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DISTRICT II-ARTESIA O.C.D.

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM132065

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.
HI BOB FEDERAL
3H 325167

2. Name of Operator
MARSHALL & WINSTON INCORPORATED

9. API Well No.
30-005-64347

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
6 Desta Drive, Suite 3100 Midland TX 79705	(432)684-6373	ROUND TANK / SAN ANDRES

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

At surface SESE / 517 FSL / 805 FEL / LAT 33.024566 / LONG -104.0446

At proposed prod. zone SESE / 20 FSL / 1040 FEL / LAT 33.008724 / LONG -104.045408

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 8 / T15S / R29E / NMP

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

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
517 feet	1405.32	200

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
40 feet	3215 feet / 8793 feet	FED: NMB000807

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3816 feet	11/01/2019	30 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Stormi Davis / Ph: (918)491-4339	08/22/2019

Title
Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Ruben J Sanchez / Ph: (575)627-0250	12/02/2019

Title	Office
Assistant Field Manager, Lands & Minerals	ROSWELL

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

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

APPROVED WITH CONDITIONS

RwP 12-17-19

(Continued on page 2)

Approval Date: 12/02/2019

Need GCP?

*(Instructions on page 2)

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

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

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

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

(Continued on page 3)

PECOS DISTRICT DRILLING
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Marshall & Winston Inc.**
LEASE NO.:	**NMNM-132065**
WELL NAME & NO.:	**HI BOB FEDERAL 3H**
SURFACE HOLE FOOTAGE:	**0517' FSL & 0805' FEL**
BOTTOM HOLE FOOTAGE	**0020' FSL & 1040' FEL Sec. 17, T. 15 S., R 29 E.**
LOCATION:	**Section 08, T. 15 S., R 29 E., NMPM**
COUNTY:	**County, New Mexico**

Operator shall submit sundry to add "COM" to the well name as the FTP is in lease NMNM-132065 and the rest of the lateral is in NMNM-121949.

Communitization Agreement

- The operator will submit a Communitization Agreement to the Roswell Field Office, 2909 West 2nd St. Roswell, New Mexico 88201, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

A. DRILLING OPERATIONS REQUIREMENTS

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

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

☐ **Chaves and Roosevelt Counties**
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 6270272.

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

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

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

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

B. **CASING**

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

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

Wait on cement (WOC) for Water Basin:

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

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

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

Possibility of lost circulation in the Queen and San Andres formations.

1. The **13-3/8** inch surface casing shall be set at approximately **225** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

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

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

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

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

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

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

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

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

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

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

C. **PRESSURE CONTROL**

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

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

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

BOP Spec sheet shall be on location for PET review if requested.

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

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

   a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to

Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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

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. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

JAM 092419

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME: MARSHALL & WINSTON
LEASE NO.: NMNM-132065
WELL NAME & NO.: HI BOB FEDERAL 2H
SURFACE HOLE FOOTAGE: [517] ' F [S] L [805] ' F [E] L
LOCATION: Section 8, T 15. S., R 29 E., NMPM
COUNTY: Chaves County, New Mexico

1. GENERAL PROVISIONS

Approval of the APD does not warrant that any party holds equitable or legal title. Any request for a variance shall be submitted to the Authorized Officer on Sundry Notice (Form 3160-5).

For BLM's surface operating standards and guidelines, refer to: The Gold Book , Fourth Edition – Revised 2007. To obtain a copy free of charge contact the Roswell Field Office (575) 627-0272 or visit BLM on the web at:
http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/gold_book.html
All construction, operations, and reclamation shall follow the Onshore Oil and Gas Operations as described in the 43 CFR part 3160.

The Operator shall submit a Sundry Notice (Form 3160-5) to the Bureau of Land Management, Roswell Field Office (address above) for approval prior to beginning any new surface-disturbing activities or operations that are not specifically addressed and approved by this APD.

A site facility diagram and a site security plan shall be filed no later than 60 calendar days following first production (Onshore Order 3, Section III, I. and 43 CFR 3162.7-5).

2. 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, 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).

3. JURISDICTIONAL WATERS of the U.S.

The operator shall obtain appropriate permits from the U.S. Army Corps of Engineers prior to discharge or dredge and fill material into waters of the United States in accordance with Section 404 of the Clean Water Act. Contact The U.S. Army Corps of Engineers regulatory New Mexico Branch Office, 4101 Jefferson Plaza NE, Albuquerque, NM 87109-3435 at (505) 342-3678 or Email: CESPA-RD-NM@usace.army.mil if you have questions.

4. ARCHAEOLOGICAL, PALEONTOLOGICAL & HISTORICAL SITES

In the event that any cultural resource (prehistoric and historic period buildings, sites, structures, objects, and landscapes) and/or paleontological resource is discovered on public or Federal land by the holder, or any person working on behalf of the holder, the holder shall immediately halt the disturbance within 100 feet of the post-review discovery. The holder shall contact the BLM Authorized Officer within 24 hours for instructions:

BLM Authorized Officer:
Ruben Sanchez
Assistant Field Manager, Lands & Minerals
575-627-0250

If BLM Authorized Officer is Unavailable:
Courtney Carlson
Archaeologist
575-627-0328

The BLM Authorized Officer will coordinate with the appropriate specialists to ensure that qualified professionals evaluate the discovery, and to decide appropriate actions to prevent the loss of significant cultural or scientific values. The holder shall be responsible for the costs of evaluation, reporting, excavation, treatment, and/or disposition. Project implementation shall not proceed within 100 feet of the location of the inadvertent discovery until the BLM has concluded the post-review discovery process, and the BLM Authorized Officer has provided the holder with a written notice to proceed.

5. HUMAN REMAINS AND OBJECTS OF CULTURAL PATRIMONY

In the event that project implementation results in the inadvertent discovery of Native American human remains, funerary objects, sacred objects, and/or objects of cultural patrimony, the holder shall immediately halt the disturbance within 300 feet of the inadvertent discovery. The holder shall contact the BLM Authorized Officer within 24 hours for instructions:

BLM Authorized Officer:
Ruben Sanchez
Assistant Field Manager, Lands & Minerals
575-627-0250

If BLM Authorized Officer is Unavailable:
Quinton Franzoy
Law Enforcement Officer
575-910-0778

The holder shall be held responsible for ceasing activity and protecting the inadvertent discovery as well as for the costs of protection, evaluation, reporting, excavation, treatment, and/or disposition of the inadvertent discovery. The BLM shall use the process identified in the Native American Graves Protection and Repatriation Act (NAGPRA) and in 43 CFR 10.4 to proceed

according to the rights of the culturally affiliated party, as applicable. Project implementation within 300 feet of the location of the inadvertent discovery may resume 30 days after BLM certifies the notification, or when a written Plan of Action following 43 CFR 10.3(b)(1) is approved. In either case, the BLM Authorized Officer will provide the holder with a written notice to proceed.

6. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations (access road and/or well pad). 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.

7. CAVE AND KARST

Any Cave or Karst feature discovered by the operator or by any person working on the operator's behalf shall immediately report the feature 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. During drilling, previously unknown cave and karst features could be encountered. If a void is encountered while drilling and a loss of circulation occurs, lost drilling fluids can directly contaminate groundwater recharge areas, aquifers, and groundwater quality. Drilling operations can also lead to sudden collapse of underground voids.

To mitigate or lessen the probability of impacts associated with the drilling and production of oil and gas wells in karst areas, the guidelines listed in Appendix 3, Practices for Oil and Gas Drilling and Production in Cave and Karst Areas, as approved in the Roswell Resource Management Plan Amendment of 1997, page AP3-4 through AP 3-7 shall be followed.

A more complete discussion of the impacts of oil and gas drilling can be found in the *Dark Canyon Environmental Impact Statement of 1993*, published by the U.S. Department of the Interior, Bureau of Land Management.

8. CONSTRUCTION

NOTIFICATION: The BLM shall administer compliance and monitor construction of the access road and well pad. Notify Natural Resource Specialist, Ricky Flores at (575) 627-0339 or the Roswell Field Office at (575) 627-0272 **at least three (3) working days prior to commencing construction of the access road and/or well pad.**

A complete copy of the *approved* APD and the attached Conditions of Approval (COAs) **shall be kept on the well's location** for reference upon inspections.

Construction over and/or immediately adjacent to existing pipelines shall be coordinated, and in accordance with, the relevant pipeline companies' policy.

Any trench left open for (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of the open trench and remove all trapped fauna. The bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried fauna. All fauna will be released a minimum of 100 yards from the trench.

For trenches left open for (8) hours or more, earthen escape ramps (built at nor more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench. Structures will also be authorized within the trench. Metal structures will not be authorized. Structures used as escape ramps will be placed at no more than a 30 degree slope and spaced no more than 500 feet apart.

9. TOPSOIL:

When saturated soil conditions exist on access roads or location, construction shall be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils, roads and locations.

Topsoil shall be stripped following removal of vegetation during construction of well pads, pipelines, roads, or other surface facilities. This shall include all growth medium - at a minimum, the upper 2-6 inches of soil - but shall also include stripping of any additional topsoil present at a site, such as indicated by color or texture. Stripping depth may be specified during the onsite inspection. Stripped topsoil shall be stored separately from subsoil or other excavated material and replaced prior to interim seedbed preparation. No topsoil shall be stripped when soils are moisture-saturated or frozen below the stripping depth.

The topsoil will not be used to construct the containment structures or earthen dikes that are on the outside boundaries of the constructed well pad, tanks, and storage facilities.

Each construction area is site specific as to topsoil depth. It is the operator's responsibility to ensure that topsoil, caliche, or spoils are not mixed together.

(**Pads**): topsoil will be stripped and stored in separate piles from the spoils pile. They can be stored on opposite or adjacent sides. If topsoil and spoils must be stored on the same pad side together they shall be no closer than toe to toe, not overlapping. Each pile shall be kept within 30 feet of the pad's side. 100% of the topsoil will be used for both interim and final reclamation. 100% of topsoil will be respread over the disturbed areas during reclamation.

(**Roads**): topsoil shall be stripped in such a way to follow the road's edge outside of the surfacing or drivable area. During final reclamation, after removal of surface material and re-contouring, 100% of topsoil will be respread over the disturbed areas during reclamation. Vegetation in the topsoil will help hold re-seeding, moisture content, and reduce erosion.

10. WELL PAD SURFACING:

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational need. Surfacing of the well pad is not required. If the operator elects to surface the well pad, the surfacing material will be required to be removed at the time of reclamation.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattle guard(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 cattle guard(s) that are in place and are utilized during lease operations. Gates or cattle guards on public lands will not be locked or closed to public use unless closure is specifically determined to be necessary and is authorized in writing by the authorized officer. A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

The operator shall notify the private surface landowner or the grazing allotment operator prior to crossing any fence(s). 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.

11. PRODUCTION:

Storage

Fiberglass storage tanks are ***not*** permitted for the storage of production.

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim reclamation and re-vegetation of the well location.

Containment Structures

All production facilities shall have a lined containment structure large enough to contain **110% of the largest Tank (PLUS) 24 hours of production** (43 CFR 3162.5-1) ***Environmental Obligations***, 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, **OIL GREEN** (Standard Environmental Color Chart June 2008).

Completion Report

In accordance with 43 CFR 3160, Form 3160-4 (Well Completion or Re-completion Report and Log) must be submitted to the Bureau of Land Management, Roswell Field Office within 30 days after completion of the well or producer. Copies of all open hole and cased hole logs, core descriptions, core analyses, well test data, geologic summaries, sample descriptions, formation test reports, stimulation reports, directional survey (if applicable), and all other surveys or data obtained and compiled during the drilling, completion, and/or work over operations, shall be included with Form 3160-4.

12. INTERIM RECLAMATION:

Reclamation earthwork for interim and/or final reclamation shall be completed within 6 months of well completion or well plugging (weather permitting), and shall consist of: 1) backfilling pits, 2) re-contouring and stabilizing the well site, access road, cut/fill slopes, drainage channels, utility and pipeline corridors, and all other disturbed areas, to approximately the original contour, shape, function, and configuration that existed before construction (any compacted backfilling activities shall ensure proper spoils placement , settling, and stabilization, 3) surface ripping, prior to topsoil placement, to a depth of 18-24 inches deep on 18-24 inch centers to reduce compaction, 4) final grading and replacement of all topsoil so that no topsoil's remains in the stockpile, 5) seeding in accordance with reclamation portions of the APD and these COA's.

Any subsequent re-disturbance of interim reclamation shall be reclaimed within six (6) months by the same means described above.

Prior to conducting interim reclamation, <u>the operator is required to:</u>

- Submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.
- Contact BLM at least three (3) working days prior to conducting any interim reclamation activities, and prior to seeding.

During reclamation, the removal of caliche is important to increasing the success of re-vegetating the site. Removed caliche may be used in road repairs, fire walls or for building other roads and locations. In addition, 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 re-vegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be re-vegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

Use a certified noxious weed-free seed mixture. Use seed tested for viability and purity in accordance with State law(s) within nine months prior to purchase. Use a commercial seed

mixture certified or registered and tagged in accordance with State law(s). Make the seed mixture labels available for BLM inspection.

13. SEED MIX:

SEE ATTACHED SEED MIX.

WELL NAME	ECOSITE (ACCESS ROAD)	ECOSITE (PAD)
HI BOB FEDERAL 3H	SHALLOW SD-3	SHALLOW SD-3

14. FINAL ABANDONMENT:

A. Upon abandonment of the well a Notice of Intent for Plug and Abandonment describing plugging procedures. Followed within 30 days you shall file with this office, a Subsequent Report of Abandonment (Form 3160-5). To be included with this report is where the plugs were placed; volumes of cement used and well bore schematic as plugged.

B. On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the Private Surface Land Owner agreements and a copy of the release is to be submitted upon abandonment.

C. The Operator shall promptly plug and abandoned each newly completed, re-completed or producing well which is not capable of producing in paying quantities. No well may be temporarily abandoned for more than 30 days without prior approval from this office. When justified by the Operator, BLM may authorize additional delays, no one of which may exceed an additional 12 months. Upon removal of drilling or producing equipment form the site of a well which is to be permanently abandoned, the surface of the lands disturbed shall be reclaimed in accordance with an approved Notice of Intent for final reclamation.

D. Final reclamation shall include: the removal of all solid waste, trash, surfacing materials, storage facilities and all other related equipment, flow lines, and meter housing, power poles, guy wires, and all other related power materials. All disturbed areas, i.e. cuts and fills, shall be re-contoured to their original surroundings. 100% of topsoil shall be used to resurface all disturbed areas including access roads. A label of the seed mix used shall be submitted with the Final Abandonment Notice (FAN) for review once reclamation is complete.

