIVED

JUL 08 2010

Carlsbad Field Office  
Carlsbad, N.M.

Safety Factors and Requirements: Collapse 1.125, Burst 1.0, Tension 1.8:

<u>Size Casing</u>	<u>Collapse</u>	<u>Burst</u>	<u>Tension</u>
13.385 "	1.3	4.09	4.25
9.625 "	1.21	2.38	4.25
7.0 "	1.29	3.11	2.79
4.5 "	1.18	3.34	1.74

4. CEMENT PROGRAM *See COA* ▶ See Swaco's Cementing Design attached

5. PRESSURE CONTROL *See Sundry Dated 6/24/10* Patterson rig will install on the 13 3/8" surface casing, a 5,000 psi rated casing head and BOPE. Prior to drilling out of the 13 3/8" shoe, we will test the casing head to 2,000 psi and test the BOP to 2,000 psi using a third party. Prior to drilling beyond the 9 5/8" shoe the BOPE shall be tested to 5,000 psi by a third party. Prior to drilling out of 7" casing shoe, the BOPE shall be tested to 5,000 psi. Testing the BOPE shall be done in accordance as per Onshore Orders.

6. DRILLING FLUID PROGRAM *See COA* ▶ See Swaco's Mud Program Attached.

Anticipated Mud Program:

0 - 1390'	fresh water mud	8.4 - 8.6 PPG
1390' - 4850'	brine water	10.0 - 10.1 PPG
4850' - 8200'	Fresh water & Brine	8.4- 9.5 PPG
8200' - 9800'	Duo-Vis/LCM	9.5-9.7 PPG
8974' - 13,125'	2% KCL	8.4 - 8.9 PPG

The mud system will be a Closed Loop System. A NMOCD C-144 has been submitted to the NMOCD, Hobbs District for approval.

Circulation, gas separator and flare lines are displayed on the rig plat schematic.

For the circulating system equipment ▶ See Swaco's "closed loop system" diagram.

It is anticipated to haul off cuttings and waste materials to Controlled Recovery Incorporated, 6601 West Carlsbad Hwy., Hobbs, NM. (877) 505-4274, NMOCD permit number R9166. Alternative back up sites are Gandy Marley or Sundance Incorporated.

7. AUXILIARY EQUIPMENT: None.

8. LOGGING PROGRAM: *See COA*

Mud logging 2 man unit from 2500' to TD.  
Electric Logging CNL / LDT / CAL / GR, DLL / GR

9. POTENTIAL HAZARDS:

No abnormal pressures or temperatures are anticipated. (BHP 4000 psi, BHT 175 deg)  
The area has a potential for H2S and the following measures will be taken:

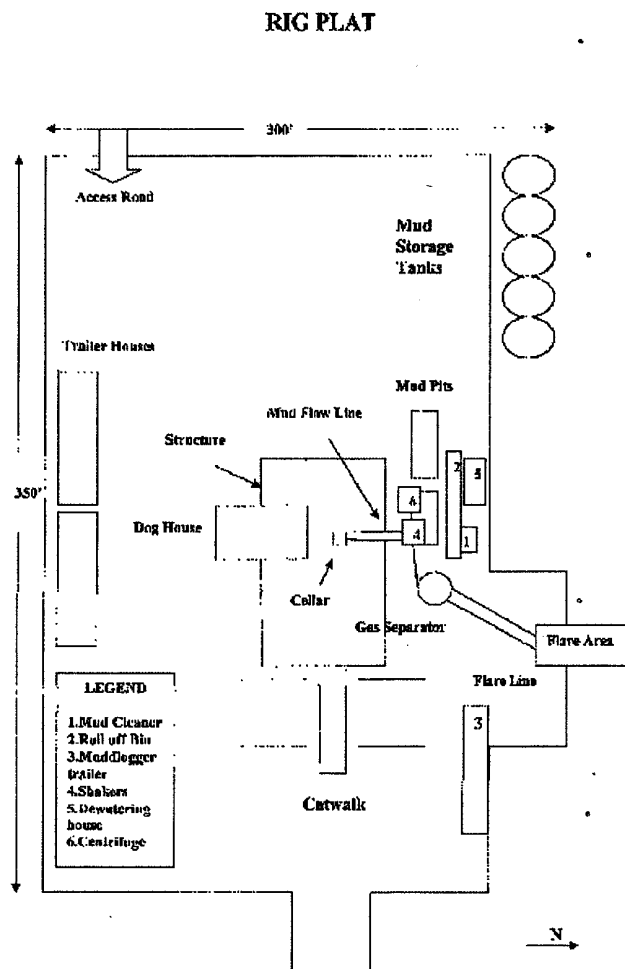
- all personnel will be H2S trained and qualified
- H2S alarms and detection systems will be utilized
- A windsock will be visible at all times
- Flags or warning signs will be visible for road traffic

A H2S contingency plan according to Onshore Orders will be incorporated by a third party prior to drilling out of the intermediate 9 5/8" shoe, details following below.

10. **Anticipated Start Date:** A rig will be available July 15, 2010. We will start as soon as the APD is approved and as close to that date as possible.

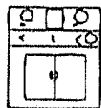
11. **Surface and Mineral Ownership:** The surface land is privately owned by Kenneth Smith and the minerals are owned by the United States and managed by the Bureau of Land Management.

### RIG LAYOUT





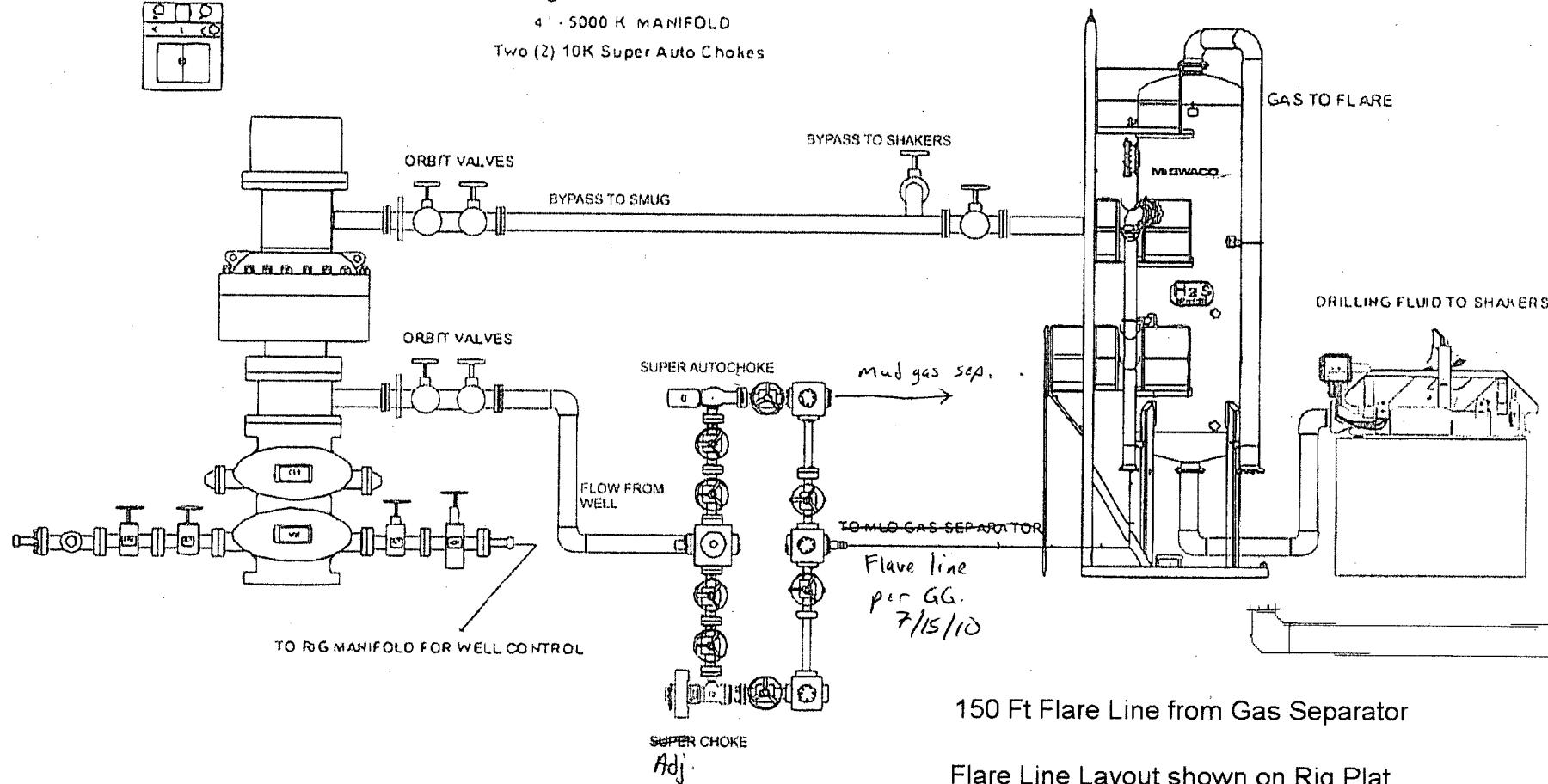
Dual Choke Operating Console  
Located on Rig Floor