15. PIPELINE PROTECTION REQUIREMENT:

Precautionary measures shall be taken by the operator during construction of the access road to protect existing pipelines that the access road will cross over. An earthen berm; 2 feet high by 3 feet wide and 14 feet across the access road travelway (2' X 3' X 14'), shall be constructed over existing pipelines. The operator shall be held responsible for any damage to existing pipelines. If the pipeline is ruptured and/or damaged the operator shall immediately cease construction operations and repair the pipeline. The operator shall be held liable for any unsafe construction operations that threaten human life and/or cause the destruction of equipment.

16. WILDLIFE PROTECTION MEASURES – Best Management Practices (BMPs)

COA/Stipulation for above ground pipelines

- All pipelines laid on the surface will have sloped dirt berms built over them every 100 yards to allow reptiles, amphibians, small mammals, ground-dwelling birds and their broods access over them. Dirt berms should be no less than 12 inches in width and extend over all surface pipelines within the Right of Way. Berms should be maintained for the life of the project.

Wildlife Mortality - General
The operator will notify the Bureau of Land Management (BLM) authorized officer and nearest Fish and Wildlife Service (FWS) Law Enforcement office within 24 hours, if the operator discovers a dead or injured federally protected species (i.e., migratory bird species, bald or golden eagle, or species listed by the FWS as threatened or endangered) in or adjacent to a pit, trench, tank, exhaust stack, or fence. (If the operator is unable to contact the FWS Law Enforcement office, the operator must contact the nearest FWS Ecological Services office.)

1. **Closed top tanks are required for any containment system.**

All tanks are required to have a closed top tank.

2. **Chemical and Fuel Secondary Containment Systems**

Chemical and Fuel Secondary Containment and Exclosure Screening – The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground.
The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. Closed-top tanks are required for any secondary containment systems.

3. **Open-Vent Exhaust Stacks**

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

17. WASTE, HAZARDOUS AND SOLID:

Waste materials produced during all phases of operation will be disposed of promptly in an approved manner so it will not impact the air, soil, water, vegetation or animals. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and equipment. All liquid waste, completion fluids and drilling products associated with oil and gas operations will be contained and then removed and deposited in an approved disposal site. Portable toilets will remain on site throughout well pad construction, drilling and reclamation.

The operator and contractors shall ensure that all use, production, storage, transportation and disposal of hazardous materials, solid wastes and hazardous wastes associated with the drilling, completion and production of this well will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines. All project related activities involving hazardous materials will be conducted in a manner to minimize potential environmental impacts. A file will be maintained onsite containing current Safety Data Sheets (SDS) for all chemicals, compounds and/or substances which are used in the course of construction, drilling, completion and production operations.

18. SURFACE WATER AND GROUNDWATER PROTECTION MEASURES – Best Management Practices (BMPs)\

A containment structure or earthen dike shall be constructed and maintained around the north, west, and south outside boundary of the well pad. The containment structure or earthen dike shall be constructed two (2) feet high (the containment structure or earthen dike can be constructed higher than the two (2) feet high minimum). The containment structure or earthen dike is required so that if an oilfield waste contaminant or product contaminant were leaked, spilled, and or released upon the well pad the oilfield waste contaminant or product contaminant shall be contained in order to prevent the contaminant from entering into the ephemeral drainage located to the west and downslope of the well pad location.

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Stormi Davis **Signed on:** 08/21/2019

Title: Regulatory Analyst

Street Address:

City: **State:** **Zip:**

Phone: (918)491-4339

Email address: erich@kfoc.net

Field Representative

Representative Name: Todd Passmore

Street Address: 6 Desta Drive, Ste 3100

City: Midland **State:** TX **Zip:** 79705

Phone: (432)894-0165

Email address: tpassmore@marwin.com

APD ID: 10400046135 **Submission Date:** 08/22/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400046135 **Tie to previous NOS?** N **Submission Date:** 08/22/2019

BLM Office: ROSWELL **User:** Stormi Davis **Title:** Regulatory Analyst

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

Lease number: NMNM132065 **Lease Acres:** 1405.32

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

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

Agreement number:

Agreement name:

Keep application confidential? Y

Permitting Agent? YES **APD Operator:** MARSHALL & WINSTON INCORPORATED

Operator letter of designation:

Operator Info

Operator Organization Name: MARSHALL & WINSTON INCORPORATED

Operator Address: 6 Desta Drive, Suite 3100 **Zip:** 79705

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)684-6373

Operator Internet Address: sroberts@mar-win.com

Section 2 - Well Information

Well in Master Development Plan? NO **Master Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: HI BOB FEDERAL **Well Number:** 3H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** ROUND TANK **Pool Name:** SAN ANDRES

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

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

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

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** N **New surface disturbance?**

Type of Well Pad: SINGLE WELL **Multiple Well Pad Name:** **Number:**

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 16 Miles **Distance to nearest well:** 40 FT **Distance to lease line:** 517 FT

Reservoir well spacing assigned acres Measurement: 200 Acres

Well plat: Hi_Bob_Federal_3H_C102_20190820161709.pdf

Pay.gov_20190822152639.pdf

Well work start Date: 11/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 19-1322 **Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce
SHL Leg #1	517	FSL	805	FEL	15S	29E	8	Aliquot SESE	33.024566	-104.0446	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 132065	3816	0	0	Y
KOP Leg #1	517	FSL	805	FEL	15S	29E	8	Aliquot SESE	33.024566	-104.0446	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 132065	1073	2744	2743	Y

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce
PPP Leg #1-1	0	FNL	1040	FEL	15S	29E	17	Aliquot NENE	33.0231419	-104.045368	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121949	601	3619	3215	Y
PPP Leg #1-2	130	FSL	1040	FEL	15S	29E	8	Aliquot SESE	33.023489	-104.045366	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 132065	601	3489	3215	Y
EXIT Leg #1	100	FSL	1040	FEL	15S	29E	17	Aliquot SESE	33.008944	-104.045408	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121949	601	8700	3215	Y
BHL Leg #1	20	FSL	1040	FEL	15S	29E	17	Aliquot SESE	33.008724	-104.045408	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121949	601	8793	3215	Y

Pay.gov

Confirmation

Your payment has been submitted to the designated government agency through Pay.gov and the details are below. Please note that this is just a confirmation of transaction submission. To confirm that the payment processed as expected, you may refer to your bank statement on the scheduled payment date. If you have any questions or wish to cancel this payment, you will need to contact the agency you paid at your earliest convenience.

Tracking Information

Pay.gov Tracking ID: 26JM38VF

Agency Tracking ID: 75822703045

Form Name: Bureau of Land Management (BLM) Application for Permit to Drill (APD) Fee

Application Name: BLM Oil and Gas Online Payment

Payment Information

Payment Type: Bank account (ACH)

Payment Amount: $20,100.00

Transaction Date: 08/22/2019 03:33:22 PM EDT

Payment Date: 08/23/2019

Company: MARSHALL & WINSTON INC.

APD IDs: 10400046135, 10400046326

Lease Numbers: NMNM132065, NMNM132065

Well Numbers: 3H, 4H

Note: You will need your Pay.gov Tracking ID to complete your APD transaction in AFMSS II. Please ensure you write this number down upon completion of payment.

Account Information

Account Holder Name: MARSHALL & WINSTON, INC

Routing Number: 111900659

Pay.gov

Bureau of Land Management (BLM) Application for Permit to Drill (APD) Fee

✓ Before You Begin | 2 Complete Agency Form | 3 Enter Payment Info | 4 Review & Submit | 5 Confirmation

Bureau of Land Management
Application for Permit to Drill (APD) Fee

*Required Field

Company Information

* Company: MARSHALL & WINSTON INC.
* Address: 6 DESTA DRIVE, STE 3100
* City: MIDLAND * State: Texas * Postal Code: 79705
* Country: United States

Well Information (Note: 24,999.99 is the maximum amount that may be charged to an individual credit card per day)

	BLM Office:	APD ID:	Lease Number:	Well Name:	Well Number:	Amount:
#1)	Roswell, NM	10400046135	NMNM132065	HI BOB FEDERAL	3H	$10,050.00
#2)	Roswell, NM	10400046326	NMNM132065	HI BOB FEDERAL	4H	$10,050.00
#3)						
#4)						
#5)						
#6)						
#7)						
#8)						
#9)						
#10)						
#11)						
#12)						
#13)						
#14)						
#15)						

Total Payment Amount $20,100.00

PDF Preview Continue

Need Help?

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APD ID: 10400046135 **Submission Date:** 08/22/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

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

Highlighted data reflects the most recent changes

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Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	---	3816	0	0	OTHER : Surface	NONE	N
2	TOP OF SALT	3566	250	250	SALT	NONE	N
3	BASE OF SALT	3026	790	790	SALT	NONE	N
4	YATES	2978	838	838	ANHYDRITE,SILTSTONE	NONE	N
5	QUEEN	2248	1568	1568	ANHYDRITE,SILTSTONE	NONE	N
6	SAN ANDRES	1450	2366	2366	ANHYDRITE,DOLOMITE	NATURAL GAS,OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 12000

Equipment: A 3M system will be installed according to Onshore Order #2. No flex hose will be used.

Requesting Variance? NO

Variance request:

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and 3000 psi high. The System may be upgraded to a higher pressure but still tested to the working pressure stated. If the system is upgraded all the components installed will be functional and tested.

Choke Diagram Attachment:

Hi_Bob_Federal_3H_BOP_Choke_amend_20190910141306.pdf

BOP Diagram Attachment:

Hi_Bob_Federal_3H_BOP_Choke_amend_20190910141431.pdf

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	8793	420	2.63	11.5	1105	50	Class C	Kol Seal
PRODUCTION	Tail		0	8793	1620	1.31	14	2122	50	Class C	Kol Seal

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1250	3215	OTHER : Cut Brine	10	10.5							
225	1250	OTHER : BRINE	8.7	9							
0	225	OTHER : FRESH WATER	9	9.6							

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Section 6 - Test, Logging, Coring

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

None planned

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

DIRECTIONAL SURVEY,GAMMA RAY LOG,MUD LOG/GEOLOGIC LITHOLOGY LOG,

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1800 **Anticipated Surface Pressure:** 1092

Anticipated Bottom Hole Temperature(F): 105

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Hi_Bob_Federal_Lease_H2S_Contingency_Plan_20190627131029.pdf

Hi_Bob_Federal_3H_H2S_Plan_Diagram_20190910141151.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Hi_Bob_Federal_3H_Directional_Plan_20190821100415.pdf

Hi_Bob_Federal_3H_AC_Report_20190821100416.pdf

Other proposed operations facets description:

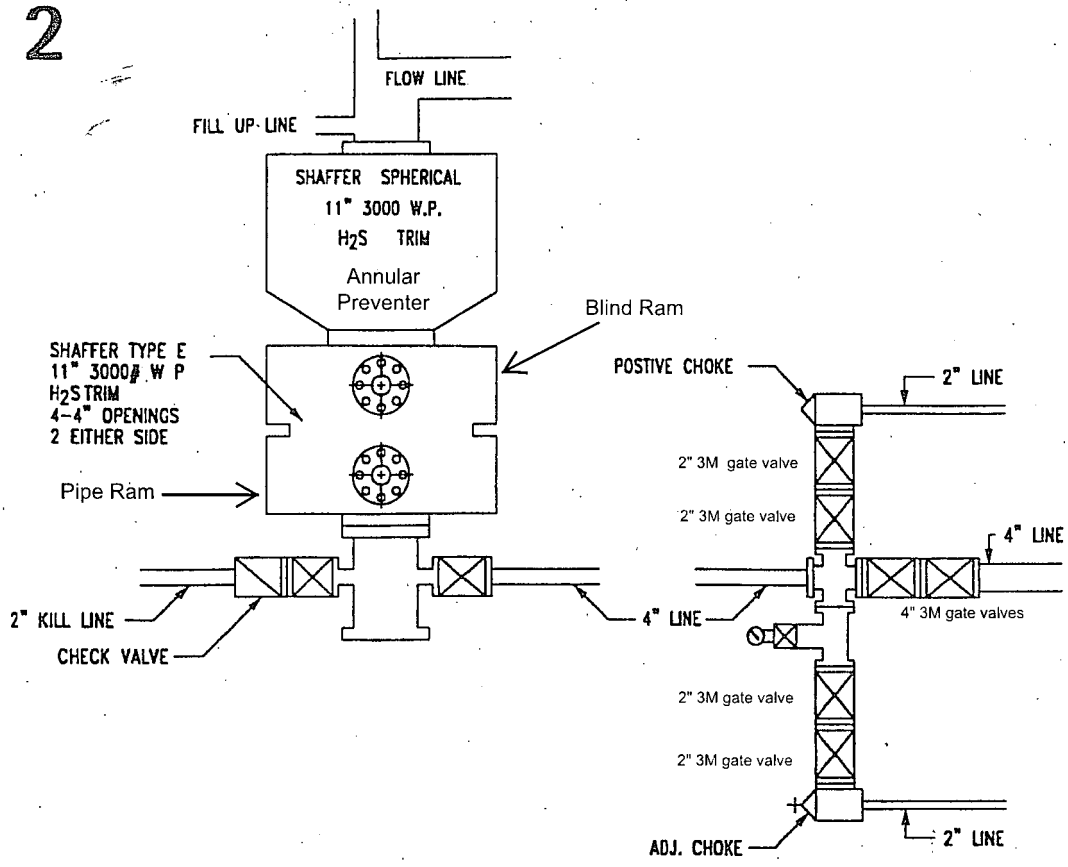
Gas Capture Plan attached

Other proposed operations facets attachment:

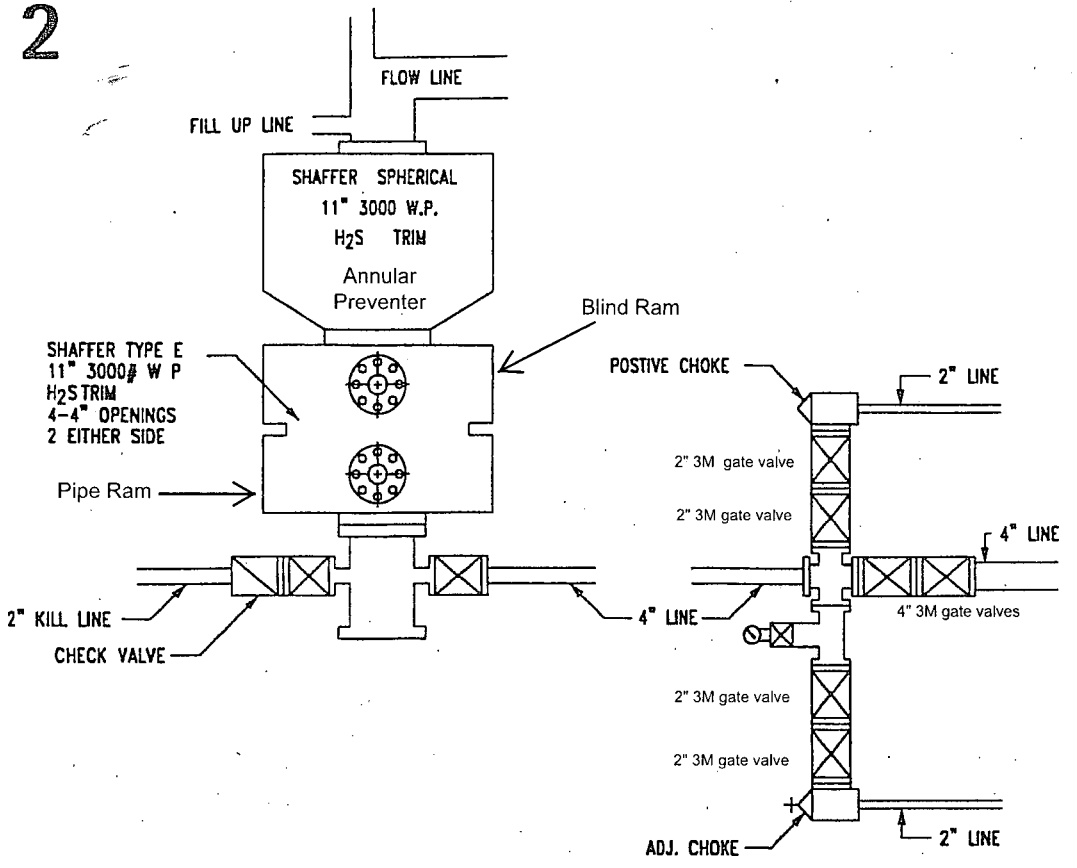
Hi_Bob_Federal_3H_GCP_20190821100433.pdf

Other Variance attachment:

RIG 2


FLOW LINE
FILL UP LINE
SHAFFER SPHERICAL
11" 3000 W.P.
H_2S TRIM
Annular
Preventer
Blind Ram
SHAFFER TYPE E
11" 3000# W P
H_2S TRIM
4-4" OPENINGS
2 EITHER SIDE
Pipe Ram
2" KILL LINE
CHECK VALVE
4" LINE
POSTIVE CHOKE
2" LINE
2" 3M gate valve
2" 3M gate valve
4" LINE
4" 3M gate valves
2" 3M gate valve
2" 3M gate valve
ADJ. CHOKE
2" LINE

RIG 2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2" LINE
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2" 3M gate valve
4" LINE
4" 3M gate valves
2" 3M gate valve
2" 3M gate valve
ADJ. CHOKE
2" LINE

MARSHALL & WINSTON INC.
Hi Bob Federal 1H
Casing Assumptions

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Surface	225	13-3/8"	48	H40	STC	New	17-1/2"	225
* Intermediate	2800	9-5/8"	40	L80	LTC	New	12-1/4"	2800
Production	8623	5-1/2"	17	HPC110	GBCD	New	8-3/4"	3215

Mud Type	Mud Weight Control	Hole Depth	Fluid Loss
FW	9.0 - 9.6	225'	NC
Brine	8.7 - 9.0	2800'	NC
CB	10.0 - 10.5	8623'	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9.6	112	740	1730	352000	352000
9.0	1310	3090	9860	727000	727000
10.1	1689	8580	10640	445000	445000

*** Intermediate casing will only be run if water flow is encountered while drilling 8 3/4" hole.**

Greasewood Federal 3H

Casing Assumptions

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Surface	225	13-3/8"	48	H-40	STC	New	17-1/2"	225
Intermediate	1250	9-5/8"	40	J-55	LTC	New	12-1/4"	1250
Production	8947	5-1/2"	17	HPC-110	GBCD	New	8-3/4"	8947

Mud Type	Mud Weight Hole Control	Fluid Loss
FW	9.0 - 9.6	NC
Brine	8.7 - 9.0	NC
CB	10.0 - 10.5	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9.6	112	740	1730	352000	352000
9.0	1310	2570	3950	520000	520000
10.1	1689	8580	10640	445000	445000

Hi Bob Federal 2H

Casing Assumptions

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Surface	225	13-3/8"	48	H-40	STC	New	17-1/2"	225
Intermediate	1250	9-5/8"	40	J-55	LTC	New	12-1/4"	1250
Production	7582	5-1/2"	17	HPC-110	GBCD	New	8-3/4"	3215

Mud Type	Mud Weight Hole Control	Fluid Loss
FW	9.0 - 9.6	NC
Brine	8.7 - 9.0	NC
CB	10.0 - 10.5	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9.6	112	740	1730	352000	352000
9.0	1310	2570	3950	520000	520000
10.1	1689	8580	10640	445000	445000

Hi Bob Federal 3H

Casing Assumptions

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Surface	225	13-3/8"	48	H-40	STC	New	17-1/2"	225
Intermediate	1250	9-5/8"	40	J-55	LTC	New	12-1/4"	1250
Production	8793	5-1/2"	17	HPC-110	GBCD	New	8-3/4"	3215

Mud Type	Mud Weight Hole Control	Fluid Loss
FW	9.0 - 9.6	NC
Brine	8.7 - 9.0	NC
CB	10.0 - 10.5	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9.6	112	740	1730	352000	352000
9.0	1310	2570	3950	520000	520000
10.1	1689	8580	10640	445000	445000

Hi Bob Federal 3H

Casing Assumptions

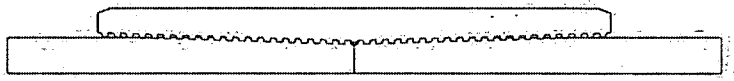
Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Surface	225	13-3/8"	48	H-40	STC	New	17-1/2"	225
Intermediate	1250	9-5/8"	40	J-55	LTC	New	12-1/4"	1250
Production	8793	5-1/2"	17	HPC-110	GBCD	New	8-3/4"	3215

Mud Type	Mud Weight Hole Control	Fluid Loss
FW	9.0 - 9.6	NC
Brine	8.7 - 9.0	NC
CB	10.0 - 10.5	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9.6	112	740	1730	352000	352000
9.0	1310	2570	3950	520000	520000
10.1	1689	8580	10640	445000	445000

PRECISION

Keeping You Connected.



SEMI PREMIUMCONNECTIONS
FIELD TESTED. FIELD PROVEN.

Precision Connections BK
5.5 in. 17 lb/ft HC-P110 with 6.05 in. Coupling OD

Pipe Body

Nominal OD	5.500	inches
Nominal Weight	17.00	lb/ft
Wall Thickness	0.304	inches
Plain End Weight	16.87	lb/ft
Drift	4.767	inches
Nominal ID	4.892	inches
Grade	HC-P110	
Min Yield	110,000	lbf/in²
Min Tensile	125,000	lbf/in²
Critical Section Area	4.962	in²
Pipe Body Yield Strength	546	kips
Min Internal Yield Pressure	10,640	psi
Collapse Pressure	8,730	psi

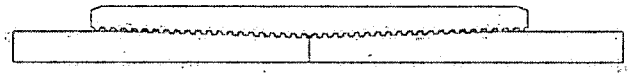
Connection

Coupling OD	6.050	inches
Coupling Length	8.250	inches
Make Up Loss	4.125	inches
Critical Section Area	6.031	in²
Internal Pressure Rating	100%	
External Pressure Rating	100%	
Tension Efficiency	100%	
Connection Strength	546	kips
Compression Efficiency	100%	
Uniaxial Bend Rating	83.4	° / 100 ft
Min Make Up Torque	4,450	ft-lbs
Yield Torque	17,100	ft-lbs

v1.2 7/26/2018

PRECISION

Keeping You Connected.



SEMI PREMIUMCONNECTIONS

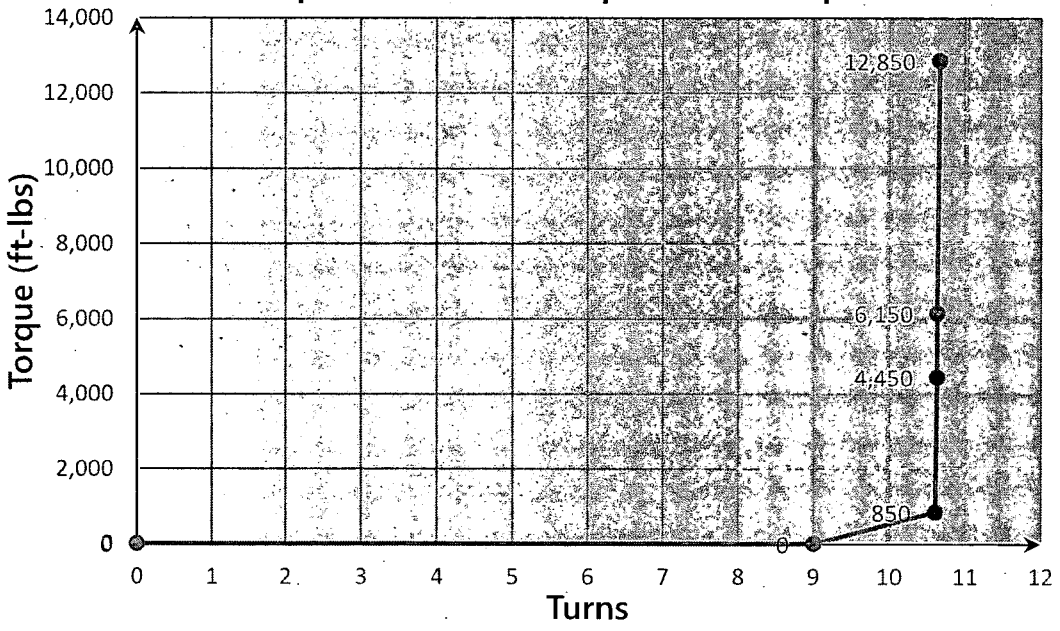
FIELD TESTED. FIELD PROVEN.

Torque Data Sheet - Precision Connections BK

5.5 in. 17 lb/ft HC-P110 with 6.05 in. Coupling OD

Min Make Up Torque	4,450	ft-lbs	Max Operating Torque	14,550	ft-lbs
Max Make Up Torque	12,850	ft-lbs	Yield Torque	17,100	ft-lbs
Optimum Torque	6,150	ft-lbs			

Representative Torque Turn Graph



v1.2 7/26/2018

Hi Bob Federal 3H

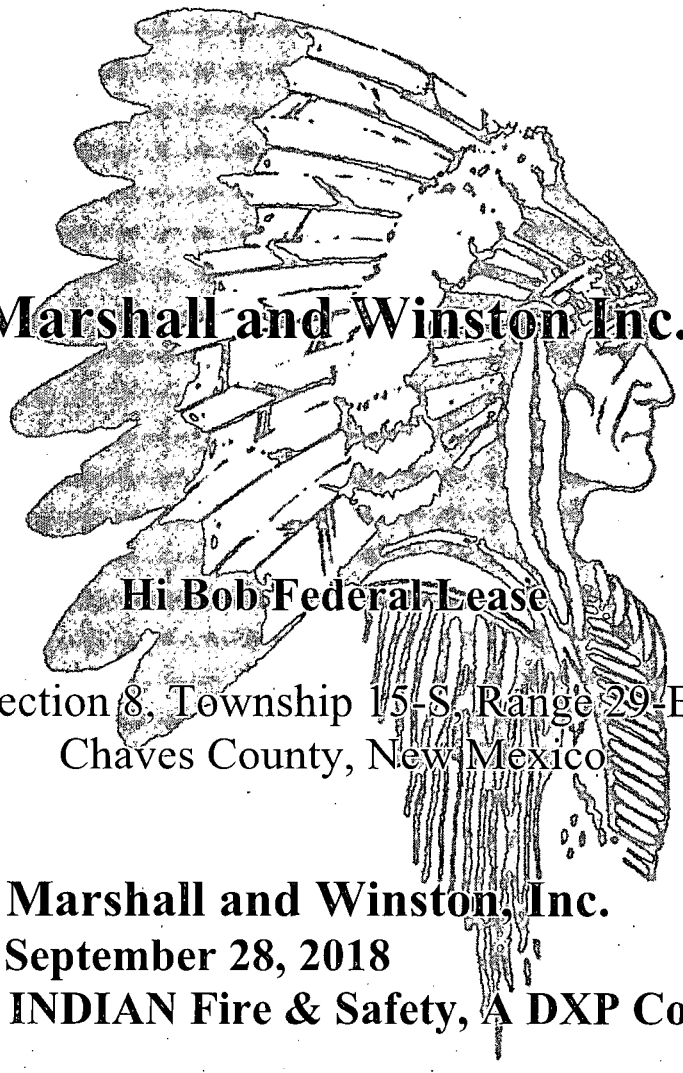
Casing Assumptions

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Surface	225	13-3/8"	48	H-40	STC	New	17-1/2"	225
Intermediate	1250	9-5/8"	40	J-55	LTC	New	12-1/4"	1250
Production	8793	5-1/2"	17	HPC-110	GBCD	New	8-3/4"	3215

Mud Type	Mud Weight Hole Control	Fluid Loss
FW	9.0 - 9.6	NC
Brine	8.7 - 9.0	NC
CB	10.0 - 10.5	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9.6	112	740	1730	352000	352000
9.0	1310	2570	3950	520000	520000
10.1	1689	8580	10640	445000	445000

CONTINGENCY PLAN



Marshall and Winston Inc.

Hi Bob Federal Lease

Section 8, Township 15-S, Range 29-E
Chaves County, New Mexico

Prepared For: **Marshall and Winston, Inc.**
Date Prepared: **September 28, 2018**
Prepared By: **INDIAN Fire & Safety, A DXP Company**

TABLE OF CONTENTS

HYDROGEN SULFIDE CONTINGENCY PLAN

SCOPE

THIS CONTINGENCY PLAN ESTABLISHES GUIDELINES FOR THE PUBLIC, ALL COMPANY EMPLOYEES WHO'S WORK ACTIVITIES MAY INVOLVE EXPOSURE TO HYDROGEN SULFIDE (H2S) GAS.