## Managed Pressure Control

4" - 5000 K MANIFOLD

Two (2) 10K Super Auto Chokes



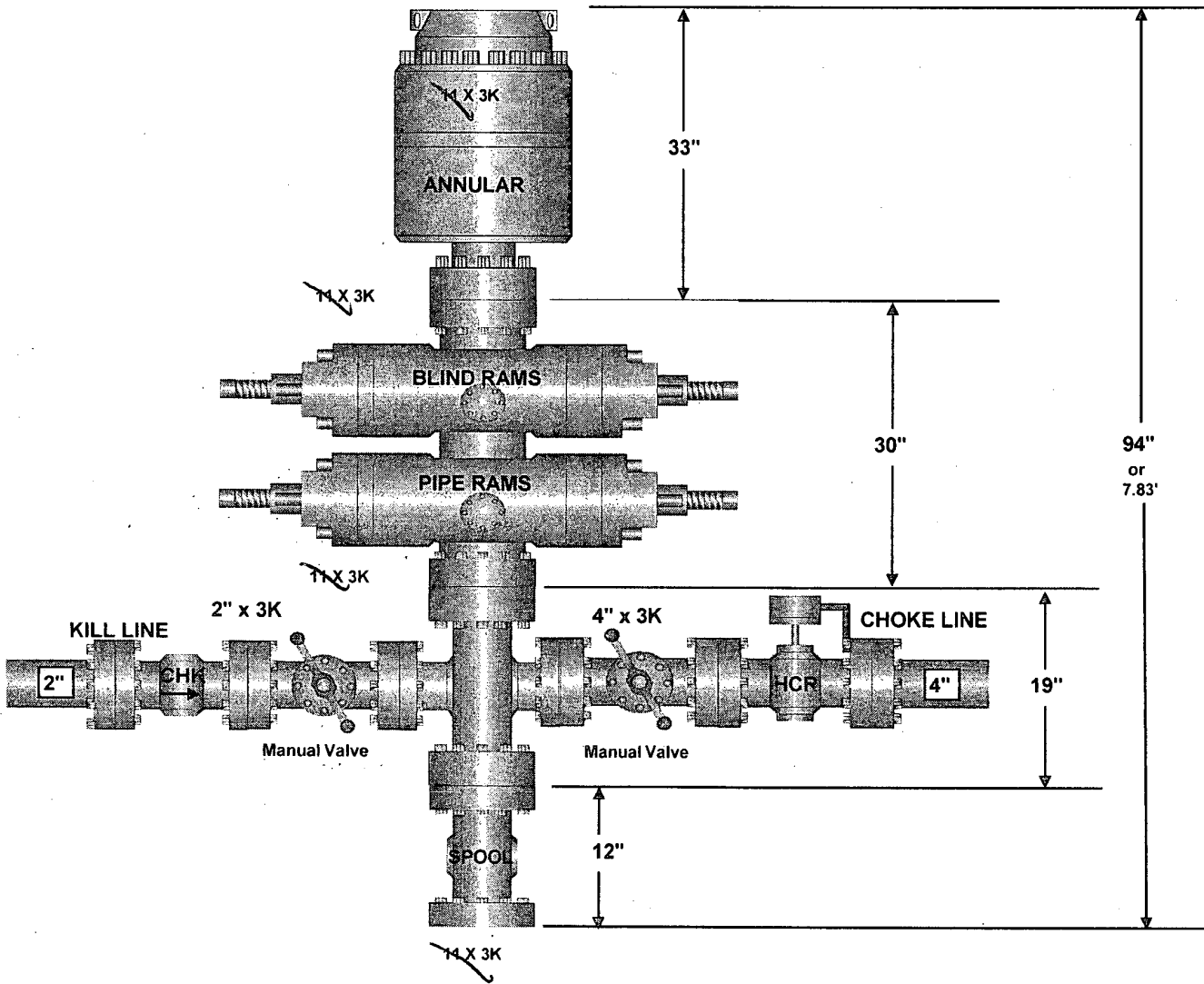