OBJECTIVE

1. PREVENT ANY AND ALL ACCIDENTS, AND PREVENT THE UNCONTROLLED RELEASE OF HYDROGEN SULFIDE INTO THE ATMOSPHERE.

2. PROVIDE PROPER EVACUATION PROCEDURES TO COPE WITH EMERGENCIES.

3. PROVIDE IMMEDIATE AND ADEQUATE MEDICAL ATTENTION SHOULD AN INJURY OCCUR.

H2S CONTINGENCY PLAN

DISCUSSION

GEOLOGICAL PROGNOSIS

IMPLEMENTATION:	THIS PLAN WITH ALL DETAILS IS TO BE FULLY IMPLEMENTED BEFORE DRILLING TO PRODUCTION CASING POINT.
EMERGENCY RESPONSE PROCEDURE:	THIS SECTION OUTLINES THE CONDITIONS AND DENOTES STEPS TO BE TAKEN IN THE EVENT OF AN EMERGENCY.
EMERGENCY EQUIPMENT PROCEDURE:	THIS SECTION OUTLINES THE SAFETY AND EMERGENCY EQUIPMENT THAT WILL BE REQUIRED FOR THE DRILLING OF TH1S WELLS.
TRAINING PROVISIONS:	THIS SECTION OUTLINES THE TRAINING PROVISIONS THAT MUST BE ADHERED TO PRIOR TO DRILLING TO PRODUCTION CASING POINT.
DRILLING EMERGENCY CALL LISTS:	INCLUDED ARE THE TELEPHONE NUMBERS OF ALL PERSONS TO BE CONTACTED SHOULD AN EMERGENCY EXIST.
BRIEFING:	THIS SECTION DEALS WITH THE BRIEFING OF ALL PEOPLE INVOLVED IN THE DRILLING OPERATION.
PUBLIC SAFETY:	PUBLIC SAFETY PERSONNEL WILL BE MADE AWARE OF THE DRILLING OF THIS WELL.
CHECK LISTS:	STATUS CHECK LISTS AND PROCEDURAL CHECK LISTS HAVE BEEN INCLUDED TO INSURE ADHERENCE TO THE PLAN.
GENERAL INFORMATION:	A GENERAL INFORMATION SECTION HAS BEEN INCLUDED TO SUPPLY SUPPORT INFORMATION.

EMERGENCY PROCEDURES

A. IN THE EVENT OF ANY EVIDENCE OF H2S LEVEL ABOVE 10 PPM, TAKE THE FOLLOWING STEPS:

1. SECURE BREATHING EQUIPMENT.

2. ORDER NON-ESSENTIAL PERSONNEL OUT OF DANGER ZONE.

3. TAKE STEPS TO DETERMINE IF THE H2S LEVEL CAN BE CORRECTED OR SUPPRESSED AND, IF SO, PROCEED IN NORMAL OPERATION.

B. IF UNCONTROLLABLE CONDITIONS OCCUR:

1. TAKE STEPS TO PROTECT AND/OR REMOVE ANY PUBLIC IN THE DOWN-WIND AREA FROM THE RIG – PARTIAL EVACUATION AND ISOLATION. NOTIFY NECESSARY PUBLIC SAFETY PERSONNEL AND THE OCD OF NEW MEXICO.

2. REMOVE ALL PERSONNEL TO A SAFE BREATHING AREA.

3. NOTIFY PUBLIC SAFETY PERSONNEL OF THE SAFE AREA.

4. PROCEED WITH BEST PLAN (AT THE TIME) TO REGAIN CONTROL OF THE WELL. MAINTAIN TIGHT SECURITY AND SAFETY PROCEDURES.

C. RESPONSIBILITY:

1. DESIGNATED PERSONNEL.

a. SHALL BE RESPONSIBLE FOR THE TOTAL IMPLEMENTATION OF THIS PLAN.

b. SHALL BE IN COMPLETE COMMAND DURING ANY EMERGENCY.

c. SHALL DESIGNATE A BACK-UP.

EMERGENCY PROCEDURES

*(Procedures are the same for both Drilling and Tripping)

ALL PERSONNEL:

1. ON ALARM, DON ESCAPE UNIT AND REPORT TO UP WIND BRIEFING AREA.
2. CHECK STATUS OF PERSONNEL (BUDDY SYSTEM).
3. SECURE BREATHING EQUIPMENT.
4. AWAIT ORDERS FROM SUPERVISOR.

DRILLING FOREMAN:

1. REPORT TO UP WIND BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH TOOL PUSHER OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H2S CONCENTRATIONS.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

TOOL PUSHER:

1. REPORT TO UP WIND BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH DRILLING FOREMAN OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H2S CONCENTRATION.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

DRILLER:

1. DON ESCAPE UNIT.
2. CHECK MONITOR FOR POINT OF RELEASE.
3. REPORT TO BRIEFING AREA.
4. CHECK STATUS OF PERSONNEL (IN AN ATTEMPT TO RESCUE, USE THE BUDDY SYSTEM).
5. ASSIGNS LEAST ESSENTIAL PERSON TO NOTIFY DRILLING FOREMAN AND TOOL PUSHER BY QUICKEST MEANS IN CASE OF THEIR ABSENCE.
6. ASSUMES THE RESPONSIBILITIES OF THE DRILLING FORMAN AND TOOL PUSHER UNTIL THEY ARRIVE SHOULD THEY BE ABSENT.

EMERGENCY PROCEDURES

DERRICK MAN FLOOR MAN #1 FLOOR MAN #2	1. WILL REMAIN IN BRIEFING AREA UNTIL INSTRUCTED BY SUPERVISOR.
MUD ENGINEER:	1. REPORT TO BRIEFING AREA. 2. WHEN INSTRUCTED, BEGIN CHECK OF MUD FOR PH AND H2S LEVEL. (GARETT GAS TRAIN.)
SAFETY PERSONNEL:	1. MASK UP AND CHECK STATUS OF ALL PERSONNEL AND SECURE OPERATIONS AS INSTRUCTED BY DRILLING FOREMAN AND REPORT TO BRIEFING AREA.

TAKING A KICK

WHEN TAKING A KICK DURING AN H2S EMERGENCY, ALL PERSONNEL WILL FOLLOW STANDARD BOP PROCEDURES AFTER REPORTING TO BRIEFING AREA AND MASKING UP.

OPEN-HOLE LOGGING

ALL UNNECESSARY PERSONNEL STAY OFF THE OFF FLOOR. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD MONITOR CONDITION, ADVISE STATUS AND DETERMINE NEED FOR USE OF AIR EQUIPMENT.

RUNNING CASING OR PLUGGING

FOLLOWING THE SAME "TRIPPING" PROCEDURE AS ABOVE, DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD DETERMINE IF ALL PERSONNEL HAVE ACCESS TO PROTECTIVE EQUIPMENT.

IGNITION PROCEDURES

THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF COMPANY FOREMAN. IN THE EVENT HE IS INCAPACITATED, IT BECOMES THE RESPONSIBILITY OF THE CONTRACT RIG TOOL PUSHER. THE DECISION SHOULD BE MADE ONLY AS A LAST RESORT AND IN A SITUATION WHERE IT IS CLEAR THAT:

1. HUMAN LIFE AND PROPERTY ARE ENDANGERED.
2. THERE IS NO HOPE CONTROLLING THE BLOWOUT UNDER THE PREVAILING CONDITIONS AT THE WELL.

NOTIFY THE DISTRICT OFFICE IF TIME PERMITS, BUT DO NOT DELAY IF HUMAN LIFE IS IN DANGER.

INITIATE FIRST PHASE OF EVACUATION PLAN.

IGNITION PROCEDURES

INSTRUCTIONS FOR IGNITING THE WELL

1. TWO PEOPLE ARE REQUIRED FOR THE ACTUAL IGNITING OPERATION. THEY MUST WEAR SELF-CONTAINED BREATHING UNITS AND HAVE SAFETY ROPE ATTACHED. ONE MAN (TOOL PUSHER OR SAFETY ENGINEER) WILL CHECK THE ATMOSPHERE FOR EXPLOSIVE GASES WITH THE EXPLOSIMETER. THE OTHER MAN (DRILLING FOREMAN) IS RESPONSIBLE FOR IGNITING THE WELL.
2. PRIMARY METHOD TO IGNITE: 25 MM FLARE GUN WITH RANGE OF APPROXIMATELY 500 FEET.
3. IGNITE UP WIND AND DO NOT APPROACH ANY CLOSER THAN IS WARRANTED.
4. SELECT THE IGNITION SITE BEST FOR PROTECTION, AND WHICH OFFERS AN EASY ESCAPE ROUTE.
5. BEFORE FIRING, CHECK FOR PRESENCE OF COMBUSTIBLE GAS.
6. AFTER LIGHTING, CONTINUE EMERGENCY ACTION AND PROCEDURE AS BEFORE.
7. ALL UNASSIGNED PERSONNEL WILL LIMIT THEIR ACTIONS TO THOSE DIRECTED BY THE DRILLING FOREMAN.

REMEMBER: AFTER WELL IS IGNITED, BURNING HYDROGEN SULFIDE WILL CONVERT TO SULFUR DIOXIDE, WHICH IS ALSO HIGHLY TOXIC. DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED.

TRAINING REQUIREMENTS

WHEN WORKING IN AN AREA WHERE HYDROGEN SULFIDE GAS (H2S) MIGHT BE ENCOUNTERED, DEFINITE TRAINING REQUIREMENTS MUST BE CARRIED OUT. ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN THE FOLLOWING:

1. HAZARDS AND CHARACTERISTICS OF H2S.
2. PHYSICAL EFFECTS OF HYDROGEN SULFIDE ON THE HUMAN BODY.
3. TOXICITY OF HYDROGEN SULFIDE AND SULFUR DIOXIDE.
4. H2S DETECTION.
5. EMERGENCY RESCUE.
6. RESUSCITATORS.
7. FIRST AID AND ARTIFICIAL RESPIRATION.
8. EFFECTS OF H2S ON METALS.
9. LOCATION SAFETY.

SERVICE COMPANY AND VISITING PERSONNEL

A. EACH SERVICE COMPANY THAT WILL BE ON THIS WELL WILL BE NOTIFIED IF THE ZONE CONTAINS H2S.

B. EACH SERVICE COMPANY MUST PROVIDE FOR THE TRAINING AND EQUIPMENT OF THEIR EMPLOYEES BEFORE THEY ARRIVE AT THE WELL SITE.

C. EACH SERVICE COMPANY WILL BE EXPECTED TO ATTEND A WELL SITE BRIEFING.

EMERGENCY EQUIPMENT REQUIREMENTS

1. SIGNS

   A. ONE SIGN LOCATED AT LOCATION ENTRANCE WITH THE FOLLOWING LANGUAGE:

CAUTION – POTENTIAL POISON GAS
HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION

2. WIND SOCK – WIND STREAMERS

   A. ONE 36" (IN LENGTH) WIND SOCK LOCATED AT PROTECTION CENTER, AT HEIGHT VISIBLE FROM RIG FLOOR.
   B. ONE 36" (IN LENGTH) WIND SOCK LOCATED AT HEIGHT VISIBLE FROM PIT AREAS.

3. HYDROGEN SULFIDE DETECTOR AND ALARMS

   A. H2S MONITORS WITH ALARMS WILL BE LOCATED ON THE RIG FLOOR, AT THE BELL NIPPLE, AND AT THE FLOW LINE. THESE MONITORS WILL BE SET TO ALARM AT 10 PPM WITH RED LIGHT, AND TO ALARM AT 15 PPM WITH RED LIGHT AND AUDIBLE ALARM.
   B. H2S MONITOR TESTER.

4. CONDITION FLAGS

   A. ONE EACH OF GREEN, YELLOW, AND RED CONDITION FLAGS TO BE DISPLAYED TO DENOTE CONDITIONS.

GREEN – NORMAL CONDITIONS
YELLOW – POTENTIAL DANGER
RED – DANGER, H2S PRESENT

   B. CONDITION FLAG SHALL BE POSTED AT LOCATION SIGN ENTRANCE.

EMERGENCY EQUIPMENT REQUIREMENTS

5. AUXILIARY RESCUE EQUIPMENT

   A. STRETCHER
   B. 100' LENGTH OF 5/8" NYLON ROPE.

6. MUD INSPECTION DEVICES

   GARRETT GAS TRAIN, OR HACH TESTER FOR INSPECTION OF SULFIDE CONCENTRATION IN MUD SYSTEM.

7. FIRE EXTINGUISHER

   ADEQUATE FIRE EXTINGUISHERS SHALL BE LOCATED AT STRATEGIC LOCATIONS.

8. BLOW OUT PREVENTION EQUIPMENT

   THE WELL SHALL HAVE HYDRAULIC BOP EQUIPMENT FOR THE ANTICIPATED BHP OF 1500 PSI. EQUIPMENT IS TO BE TESTED ON INSTALLATION.

9. COMBUSTIBLE GAS DETECTOR

   THERE SHALL BE ONE COMBUSTIBLE GAS DETECTOR ON LOCATION AT ALL TIMES.

10. BOP TESTING

    BOP AND CHOKE LINE AND KILL LINE WILL BE TESTED.

11. AUDIO SYSTEM

    RADIO COMMUNICATION WILL BE AVAILABLE AT THE RIG.
    A. RIG FLOOR OR TRAILER
    B. VEHICLE

12. SPECIAL CONTROL EQUIPMENT

    A. HYDRAULIC BOP EQUIPMENT WITH REMOTE CONTROL ON GROUND.
    B. ROTATING HEAD

EMERGENCY EQUIPMENT REQUIREMENTS

13. EVACUATION PLAN

EVACUATION ROUTES SHOULD BE ESTABLISHED PRIOR TO SPUDDING EACH WELL AND DISCUSSED WITH ALL RIG PERSONNEL.

14. DESIGNATED AREA

A. **PARKING AND VISITOR AREA:** ALL VEHICLES ARE TO BE PARKED AT A PREDETERMINED SAFE DISTANCE FROM THE WELLHEAD. THIS WILL BE THE DESIGNATED SMOKING AREA.

B. TWO BRIEFING AREAS ON EITHER SIDE OF THE LOCATION AT THE MAXIMUM ALLOWABLE DISTANCE FROM THE WELL BORE SO THEY OFFSET PREVAILING WINDS PERPENDICULARLY, OR AT A 45-DEGREE ANGLE IF WIND DIRECTION TENDS TO SHIFT IN THE AREA.

C. PROTECTION CENTERS OR IF A MOVABLE TRAILER IS USED, IT SHOULD BE KEPT UPWIND OF EXISTING WINDS. WHEN WIND IS FROM THE PREVAILING DIRECTIONS, BOTH PROTECTION CENTERS SHOULD BE ACCESSIBLE.

STATUS CHECK LIST

NOTE: ALL ITEMS ON THIS LIST MUST BE COMPLETED BEFORE DRILLING TO PRODUCTION CASING POINT.

1. SIGN AT LOCATION ENTRANCE.
2. TWO (2) WIND SOCKS LOCATED AS REQUIRED.
3. TWO (2) 30-MINUTE POSITIVE PRESSURE AIR PACKS ON LOCATION FOR RIG PERSONNEL AND/OR MUD LOGGERS.
4. AIR PACK INSPECTED FOR READY USE.
5. CASCADE SYSTEM AND HOSE LINE HOOK-UP.
6. CASCADE SYSTEM FOR REFILLING AIR BOTTLES.
7. SAFE BREATHING AREAS SET UP.
8. CONDITION FLAG ON LOCATION AND READY FOR USE.
9. H2S DETECTION SYSTEM HOOKED UP.
10. H2S ALARM SYSTEM HOOKED UP AND READY.
11. OXYGEN RESUSCITATOR ON LOCATION AND TESTED FOR USE.
12. STRETCHER ON LOCATION AT SAFETY TRAILER.
13. 1 – 100' LENGTH OF NYLON ROPE ON LOCATION.
14. ALL RIG CREW AND SUPERVISORS TRAINED AS REQUIRED.
15. ALL OUTSIDE SERVICE CONTRACTORS ADVISED OF POTENTIAL H2S HAZARD ON WELL.
16. NO SMOKING SIGN POSTED.

CHECKED BY:_____ DATE:_____

PROCEDURAL CHECK LIST

PERFORM EACH TOUR:

1. CHECK FIRE EXTINGUISHERS TO SEE THAT THEY HAVE THE PROPER CHARGE.

2. CHECK BREATHING EQUIPMENT TO ENSURE THAT IT HAS NOT BEEN TAMPERED WITH.

3. MAKE SURE ALL THE H2S DETECTION SYSTEM IS OPERATIVE.

PERFORM EACH WEEK:

1. CHECK EACH PIECE OF BREATHING EQUIPMENT TO MAKE SURE THAT DEMAND REGULATOR IS WORKING. THIS REQUIRES THAT THE BOTTLE BE OPENED AND THE MASK ASSEMBLY BE PUT ON TIGHT ENOUGH SO THAT WHEN YOU INHALE, YOU RECEIVE AIR.

2. BLOW OUT PREVENTER SKILLS.

3. CHECK SUPPLY PRESSURE ON BOP ACCUMULATOR STAND BY SOURCE.

4. CHECK ALL SKA-PAC UNITS FOR OPERATION: DEMAND REGULATOR, ESCAPE BOTTLE AIR VOLUMES, SUPPLY BOTTLE OF AIR VOLUME.

5. CHECK BREATHING EQUIPMENT MASK ASSEMBLY TO SEE THAT STRAPS ARE LOOSENED AND TURNED BACK, READY TO PUT ON.

6. CHECK PRESSURE ON BREATHING EQUIPMENT AIR BOTTLES TO MAKE SURE THEY ARE CHARGED TO FULL VOLUME.

7. CONFIRM PRESSURE ON ALL SUPPLY AIR BOTTLES.

8. PERFORM BREATHING EQUIPMENT DRILLS WITH ON-SITE PERSONNEL.

9. CHECK THE FOLLOWING SUPPLIES FOR AVAILABILITY.

A. EMERGENCY TELEPHONE LIST.

GENERAL EVACUATION PLAN

THE DIRECT LINES OF ACTION PREPARED BY **DXP / INDIAN FIRE & SAFETY, INC.** TO PROTECT THE PUBLIC FROM HAZARDOUS GAS SITUATIONS ARE AS FOLLOWS:

1. WHEN THE COMPANY APPROVED SUPERVISOR (DRILLING FOREMAN, CONSULTANT, RIG PUSHER, OR DRILLER) DETERMINES THE H2S GAS CANNOT BE LIMITED TO THE WELL LOCATION AND THE PUBLIC WILL BE INVOLVED, HE WILL ACTIVATE THE EVACUATION PLAN. ESCAPE ROUTES ARE NOTED ON AREA MAP.

2. "COMPANY MAN" OR DESIGNEE WILL NOTIFY LOCAL GOVERNMENT AGENCY THAT A HAZARDOUS CONDITION EXISTS AND EVACUATION NEEDS TO BE IMPLEMENTED.

3. COMPANY SAFETY PERSONNEL THAT HAVE BEEN TRAINED IN THE USE OF H2S DETECTION EQUIPMENT AND SELF-CONTAINED BREATHING EQUIPMENT WILL MONITOR H2S CONCENTRATIONS, WIND DIRECTIONS, AND AREA OF EXPOSURE. THEY WILL DELINEATE THE OUTER PERIMETER OF THE HAZARDOUS GAS AREA. EXTENSION TO THE EVACUATION AREA WILL BE DETERMINED FROM INFORMATION GATHERED.

4. LAW ENFORCEMENT PERSONNEL (STATE POLICE, POLICE DEPT., FIRE DEPT., AND SHERIFF'S DEPT.), WILL BE CALLED TO AID IN SETTING UP AND MAINTAINING ROAD BLOCKS. ALSO, THEY WILL AID IN EVACUATION OF THE PUBLIC IF NECESSARY.

IMPORTANT: LAW ENFORCEMENT PERSONNEL WILL NOT BE ASKED TO COME INTO A CONTAMINATED AREA. THEIR ASSISTANCE WILL BE LIMITED TO UNCONTAMINATED AREAS. CONSTANT PHONE CONTACT WILL BE MAINTAINED WITH THEM.

5. AFTER THE DISCHARGE OF GAS HAS BEEN CONTROLLED, COMPANY SAFETY PERSONNEL WILL DETERMINE WHEN THE AREA IS SAFE FOR RE-ENTRY.

EMERGENCY ACTIONS

WELL BLOWOUT – IF EMERGENCY

1. EVACUATE ALL PERSONNEL IF POSSIBLE.
2. IF SOUR GAS – EVACUATE RIG PERSONNEL.
3. IF SOUR GAS – EVACUATE PUBLIC WITHIN 3000 FT RADIUS OF EXPOSURE.
4. DON SCBA AND RESCUE ANY PERSON(S) OVER COME BY H2S.
5. CALL 911 FOR EMERGENCY HELP (FIRE DEPT AND AMBULANCE) AND NOTIFY SR. DRILLING FOREMAN AND DISTRICT FOREMAN.
6. GIVE FIRST AID.

PERSON DOWN LOCATION/FACILITY

1. IF IMMEDIATELY POSSIBLE, CONTACT 911. GIVE LOCATION AND WAIT FOR CONFIRMATION.
2. DON SCBA AND RESCUE PERSON(S) "DOWN" FROM H2S.
3. REMOVE TO FRESH AIR.
4. REMOVE OUTTER CLOTHING (GAS IS TRAPPED IN CLOTHING)
5. IF CPR IS NEEDED, REMEMBER THE VICTIM INHALED H2S, HE WILL ALSO EX-HALE H2S.

EMERGENCY CONTACT LIST

Marshall and Winston.

Office		432-684-6373
Todd Passmore	Operations Manager	432-894-0165
Travis Flemmons	Operations Superintendent	575-631-0906
Stephen Garcia	Onsite Operations Consultant	806-790-8286

EMERGENCY PHONE LIST

GOVERNMENTAL AGENCIES

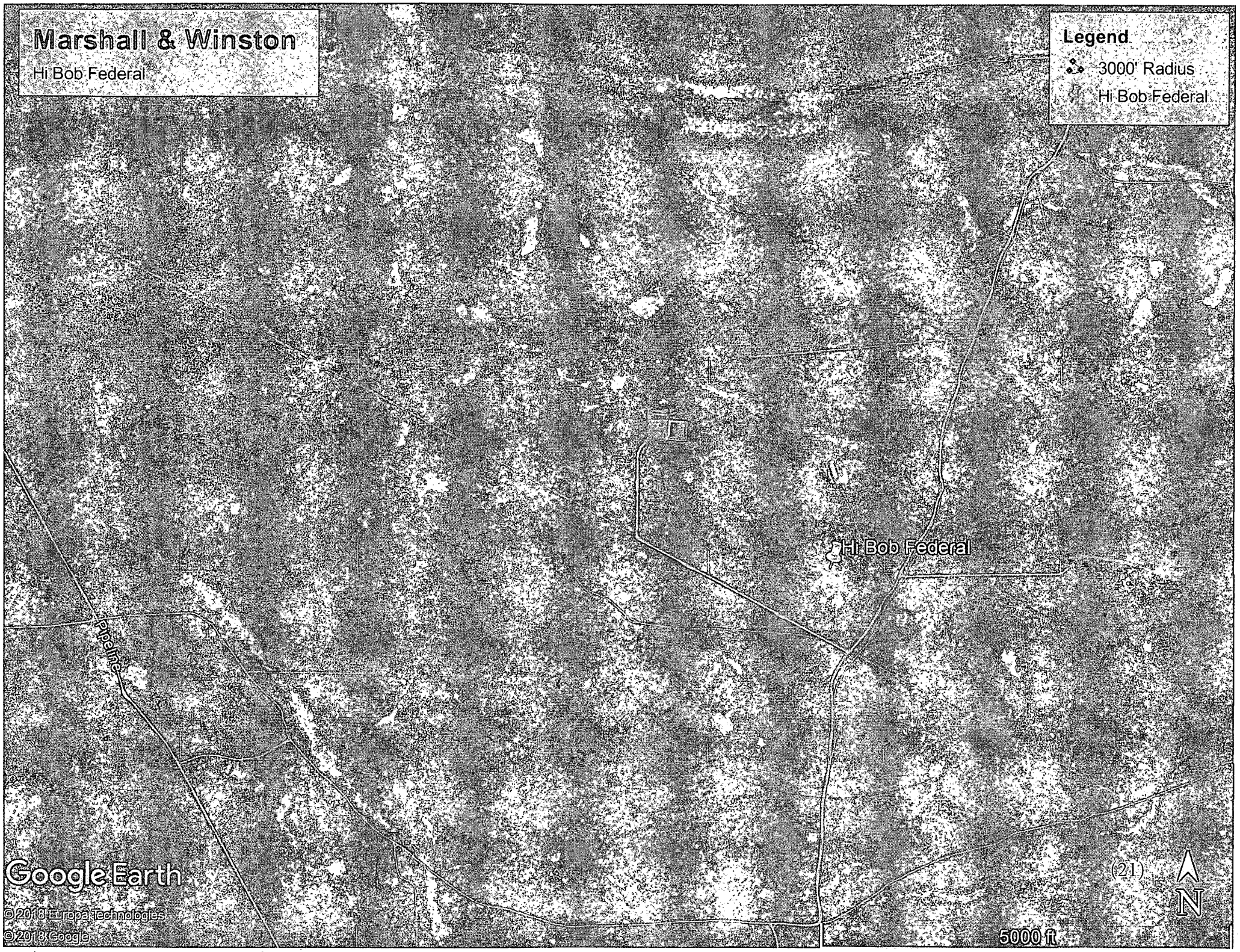
Chaves County Sheriff's Office		
Non emergency	575-624-6500	911
Fire Department		
Roswell - Non-emergency	575-624-6800	911
State Police Department - Roswell		
Non-emergency	575-622-7200	911
Hospital –Lovelace Regional - Roswell	575-627-7000	
Bureau of Land Management	575-887-6544	
New Mexico Oil Conservation.....	575-393-6161	
Indian Fire & Safety, Inc.....	575-393-3093	
24 Hour Emergency & Haz Mat.....	800-530-8693	

Indian Fire & Safety, Inc.
3317 W. County Road
505-393-3093 - office
800-530-8693 – toll free
505-392-6274 – fax

Personnel Contact List

Cell Phone

Melvin Scott	575-602-8924	Dispatch
Joe Spurgeon	806-215-1087	General Manager
Scott Dudenhoeffer	575-631-9753	Operations Manager
Sam Abney	575- 631-9712	Senior Supervisor
Fabian Lopez	575-513-4688	Weekend on call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TOXIC EFFECTS OF HYDROGEN SULFIDE

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 COLORLESS. IT FORMS AN EXPLOSIVE MIXTURE WITH AIR BETWEEN 4.3 AND 46.0 PERCENT BY VOLUME. HYDROGEN SULFIDE IS ALMOST AS TOXIC AS HYDROGEN CYANIDE AND IS BETWEEN FIVE AND SIX TIMES MORE TOXIC THAN CARBON MONOXIDE. TOXICITY DATA FOR HYDROGEN SULFIDE AND VARIOUS OTHER GASES ARE COMPARED IN TABLE I. PHYSICAL EFFECTS AT VARIOUS HYDROGEN SULFIDE EXPOSURE LEVELS ARE SHOWN IN TABLE II.

TABLE I
TOXICITY OF VARIOUS GASES

COMMON NAME	CHEMICAL FORMULA	SPECIFIC GRAVITY (SC=1)	THRESHOLD LIMIT (1)	HAZARDOUS LIMIT (2)	LETHAL CONCENTRATION (3)
HYDROGEN CYANIDE	HCN	0.94	10 PPM	150 PPM/HR	300 PPM
HYDROGEN SULFIDE	H2S	1.18	10 PPM	250 PPM/HR	600 PPM
SULFUR DIOXIDE	SO2	2.21	5 PPM	-	1000 PPM
CHLORINE	CL2	2.45	1 PPM	4 PPM/HR	1000 PPM
CARBON MONOXIDE	CO	0.97	50 PPM	400 PPM/HR	1000 PPM
CARBON DIOXIDE	CO2	1.52	5000 PPM	5%	10%
METHANE	CH4	0.55	90,000 PPM	COMBUSTIBLE ABOVE 5% IN AIR	

1) THRESHOLD LIMIT – CONCENTRATION AT WHICH IT IS BELIEVED THAT ALL WORKERS MAY BE REPEATEDLY EXPOSED DAY AFTER DAY WITHOUT ADVERSE EFFECTS.

2) HAZARDOUS LIMIT – CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.

3) LETHAL CONCENTRATION – CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.

TOXIC EFFECTS OF HYDROGEN SULFIDE

TABLE II
PHYSICAL EFFECTS OF HYDROGEN SULFIDE

PERCENT (%)	PPM	CONCENTRATION GRAINS 100 STD. FT3*	PHYSICAL EFFECTS
0.001	<10	00.65	Obvious and unpleasant odor.
0.002	10	01.30	Safe for 8 hours of exposure.
0.010	100	06.48	Kill smell in 3 – 15 minutes. May sting eyes and throat.
0.020	200	12.96	Kills smell shortly; Stings eyes and throat.
0.050	500	32.96	Dizziness; Breathing ceases in a few minutes; Needs prompt artificial respiration.
0.070	700	45.36	Unconscious quickly; Death will result if not rescued promptly.
0.100	1000	64.30	Unconscious at once; Followed by death within minutes.