**MI SWACO**

# BOP STACK SPACING

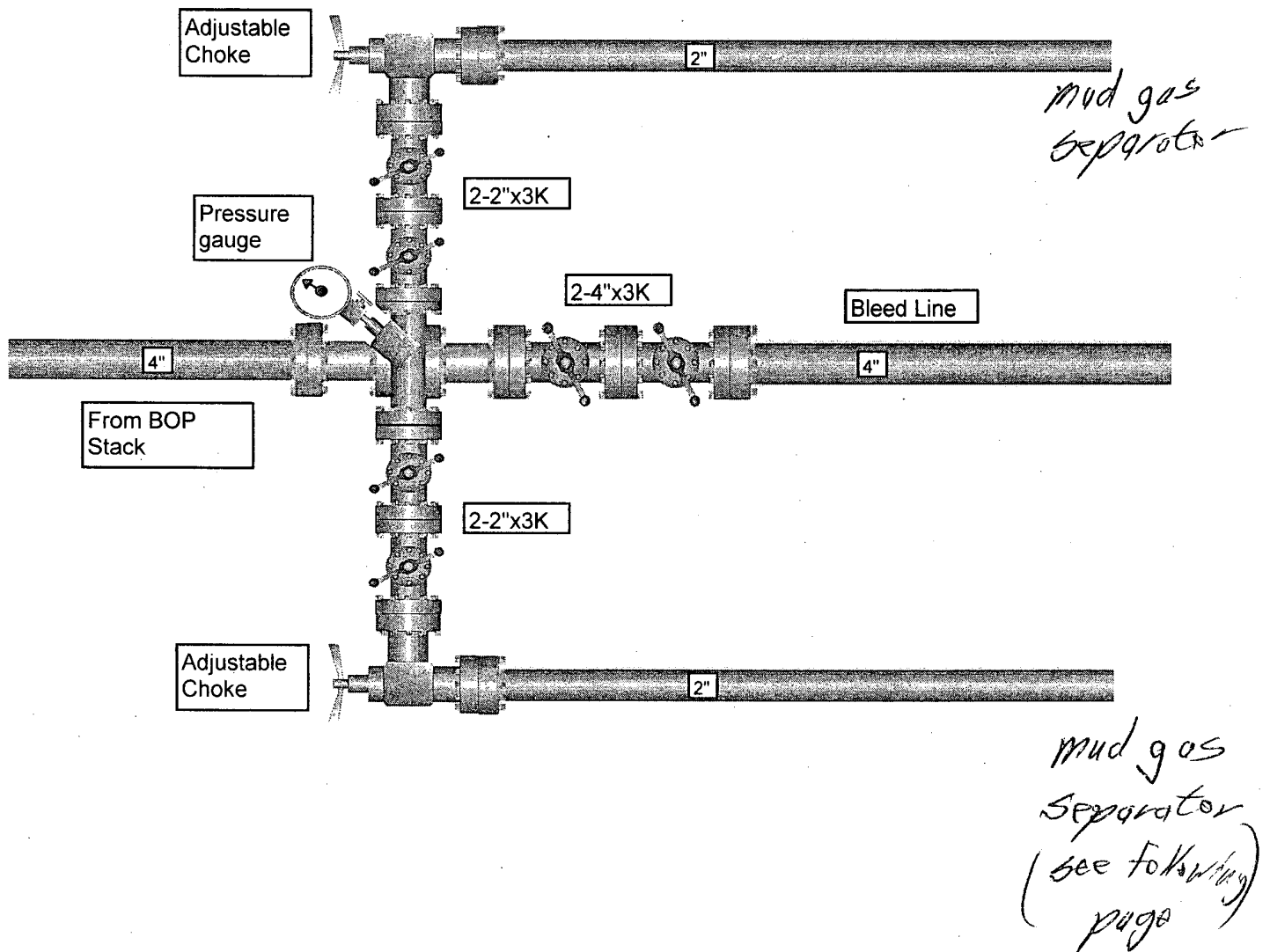
SIZE: 11" X 3,000 PSI

13 5/8"