*AT 15.00 PSIA AND 60'F.

USE OF SELF-CONTAINED BREATHING EQUIPMENT

1. WRITTEN PROCEDURES SHALL BE PREPARED COVERING SAFE USE OF SCBA'S IN DANGEROUS ATMOSPHERE, WHICH MIGHT BE ENCOUNTERED IN NORMAL OPERATIONS OR IN EMERGENCIES. PERSONNEL SHALL BE FAMILIAR WITH THESE PROCEDURES AND THE AVAILABLE SCBA.

2. SCBA'S SHALL BE INSPECTED FREQUENTLY AT RANDOM TO INSURE THAT THEY ARE PROPERLY USED, CLEANED, AND MAINTAINED.

3. ANYONE WHO MAY USE THE SCBA'S SHALL BE TRAINED IN HOW TO INSURE PROPER FACE-PIECE TO FACE SEAL. THEY SHALL WEAR SCBA'S IN NORMAL AIR AND THEN WEAR THEM IN A TEST ATMOSPHERE. (NOTE: SUCH ITEMS AS FACIAL HAIR {BEARD OR SIDEBURNS} AND EYEGLASSES WILL NOT ALLOW PROPER SEAL.) ANYONE THAT MAY BE REASONABLY EXPECTED TO WEAR SCBA'S SHOULD HAVE THESE ITEMS REMOVED BEFORE ENTERING A TOXIC ATMOSPHERE. A SPECIAL MASK MUST BE OBTAINED FOR ANYONE WHO MUST WEAR EYEGLASSES OR CONTACT LENSES.

4. MAINTENANCE AND CARE OF SCBA'S:

   A. A PROGRAM FOR MAINTENANCE AND CARE OF SCBA'S SHALL INCLUDE THE FOLLOWING:
      1. INSPECTION FOR DEFECTS, INCLUDING LEAK CHECKS.
      2. CLEANING AND DISINFECTING.
      3. REPAIR.
      4. STORAGE.

   B. INSPECTION; SELF-CONTAINED BREATHING APPARATUS FOR EMERGENCY USE SHALL BE INSPECTED MONTHLY FOR THE FOLLOWING PERMANENT RECORDS KEPT OF THESE INSPECTIONS.
      1. FULLY CHARGED CYLINDERS.
      2. REGULATOR AND WARNING DEVICE OPERATION.
      3. CONDITION OF FACE PIECE AND CONNECTIONS.
      4. ELASTOMER OR RUBBER PARTS SHALL BE STRETCHED OR MASSAGED TO KEEP THEM PLIABLE AND PREVENT DETERIORATION.

   C. ROUTINELY USED SCBA'S SHALL BE COLLECTED, CLEANED AND DISINFECTED AS FREQUENTLY AS NECESSARY TO INSURE PROPER PROTECTION IS PROVIDED. (20)

USE OF SELF-CONTAINED BREATHING EQUIPMENT

5. PERSONS ASSIGNED TASKS THAT REQUIRES USE OF SELF-CONTAINED BREATHING EQUIPMENT SHALL BE CERTIFIED PHYSICALLY FIT FOR BREATHING EQUIPMENT USAGE BY THE LOCAL COMPANY PHYSICIAN AT LEAST ANNUALLY.

6. SCBA'S SHOULD BE WORN WHEN:

   A. ANY EMPLOYEE WORKS NEAR THE TOP OR ON TOP OF ANY TANK UNLESS TEST REVEALS LESS THAN 10 PPM OF H2S.

   B. WHEN BREAKING OUT ANY LINE WHERE H2S CAN REASONABLY BE EXPECTED.

   C. WHEN SAMPLING AIR IN AREAS TO DETERMINE IF TOXIC CONCENTRATIONS OF H2S EXISTS.

   D. WHEN WORKING IN AREAS WHERE OVER 10 PPM H2S HAS BEEN DETECTED.

   E. AT ANY TIME THERE IS A DOUBT AS TO THE H2S LEVEL IN THE AREA TO BE ENTERED.

RESCUE
FIRST AID FOR H2S POISONING

DO NOT PANIC!

REMAIN CALM – THINK!

1. HOLD YOUR BREATH. (DO NOT INHALE FIRST; STOP BREATHING.)

2. PUT ON BREATHING APPARATUS.

3. REMOVE VICTIM(S) TO FRESH AIR AS QUICKLY AS POSSIBLE. (GO UP-WIND FROM SOURCE OR AT RIGHT ANGLE TO THE WIND. NOT DOWN WIND.)

4. START ARTIFICIAL RESPIRATIONS (CPR) IF NEEDED. AVOID INHALING ANY TOXIC GAS DIRECTLY FROM THE VICTIM'S LUNGS.

5. PROVIDE FOR PROMPT TRANSPORTATION TO THE HOSPITAL, AND CONTINUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.

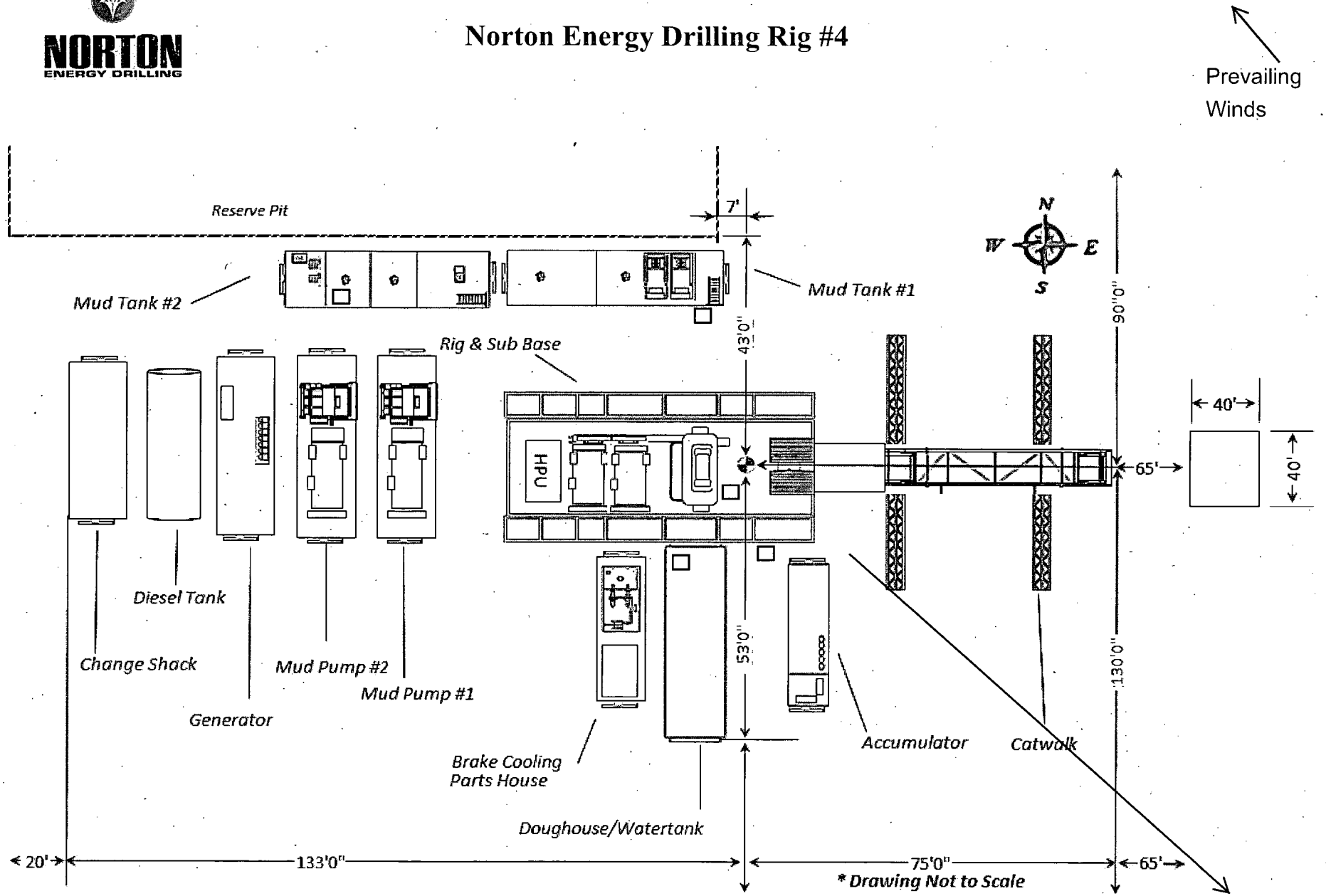
6. HOSPITAL(S) OR MEDICAL FACILITIES NEED TO BE INFORMED, BEFORE-HAND, OF THE POSSIBILITY OF H2S GAS POISONING – NO MATTER HOW REMOTE THE POSSIBILITY IS.

7. NOTIFY EMERGENCY ROOM PERSONNEL THAT THE VICTIM(S) HAS BEEN EXPOSED TO H2S GAS.

BESIDES BASIC FIRST AID, EVERYONE ON LOCATION SHOULD HAVE A GOOD WORKING KNOWLEDGE OF ARTIFICIAL RESPIRATION, AS WELL AS FIRST AID FOR EYES AND SKIN CONTACT WITH LIQUID H2S. EVERYONE NEEDS TO MASTER THESE NECESSARY SKILLS.

NORTON
ENERGY DRILLING

Norton Energy Drilling Rig #4



Marshall & Winston, Inc.

Hi Bob Federal #3H
Chaves County, New Mexico
Job No: WT-19-***
Rig: Stoneham 6

Aim Directional Services

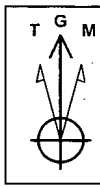
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	
2	1350.00	0.00	0.00	1350.00	0.00	0.00	0.000	0.00	0.00	Build: 2°/100' @ 1350.00' MD
3	1500.00	3.00	270.00	1499.93	0.00	-3.93	2.000	270.00	0.16	Hold: 3.00° Inc, 270.00° Azm
4	2744.62	3.00	270.00	2742.85	0.00	-69.06	0.000	0.00	2.78	KOP: 12°/100' @ 2744.62' MD
5	3489.93	90.00	190.82	3215.00	-464.39	-182.56	12.000	-79.19	471.36	LP/Turn: 2°/100' @ 3489.93' MD
6	4031.83	90.00	179.98	3215.00	-1003.08	-233.49	2.000	-90.00	1011.66	Hold: 90.00° Inc, 179.98° Azm
7	8793.25	90.00	179.98	3215.00	-5764.50	-232.00	0.000	0.00	5769.17	TD @ 8793.25' MD/3215.00' TVD

SITE DETAILS: Hi Bob Federal #3H	
Site Centre Northing:	736595.70
Easting:	629832.00
Positional Uncertainity:	0.00
Convergence:	0.16
Local North:	Grid

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP - Hi Bob Fed #3H	3215.00	-392.50	-233.60	736203.20	629598.40	33° 1' 24.560 N	104° 2' 43.316 W
LTP - Hi Bob Fed #3H	3215.00	-5684.50	-232.00	730911.20	629600.00	33° 0' 32.197 N	104° 2' 43.468 W
PBHL - Hi Bob Fed #3H	3215.00	-5764.50	-232.00	730831.20	629600.00	33° 0' 31.405 N	104° 2' 43.470 W

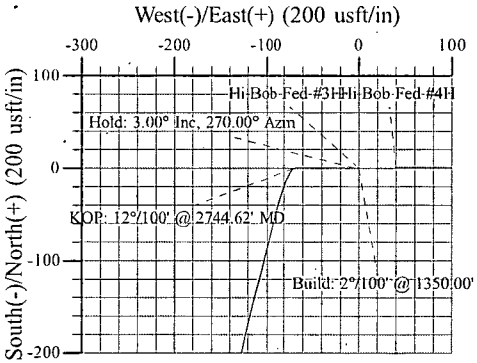
PROJECT DETAILS: Chaves County, New Mexico	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	New Mexico Eastern Zone
System Datum:	Mean Sea Level

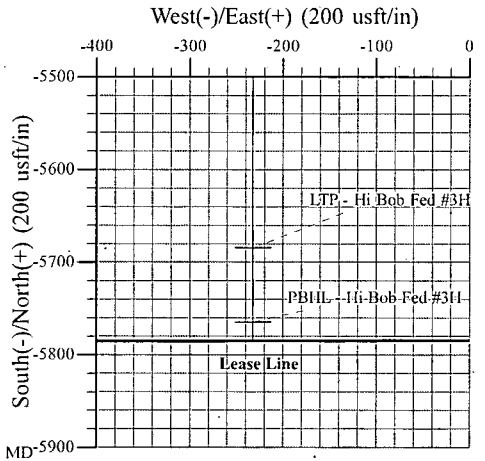
Drawn By: PBR
Date Created: 05/28/19
Date Revised: 08/12/19
File: Marshall & Winston - Hi Bob Federal #3H - Lateral 1r1.wpc

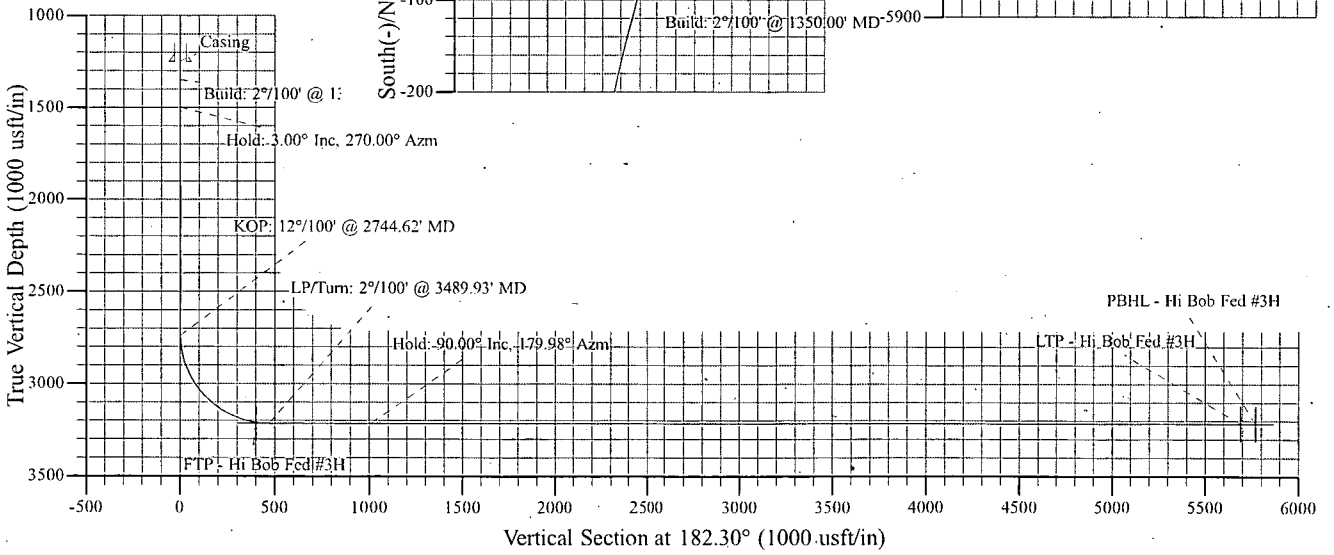


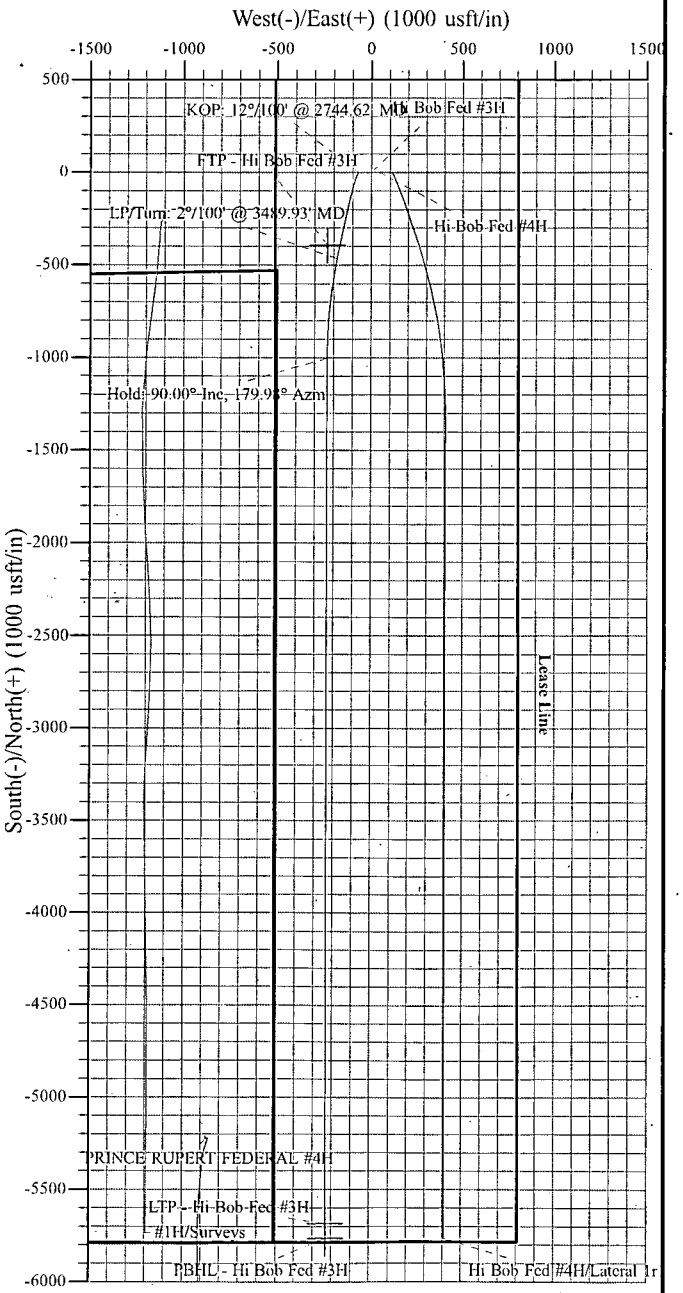
Azimuths to Grid North
True North: -0.16°
Magnetic North: 7.19°

Magnetic Field
Strength: 48145.2nT
Dip Angle: 60.67°
Date: 9/1/2019
Model: MVHD









Survey Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Well:	Hi Bob Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r1	**Database:**	EDMRESTORED

Project Chaves County, New Mexico

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Hi Bob Federal #3H

Site Position:		**Northing:**	736,595.70 usft	**Latitude:**	33° 1' 28.437 N
From:	Map	**Easting:**	629,832.00 usft	**Longitude:**	104° 2' 40.560 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.16 °

Well Hi Bob Fed #3H

Well Position	**+N/-S**	0.00 usft	**Northing:**	736,595.70 usft	**Latitude:**	33° 1' 28.437 N
	+E/-W	0.00 usft	**Easting:**	629,832.00 usft	**Longitude:**	104° 2' 40.560 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,816.60 usft

Wellbore Planning

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	9/1/2019	7.34	60.67	48,145.18193894

Design Lateral 1r1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	182.30

Survey Tool Program **Date** 8/12/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,793.25	Lateral 1r1 (Planning)	MWD+HDGM	OWSG MWD + HDGM

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.000	0.000	0.000
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.000	0.000	0.000
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.000	0.000	0.000
Casing									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.000	0.000	0.000
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.000	0.000	0.000
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.000	0.000	0.000
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.000	0.000	0.000
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.000	0.000	0.000
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.000	0.000	0.000

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Well:	Hi Bob Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r1	**Database:**	EDMRESTORED

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.000	0.000	0.000
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.000	0.000	0.000
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.000	0.000	0.000
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.000	0.000	0.000
1,250.00	0.00	0.00	1,250.00	0.00	0.00	0.00	0.000	0.000	0.000
Casing									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.000	0.000	0.000
1,350.00	0.00	0.00	1,350.00	0.00	0.00	0.00	0.000	0.000	0.000
Build: 2°/100' @ 1350.00' MD									
1,400.00	1.00	270.00	1,400.00	0.00	-0.44	0.02	2.000	2.000	0.000
1,500.00	3.00	270.00	1,499.93	0.00	-3.93	0.16	2.000	2.000	0.000
Hold: 3.00° Inc, 270.00° Azm									
1,600.00	3.00	270.00	1,599.79	0.00	-9.16	0.37	0.000	0.000	0.000
1,700.00	3.00	270.00	1,699.66	0.00	-14.39	0.58	0.000	0.000	0.000
1,800.00	3.00	270.00	1,799.52	0.00	-19.63	0.79	0.000	0.000	0.000
1,900.00	3.00	270.00	1,899.38	0.00	-24.86	1.00	0.000	0.000	0.000
2,000.00	3.00	270.00	1,999.25	0.00	-30.09	1.21	0.000	0.000	0.000
2,100.00	3.00	270.00	2,099.11	0.00	-35.33	1.42	0.000	0.000	0.000
2,200.00	3.00	270.00	2,198.97	0.00	-40.56	1.63	0.000	0.000	0.000
2,300.00	3.00	270.00	2,298.84	0.00	-45.79	1.84	0.000	0.000	0.000
2,400.00	3.00	270.00	2,398.70	0.00	-51.03	2.05	0.000	0.000	0.000
2,500.00	3.00	270.00	2,498.56	0.00	-56.26	2.26	0.000	0.000	0.000
2,600.00	3.00	270.00	2,598.42	0.00	-61.50	2.47	0.000	0.000	0.000
2,700.00	3.00	270.00	2,698.29	0.00	-66.73	2.68	0.000	0.000	0.000
2,744.62	3.00	270.00	2,742.85	0.00	-69.06	2.78	0.000	0.000	0.000
KOP: 12°/100' @ 2744.62' MD									
2,750.00	3.18	258.52	2,748.22	-0.03	-69.35	2.82	11.991	3.430	-213.436
2,775.00	5.14	225.76	2,773.15	-0.95	-70.83	3.80	12.000	7.804	-131.019
2,800.00	7.78	212.94	2,797.99	-3.15	-72.56	6.07	12.000	10.594	-51.286
2,825.00	10.62	206.75	2,822.67	-6.63	-74.51	9.62	12.000	11.345	-24.750
2,850.00	13.53	203.17	2,847.12	-11.38	-76.70	14.45	12.000	11.626	-14.313
2,875.00	16.47	200.85	2,871.26	-17.38	-79.12	20.54	12.000	11.758	-9.303
2,900.00	19.42	199.21	2,895.04	-24.61	-81.75	27.88	12.000	11.831	-6.542
2,925.00	22.39	198.00	2,918.39	-33.07	-84.59	36.45	12.000	11.874	-4.867
2,950.00	25.37	197.05	2,941.25	-42.72	-87.63	46.21	12.000	11.902	-3.778
2,975.00	28.35	196.29	2,963.55	-53.54	-90.86	57.15	12.000	11.922	-3.031
3,000.00	31.33	195.67	2,985.23	-65.50	-94.29	69.24	12.000	11.936	-2.497
3,025.00	34.32	195.14	3,006.24	-78.56	-97.88	82.44	12.000	11.946	-2.103
3,050.00	37.31	194.69	3,026.51	-92.70	-101.65	96.71	12.000	11.954	-1.804
3,075.00	40.30	194.30	3,045.99	-107.86	-105.57	112.02	12.000	11.959	-1.573
3,100.00	43.29	193.95	3,064.63	-124.02	-109.63	128.33	12.000	11.964	-1.390
3,125.00	46.28	193.64	3,082.37	-141.12	-113.83	145.59	12.000	11.968	-1.244
3,150.00	49.27	193.36	3,099.17	-159.12	-118.15	163.74	12.000	11.971	-1.126
3,175.00	52.27	193.10	3,114.98	-177.97	-122.58	182.76	12.000	11.974	-1.029

Company:	Marshall & Winston, Inc.	Local Co-ordinate Reference:	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	TVD Reference:	Well @ 3833.60usft (Stoneham 6)
Site:	Hi Bob Federal #3H	MD Reference:	Well @ 3833.60usft (Stoneham 6)
Well:	Hi Bob Fed #3H	North Reference:	Grid
Wellbore:	Planning	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 1r1	Database:	EDMRESTORED

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,200.00	55.26	192.87	3,129.75	-197.62	-127.11	202.57	12.000	11.976	-0.949
3,225.00	58.26	192.65	3,143.46	-218.01	-131.73	223.13	12.000	11.977	-0.882
3,250.00	61.25	192.44	3,156.05	-239.09	-136.41	244.38	12.000	11.979	-0.827
3,275.00	64.24	192.24	3,167.50	-260.80	-141.16	266.26	12.000	11.980	-0.781
3,300.00	67.24	192.06	3,177.77	-283.08	-145.96	288.72	12.000	11.981	-0.742
3,325.00	70.24	191.88	3,186.83	-305.87	-150.79	311.68	12.000	11.982	-0.711
3,350.00	73.23	191.71	3,194.67	-329.10	-155.64	335.09	12.000	11.982	-0.684
3,375.00	76.23	191.54	3,201.25	-352.72	-160.50	358.89	12.000	11.983	-0.663
3,400.00	79.22	191.38	3,206.56	-376.66	-165.36	383.01	12.000	11.983	-0.646
3,425.00	82.22	191.22	3,210.60	-400.85	-170.19	407.37	12.000	11.984	-0.634
3,450.00	85.21	191.07	3,213.33	-425.23	-174.99	431.92	12.000	11.984	-0.625
3,475.00	88.21	190.91	3,214.76	-449.73	-179.75	456.59	12.000	11.984	-0.619
3,489.93	90.00	190.82	3,215.00	-464.39	-182.56	471.35	12.000	11.984	-0.617
LP/Turn: 2°/100' @ 3489.93' MD									
3,500.00	90.00	190.62	3,215.00	-474.28	-184.44	481.32	2.000	0.002	-2.000
3,600.00	90.00	188.62	3,215.00	-572.87	-201.14	580.50	2.000	0.000	-2.000
3,700.00	90.00	186.62	3,215.00	-671.98	-214.40	680.06	2.000	0.000	-2.000
3,800.00	90.00	184.62	3,215.00	-771.50	-224.19	779.89	2.000	0.000	-2.000
3,900.00	90.00	182.62	3,215.00	-871.29	-230.50	879.86	2.000	0.000	-2.000
4,000.00	90.00	180.62	3,215.00	-971.25	-233.33	979.85	2.000	0.000	-2.000
4,031.83	90.00	179.98	3,215.00	-1,003.08	-233.49	1,011.66	2.000	0.000	-2.000
Hold: 90.00° Inc, 179.98° Azm									
4,100.00	90.00	179.98	3,215.00	-1,071.25	-233.47	1,079.77	0.000	0.000	0.000
4,200.00	90.00	179.98	3,215.00	-1,171.25	-233.44	1,179.69	0.000	0.000	0.000
4,300.00	90.00	179.98	3,215.00	-1,271.25	-233.41	1,279.61	0.000	0.000	0.000
4,400.00	90.00	179.98	3,215.00	-1,371.25	-233.38	1,379.52	0.000	0.000	0.000
4,500.00	90.00	179.98	3,215.00	-1,471.25	-233.35	1,479.44	0.000	0.000	0.000
4,600.00	90.00	179.98	3,215.00	-1,571.25	-233.32	1,579.36	0.000	0.000	0.000
4,700.00	90.00	179.98	3,215.00	-1,671.25	-233.28	1,679.28	0.000	0.000	0.000
4,800.00	90.00	179.98	3,215.00	-1,771.25	-233.25	1,779.20	0.000	0.000	0.000
4,900.00	90.00	179.98	3,215.00	-1,871.25	-233.22	1,879.11	0.000	0.000	0.000
5,000.00	90.00	179.98	3,215.00	-1,971.25	-233.19	1,979.03	0.000	0.000	0.000
5,100.00	90.00	179.98	3,215.00	-2,071.25	-233.16	2,078.95	0.000	0.000	0.000
5,200.00	90.00	179.98	3,215.00	-2,171.25	-233.13	2,178.87	0.000	0.000	0.000
5,300.00	90.00	179.98	3,215.00	-2,271.25	-233.10	2,278.79	0.000	0.000	0.000
5,400.00	90.00	179.98	3,215.00	-2,371.25	-233.07	2,378.70	0.000	0.000	0.000
5,500.00	90.00	179.98	3,215.00	-2,471.25	-233.03	2,478.62	0.000	0.000	0.000
5,600.00	90.00	179.98	3,215.00	-2,571.25	-233.00	2,578.54	0.000	0.000	0.000
5,700.00	90.00	179.98	3,215.00	-2,671.25	-232.97	2,678.46	0.000	0.000	0.000
5,800.00	90.00	179.98	3,215.00	-2,771.25	-232.94	2,778.37	0.000	0.000	0.000
5,900.00	90.00	179.98	3,215.00	-2,871.25	-232.91	2,878.29	0.000	0.000	0.000
6,000.00	90.00	179.98	3,215.00	-2,971.25	-232.88	2,978.21	0.000	0.000	0.000
6,100.00	90.00	179.98	3,215.00	-3,071.25	-232.85	3,078.13	0.000	0.000	0.000