See COA



# 5,000 PSI CHOKE MANIFOLD



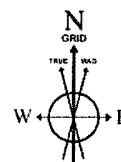
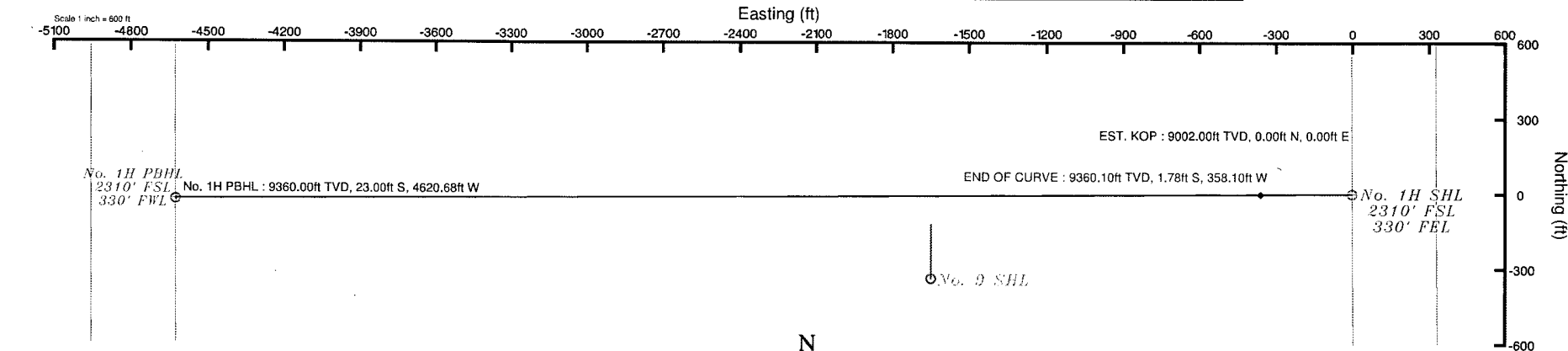
# Marshall & Winston, INC

Location: Lea County, NM  
Field: (LDU) Sec 35, T19S, R33E  
Facility: Leguna Deep Unit Fed 35-1H

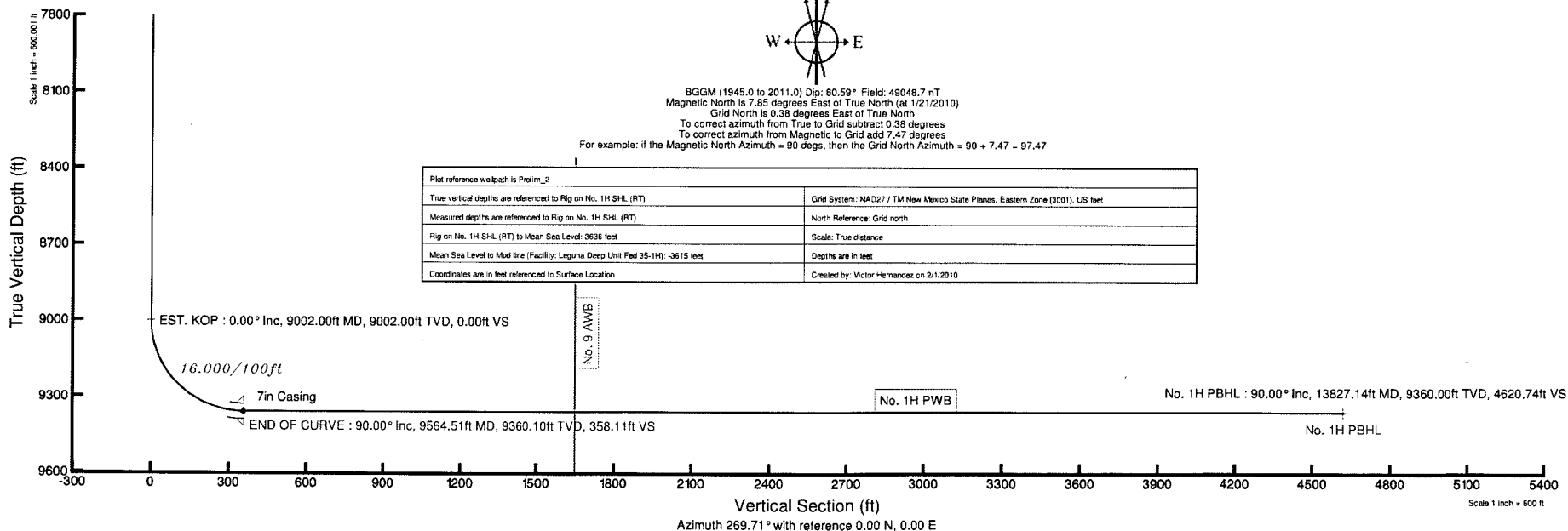
Slot: No. 1H SHL  
Well: No. 1H  
Wellbore: No. 1H PWB

## Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (%/100ft)	VS (ft)
Tie On	0.00	0.000	269.715	0.00	0.00	0.00	0.00	0.00
EST. KOP	9002.00	0.000	269.715	9002.00	0.00	0.00	0.00	0.00
END OF CURVE	9564.51	90.001	269.715	9360.10	-1.78	-358.10	16.00	358.11
No. 1H PBHL	13827.14	90.001	269.715	9360.00	-23.00	-4620.68	0.00	4620.74



BGGM (1945.0 to 2011.0) Dip: 60.59° Field: 49048.7 nT  
Magnetic North is 7.85 degrees East of True North (at 1/21/2010)  
Grid North is 0.38 degrees East of True North  
To correct azimuth from True to Grid subtract 0.38 degrees  
To correct azimuth from Magnetic to Grid add 7.47 degrees  
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.47 = 97.47



Plot reference wellpath is Prelim_2	
True vertical depths are referenced to Rig on No. 1H SHL (RT)	Grid System: NAD27 / TM New Mexico State Planes, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 1H SHL (RT)	North Reference: Grid north
Rig on No. 1H SHL (RT) to Mean Sea Level: 3636 feet	Scale: True distance
Mean Sea Level to Mud line (Facility: Leguna Deep Unit Fed 35-1H): -3615 feet	Depths are in feet
Coordinates are in feet referenced to Surface Location	Created by: Victor Hernandez on 2/1/2010



# Planned Wellpath Report

Prelim\_2  
Page 1 of 4



**INTEQ**

## REFERENCE WELLPATH IDENTIFICATION

Operator	Marshall & Winston, INC	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(LDU) Sec 35, T19S, R33E	Wellbore	No. 1H PWB
Facility	Leguna Deep Unit Fed 35-1H		

## REPORT SETUP INFORMATION

Projection System	NAD27 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999963	Report Generated	2/1/2010 at 11:28:03 AM
Convergence at slot	0.38° East	Database/Source file	WA_Midland/No. 1H_PWB.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	717823.50	588407.40	32°36'56.317"N	103°37'33.258"W
Facility Reference Pt			717823.50	588407.40	32°36'56.317"N	103°37'33.258"W
Field Reference Pt			717823.50	588407.40	32°36'56.317"N	103°37'33.258"W

## WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H SHL (RT) to GL	21.00ft
Horizontal Reference Pt	Surface Location	Rig on No. 1H SHL (RT) to Mean Sea Level	3636.00ft
Vertical Reference Pt	Rig on No. 1H SHL (RT)	GL to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 1H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	269.71°

# Planned Wellpath Report

Prelim\_2  
Page 2 of 4

**INTEQ**

## REFERENCE WELLPATH IDENTIFICATION

Operator	Marshall & Winston, INC	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(LDU) Sec 35, T19S, R33E	Wellbore	No. 1H PWB
Facility	Leguna Deep Unit Fed 35-1H		

## WELLPATH DATA (52 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	269.715	0.00	0.00	0.00	0.00	717823.50	588407.40	32°36'56.317"N	103°37'33.258"W	0.00	Tie On
9002.00	0.000	269.715	9002.00	0.00	0.00	0.00	717823.50	588407.40	32°36'56.317"N	103°37'33.258"W	0.00	EST. KOP
9102.00†	16.000	269.715	9100.71	13.87	-0.07	-13.87	717809.63	588407.33	32°36'56.317"N	103°37'33.420"W	16.00	
9202.00†	32.000	269.715	9191.76	54.41	-0.27	-54.41	717769.09	588407.13	32°36'56.317"N	103°37'33.894"W	16.00	
9302.00†	48.000	269.715	9268.12	118.48	-0.59	-118.48	717705.02	588406.81	32°36'56.319"N	103°37'34.643"W	16.00	
9402.00†	64.000	269.715	9323.86	201.12	-1.00	-201.12	717622.39	588406.40	32°36'56.320"N	103°37'35.609"W	16.00	
9502.00†	80.000	269.715	9354.66	295.92	-1.47	-295.91	717527.60	588405.93	32°36'56.321"N	103°37'36.717"W	16.00	
9564.51	90.001	269.715	9360.10	358.11	-1.78	-358.10	717465.41	588405.62	32°36'56.323"N	103°37'37.444"W	16.00	END OF CURVE
9602.00†	90.001	269.715	9360.10	395.60	-1.97	-395.59	717427.92	588405.43	32°36'56.323"N	103°37'37.883"W	0.00	
9702.00†	90.001	269.715	9360.10	495.60	-2.47	-495.59	717327.93	588404.93	32°36'56.325"N	103°37'39.052"W	0.00	
9802.00†	90.001	269.715	9360.09	595.60	-2.96	-595.59	717227.93	588404.44	32°36'56.326"N	103°37'40.221"W	0.00	
9902.00†	90.001	269.715	9360.09	695.60	-3.46	-695.59	717127.94	588403.94	32°36'56.328"N	103°37'41.390"W	0.00	
10002.00†	90.001	269.715	9360.09	795.60	-3.96	-795.59	717027.94	588403.44	32°36'56.330"N	103°37'42.559"W	0.00	
10102.00†	90.001	269.715	9360.09	895.60	-4.46	-895.59	716927.95	588402.94	32°36'56.331"N	103°37'43.728"W	0.00	
10202.00†	90.001	269.715	9360.08	995.60	-4.96	-995.59	716827.95	588402.44	32°36'56.333"N	103°37'44.897"W	0.00	
10302.00†	90.001	269.715	9360.08	1095.60	-5.45	-1095.59	716727.96	588401.95	32°36'56.335"N	103°37'46.066"W	0.00	
10402.00†	90.001	269.715	9360.08	1195.60	-5.95	-1195.58	716627.96	588401.45	32°36'56.336"N	103°37'47.235"W	0.00	
10502.00†	90.001	269.715	9360.08	1295.60	-6.45	-1295.58	716527.97	588400.95	32°36'56.338"N	103°37'48.404"W	0.00	
10602.00†	90.001	269.715	9360.07	1395.60	-6.95	-1395.58	716427.97	588400.45	32°36'56.339"N	103°37'49.573"W	0.00	
10702.00†	90.001	269.715	9360.07	1495.60	-7.44	-1495.58	716327.98	588399.96	32°36'56.341"N	103°37'50.742"W	0.00	
10802.00†	90.001	269.715	9360.07	1595.60	-7.94	-1595.58	716227.98	588399.46	32°36'56.343"N	103°37'51.911"W	0.00	
10902.00†	90.001	269.715	9360.07	1695.60	-8.44	-1695.58	716127.99	588398.96	32°36'56.344"N	103°37'53.081"W	0.00	
11002.00†	90.001	269.715	9360.07	1795.60	-8.94	-1795.58	716027.99	588398.46	32°36'56.346"N	103°37'54.250"W	0.00	
11102.00†	90.001	269.715	9360.06	1895.60	-9.44	-1895.58	715928.00	588397.96	32°36'56.348"N	103°37'55.419"W	0.00	
11202.00†	90.001	269.715	9360.06	1995.60	-9.93	-1995.57	715828.00	588397.47	32°36'56.349"N	103°37'56.588"W	0.00	
11302.00†	90.001	269.715	9360.06	2095.60	-10.43	-2095.57	715728.01	588396.97	32°36'56.351"N	103°37'57.757"W	0.00	
11402.00†	90.001	269.715	9360.06	2195.60	-10.93	-2195.57	715628.01	588396.47	32°36'56.352"N	103°37'58.926"W	0.00	
11502.00†	90.001	269.715	9360.05	2295.60	-11.43	-2295.57	715528.02	588395.97	32°36'56.354"N	103°38'00.095"W	0.00	
11602.00†	90.001	269.715	9360.05	2395.60	-11.92	-2395.57	715428.02	588395.48	32°36'56.355"N	103°38'01.264"W	0.00	
11702.00†	90.001	269.715	9360.05	2495.60	-12.42	-2495.57	715328.03	588394.98	32°36'56.357"N	103°38'02.433"W	0.00	

# Planned Wellpath Report

Prelim\_2  
Page 3 of 4

INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	Marshall & Winston, INC	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(LDU) Sec 35, T19S, R33E	Wellbore	No. 1H PWB
Facility	Leguna Deep Unit Fed 35-1H		

## WELLPATH DATA (52 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11802.00†	90.001	269.715	9360.05	2595.60	-12.92	-2595.57	715228.03	588394.48	32°36'56.359"N	103°38'03.602"W	0.00	
11902.00†	90.001	269.715	9360.04	2695.60	-13.42	-2695.57	715128.04	588393.98	32°36'56.360"N	103°38'04.771"W	0.00	
12002.00†	90.001	269.715	9360.04	2795.60	-13.92	-2795.56	715028.04	588393.48	32°36'56.362"N	103°38'05.940"W	0.00	
12102.00†	90.001	269.715	9360.04	2895.60	-14.41	-2895.56	714928.05	588392.99	32°36'56.363"N	103°38'07.110"W	0.00	
12202.00†	90.001	269.715	9360.04	2995.60	-14.91	-2995.56	714828.05	588392.49	32°36'56.365"N	103°38'08.279"W	0.00	
12302.00†	90.001	269.715	9360.04	3095.60	-15.41	-3095.56	714728.06	588391.99	32°36'56.367"N	103°38'09.448"W	0.00	
12402.00†	90.001	269.715	9360.03	3195.60	-15.91	-3195.56	714628.06	588391.49	32°36'56.368"N	103°38'10.617"W	0.00	
12502.00†	90.001	269.715	9360.03	3295.60	-16.40	-3295.56	714528.07	588391.00	32°36'56.370"N	103°38'11.786"W	0.00	
12602.00†	90.001	269.715	9360.03	3395.60	-16.90	-3395.56	714428.07	588390.50	32°36'56.371"N	103°38'12.955"W	0.00	
12702.00†	90.001	269.715	9360.03	3495.60	-17.40	-3495.56	714328.08	588390.00	32°36'56.373"N	103°38'14.124"W	0.00	
12802.00†	90.001	269.715	9360.02	3595.60	-17.90	-3595.55	714228.08	588389.50	32°36'56.374"N	103°38'15.293"W	0.00	
12902.00†	90.001	269.715	9360.02	3695.60	-18.40	-3695.55	714128.09	588389.00	32°36'56.376"N	103°38'16.462"W	0.00	
13002.00†	90.001	269.715	9360.02	3795.60	-18.89	-3795.55	714028.09	588388.51	32°36'56.377"N	103°38'17.631"W	0.00	
13102.00†	90.001	269.715	9360.02	3895.60	-19.39	-3895.55	713928.10	588388.01	32°36'56.379"N	103°38'18.800"W	0.00	
13202.00†	90.001	269.715	9360.01	3995.60	-19.89	-3995.55	713828.10	588387.51	32°36'56.381"N	103°38'19.969"W	0.00	
13302.00†	90.001	269.715	9360.01	4095.60	-20.39	-4095.55	713728.11	588387.01	32°36'56.382"N	103°38'21.139"W	0.00	
13402.00†	90.001	269.715	9360.01	4195.60	-20.88	-4195.55	713628.12	588386.52	32°36'56.384"N	103°38'22.308"W	0.00	
13502.00†	90.001	269.715	9360.01	4295.60	-21.38	-4295.55	713528.12	588386.02	32°36'56.385"N	103°38'23.477"W	0.00	
13602.00†	90.001	269.715	9360.01	4395.60	-21.88	-4395.54	713428.13	588385.52	32°36'56.387"N	103°38'24.646"W	0.00	
13702.00†	90.001	269.715	9360.00	4495.60	-22.38	-4495.54	713328.13	588385.02	32°36'56.388"N	103°38'25.815"W	0.00	
13802.00†	90.001	269.715	9360.00	4595.60	-22.88	-4595.54	713228.14	588384.53	32°36'56.390"N	103°38'26.984"W	0.00	
13827.14	90.001	269.715	9360.00 <sup>1</sup>	4620.74	-23.00	-4620.68	713203.00	588384.40	32°36'56.390"N	103°38'27.278"W	0.00	No. 1H PBHL



# Planned Wellpath Report

Prelim\_2  
Page 4 of 4



INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Marshall & Winston, INC	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(LDU) Sec 35, T19S, R33E	Wellbore	No. 1H PWB
Facility	Leguna Deep Unit Fed 35-1H		

HOLE & CASING SECTIONS Ref Wellbore: No. 1H PWB Ref Wellpath: Prelim_2									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
8.75in Open Hole	0.00	9565.00	9565.00	0.00	9360.10	0.00	0.00	-1.79	-358.59
7in Casing	0.00	9565.00	9565.00	0.00	9360.10	0.00	0.00	-1.79	-358.59
6.125in Open Hole	9565.00	13827.14	4262.14	9360.10	9360.00	-1.79	-358.59	-23.00	-4620.68

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 1H PBHL	13827.14	9360.00	-23.00	-4620.68	713203.00	588384.40	32°36'56.390"N	103°38'27.278"W	point

SURVEY PROGRAM Ref Wellbore: No. 1H PWB Ref Wellpath: Prelim_2				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
21.00	13827.14	NaviTrak (Standard)		No. 1H PWB