Survey Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Well:	Hi Bob Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r1	**Database:**	EDMRESTORED

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,200.00	90.00	179.98	3,215.00	-3,171.25	-232.81	3,178.05	0.000	0.000	0.000
6,300.00	90.00	179.98	3,215.00	-3,271.25	-232.78	3,277.96	0.000	0.000	0.000
6,400.00	90.00	179.98	3,215.00	-3,371.25	-232.75	3,377.88	0.000	0.000	0.000
6,500.00	90.00	179.98	3,215.00	-3,471.25	-232.72	3,477.80	0.000	0.000	0.000
6,600.00	90.00	179.98	3,215.00	-3,571.25	-232.69	3,577.72	0.000	0.000	0.000
6,700.00	90.00	179.98	3,215.00	-3,671.25	-232.66	3,677.64	0.000	0.000	0.000
6,800.00	90.00	179.98	3,215.00	-3,771.25	-232.63	3,777.55	0.000	0.000	0.000
6,900.00	90.00	179.98	3,215.00	-3,871.25	-232.59	3,877.47	0.000	0.000	0.000
7,000.00	90.00	179.98	3,215.00	-3,971.25	-232.56	3,977.39	0.000	0.000	0.000
7,100.00	90.00	179.98	3,215.00	-4,071.25	-232.53	4,077.31	0.000	0.000	0.000
7,200.00	90.00	179.98	3,215.00	-4,171.25	-232.50	4,177.22	0.000	0.000	0.000
7,300.00	90.00	179.98	3,215.00	-4,271.25	-232.47	4,277.14	0.000	0.000	0.000
7,400.00	90.00	179.98	3,215.00	-4,371.25	-232.44	4,377.06	0.000	0.000	0.000
7,500.00	90.00	179.98	3,215.00	-4,471.25	-232.41	4,476.98	0.000	0.000	0.000
7,600.00	90.00	179.98	3,215.00	-4,571.25	-232.37	4,576.90	0.000	0.000	0.000
7,700.00	90.00	179.98	3,215.00	-4,671.25	-232.34	4,676.81	0.000	0.000	0.000
7,800.00	90.00	179.98	3,215.00	-4,771.25	-232.31	4,776.73	0.000	0.000	0.000
7,900.00	90.00	179.98	3,215.00	-4,871.25	-232.28	4,876.65	0.000	0.000	0.000
8,000.00	90.00	179.98	3,215.00	-4,971.25	-232.25	4,976.57	0.000	0.000	0.000
8,100.00	90.00	179.98	3,215.00	-5,071.25	-232.22	5,076.48	0.000	0.000	0.000
8,200.00	90.00	179.98	3,215.00	-5,171.25	-232.19	5,176.40	0.000	0.000	0.000
8,300.00	90.00	179.98	3,215.00	-5,271.25	-232.15	5,276.32	0.000	0.000	0.000
8,400.00	90.00	179.98	3,215.00	-5,371.25	-232.12	5,376.24	0.000	0.000	0.000
8,500.00	90.00	179.98	3,215.00	-5,471.25	-232.09	5,476.16	0.000	0.000	0.000
8,600.00	90.00	179.98	3,215.00	-5,571.25	-232.06	5,576.07	0.000	0.000	0.000
8,700.00	90.00	179.98	3,215.00	-5,671.25	-232.03	5,675.99	0.000	0.000	0.000
8,793.25	90.00	179.98	3,215.00	-5,764.50	-232.00	5,769.17	0.000	0.000	0.000
TD @ 8793.25' MD/3215.00' TVD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP - Hi Bob Fed #3H	0.00	0.00	3,215.00	-392.50	-233.60	736,203.20	629,598.40	33° 1' 24.560 N	104° 2' 43.316 W
- plan misses target center by 63.94usft at 3429.52usft MD (3211.19 TVD, -405.25 N, -171.06 E)									
- Point									
LTP - Hi Bob Fed #3H	0.00	0.00	3,215.00	-5,684.50	-232.00	730,911.20	629,600.00	33° 0' 32.197 N	104° 2' 43.468 W
- plan misses target center by 13.25usft at 8700.00usft MD (3215.00 TVD, -5671.25 N, -232.03 E)									
- Point									
PBHL - Hi Bob Fed #3	0.00	0.00	3,215.00	-5,764.50	-232.00	730,831.20	629,600.00	33° 0' 31.405 N	104° 2' 43.470 W
- plan hits target center									
- Point									

Survey Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Well:	Hi Bob Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r1	**Database:**	EDMRESTORED

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
225.00	225.00	Casing	13-3/4	17-1/2
1,250.00	1,250.00	Casing	9-5/8	12-1/4

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1350	1350	0	0	Build: 2°/100' @ 1350.00' MD
1500	1500	0	-4	Hold: 3.00° Inc, 270.00° Azm
2745	2743	0	-69	KOP: 12°/100' @ 2744.62' MD
3490	3215	-464	-183	LP/Turn: 2°/100' @ 3489.93' MD
4032	3215	-1003	-233	Hold: 90.00° Inc, 179.98° Azm
8793	3215	-5764	-232	TD @ 8793.25' MD/3215.00' TVD

Checked By: _____ Approved By: _____ Date: _____

Marshall & Winston, Inc.

Chaves County, New Mexico
Hi Bob Federal #3H
Hi Bob Fed #3H

Planning
Lateral 1r1

Anticollision Report

12 August, 2019

Anticollision Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Reference Lateral 1r1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum centre distance of 10,000.00usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 8/12/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,793.25	Lateral 1r1 (Planning)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Hi Bob Federal #1H						
#1H - Drilling - Surveys	3,722.38	3,383.33	936.54	911.96	38.097	CC
#1H - Drilling - Surveys	8,793.25	8,532.00	963.24	797.76	5.821	ES, SF
Hi Bob Federal #4H						
Hi Bob Fed #4H - Planning - Lateral 1r1	1,300.00	1,300.70	40.01	31.10	4.494	CC
Hi Bob Fed #4H - Planning - Lateral 1r1	1,300.00	1,300.70	40.01	31.10	4.494	ES
Hi Bob Fed #4H - Planning - Lateral 1r1	8,793.25	8,819.19	640.00	468.87	3.740	SF
PRINCE RUPERT FEDERAL #4H						
PRINCE RUPERT FEDERAL #4H - Drilling - Surveys	8,547.25	3,209.94	673.61	581.51	7.314	CC
PRINCE RUPERT FEDERAL #4H - Drilling - Surveys	8,600.00	3,250.00	674.48	581.13	7.225	ES
PRINCE RUPERT FEDERAL #4H - Drilling - Surveys	8,793.25	3,459.23	683.44	585.84	7.002	SF

Offset Design Hi Bob Federal #1H - #1H - Drilling - Surveys — **Offset Site Error:** 2.00 usft

Survey Program: 100-GYRO-NS-CT-1328-MWD+HDGM, 2689-MWD+HDGM — **Rule Assigned:** — **Offset Well Error:** 2.80 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi-Major Axis Reference (usft)	Semi-Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	3.44	-100.81	-210.90	-1,104.10	1,124.15				
100.00	100.00	91.54	91.54	0.15	3.44	-100.82	-211.05	-1,103.83	1,123.84	1,120.25	3.59	312.811	
153.96	153.96	139.66	139.66	0.34	3.45	-100.83	-211.11	-1,103.66	1,123.67	1,119.87	3.79	296.100	
200.00	200.00	179.33	179.32	0.51	3.47	-100.82	-210.95	-1,103.80	1,123.80	1,119.82	3.97	282.771	
300.00	300.00	282.24	282.23	0.87	3.53	-100.75	-209.81	-1,104.66	1,124.41	1,120.02	4.40	255.815	
400.00	400.00	388.95	388.93	1.22	3.63	-100.69	-208.55	-1,104.90	1,124.41	1,119.56	4.86	231.563	
500.00	500.00	495.64	495.61	1.58	3.77	-100.67	-208.04	-1,104.36	1,123.83	1,118.48	5.35	210.083	
600.00	600.00	598.02	597.99	1.94	3.93	-100.63	-207.18	-1,103.49	1,122.83	1,116.97	5.87	191.381	
700.00	700.00	715.29	715.23	2.30	4.14	-100.58	-205.69	-1,101.44	1,120.87	1,114.43	6.44	174.104	
800.00	800.00	814.64	814.54	2.66	4.35	-100.55	-204.64	-1,098.96	1,118.22	1,111.22	7.00	159.770	
900.00	900.00	908.57	908.45	3.02	4.56	-100.53	-203.98	-1,096.90	1,115.93	1,108.37	7.57	147.501	
1,000.00	1,000.00	1,007.32	1,007.18	3.38	4.79	-100.54	-203.72	-1,094.91	1,113.91	1,105.75	8.16	136.555	
1,100.00	1,100.00	1,100.00	1,099.85	3.73	5.02	-100.56	-203.82	-1,093.65	1,112.57	1,103.83	8.75	127.199	
1,200.00	1,200.00	1,193.04	1,192.88	4.09	5.27	-100.56	-203.71	-1,093.04	1,111.88	1,102.54	9.35	118.957	
1,300.00	1,300.00	1,294.77	1,294.61	4.45	5.47	-100.55	-203.36	-1,092.33	1,111.14	1,101.23	9.91	112.108	
1,400.00	1,400.00	1,396.41	1,396.25	4.80	5.53	-10.56	-203.39	-1,091.43	1,109.84	1,099.52	10.32	107.501	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Offset Design Hi Bob Federal #1H - #1H - Drilling - Surveys — Offset Site Error: 2.00 usft

Survey Program: 100-GYRO-NS-CT, 1328-MWD+HDGM, 2689-MWD+HDGM — Rule Assigned: — Offset Well Error: 2.80 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,500.00	1,499.93	1,493.70	1,493.54	5.15	5.57	-10.62	-203.49	-1,090.55	1,105.54	1,094.84	10.70	103.293	
1,600.00	1,599.79	1,594.47	1,594.31	5.49	5.63	-10.69	-203.72	-1,089.77	1,099.68	1,088.57	11.11	99.008	
1,700.00	1,699.66	1,693.58	1,693.41	5.84	5.71	-10.76	-203.87	-1,089.96	1,093.76	1,082.23	11.53	94.844	
1,800.00	1,799.52	1,792.02	1,791.85	6.19	5.81	-10.82	-203.87	-1,088.26	1,087.93	1,075.95	11.98	90.810	
1,900.00	1,899.38	1,884.00	1,883.82	6.54	5.91	-10.87	-203.84	-1,087.92	1,082.43	1,069.99	12.44	87.035	
2,000.00	1,999.25	1,972.56	1,972.38	6.90	6.03	-10.89	-203.54	-1,088.67	1,078.04	1,065.14	12.90	83.574	
2,100.00	2,099.11	2,072.81	2,072.63	7.25	6.17	-10.91	-203.09	-1,089.92	1,074.04	1,060.64	13.39	80.196	
2,200.00	2,198.97	2,173.65	2,173.45	7.61	6.33	-10.93	-202.71	-1,091.11	1,069.99	1,056.08	13.91	76.943	
2,300.00	2,298.84	2,273.14	2,272.94	7.97	6.51	-10.95	-202.24	-1,092.28	1,065.91	1,051.48	14.43	73.850	
2,400.00	2,398.70	2,373.75	2,373.54	8.32	6.70	-10.96	-201.77	-1,093.46	1,061.84	1,046.86	14.98	70.893	
2,500.00	2,498.56	2,471.90	2,471.68	8.68	6.90	-10.98	-201.40	-1,094.67	1,057.83	1,042.30	15.53	68.107	
2,600.00	2,598.42	2,572.23	2,572.00	9.04	7.11	-11.00	-201.01	-1,095.93	1,053.86	1,037.75	16.10	65.447	
2,700.00	2,698.29	2,671.24	2,671.00	9.40	7.29	-11.04	-200.89	-1,097.14	1,049.90	1,033.26	16.63	63.124	
2,800.00	2,797.99	2,735.82	2,735.52	9.76	7.32	46.04	-203.05	-1,098.29	1,046.14	1,029.14	17.00	61.538	
2,900.00	2,895.04	2,782.00	2,781.32	10.12	7.33	60.36	-208.44	-1,100.33	1,039.80	1,022.50	17.30	60.093	
3,000.00	2,985.23	2,843.00	2,840.69	10.48	7.37	65.24	-221.58	-1,104.75	1,030.71	1,013.09	17.62	58.497	
3,100.00	3,064.63	2,885.69	2,881.00	10.87	7.40	68.59	-234.85	-1,109.24	1,019.89	1,001.94	17.94	56.840	
3,200.00	3,129.75	2,957.44	2,945.42	11.33	7.48	72.34	-265.00	-1,118.21	1,007.84	989.38	18.45	54.618	
3,300.00	3,177.77	3,086.80	3,049.50	11.89	7.73	77.72	-340.68	-1,126.93	989.25	969.91	19.34	51.145	
3,400.00	3,206.56	3,151.00	3,092.55	12.55	7.96	81.82	-388.13	-1,130.19	970.04	949.79	20.25	47.906	
3,500.00	3,215.00	3,216.11	3,130.55	13.29	8.27	85.73	-440.76	-1,134.77	953.50	932.15	21.35	44.653	
3,600.00	3,215.00	3,293.95	3,166.98	14.11	8.77	87.94	-509.23	-1,140.37	941.98	919.27	22.71	41.481	
3,700.00	3,215.00	3,368.00	3,191.46	15.02	9.34	89.43	-578.79	-1,146.47	936.76	912.53	24.22	38.672	
3,722.38	3,215.00	3,383.33	3,195.32	15.23	9.47	89.67	-593.55	-1,147.99	936.54	911.96	24.58	38.097	CC
3,800.00	3,215.00	3,445.15	3,207.00	15.99	10.03	90.39	-653.79	-1,155.24	938.48	912.56	25.92	36.211	
3,900.00	3,215.00	3,531.46	3,214.89	17.01	10.88	90.86	-738.94	-1,166.66	945.57	917.75	27.82	33.988	
4,000.00	3,215.00	3,651.87	3,216.03	18.08	12.18	90.92	-858.28	-1,182.49	955.98	925.81	30.17	31.682	
4,100.00	3,215.00	3,788.62	3,217.58	19.19	13.77	91.00	-994.33	-1,196.06	965.80	932.98	32.82	29.424	
4,200.00	3,215.00	3,880.27	3,220.65	20.34	14.89	91.18	-1,085.63	-1,203.45	973.98	938.86	35.12	27.729	
4,300.00	3,215.00	3,982.62	3,222.99	21.53	16.17	91.30	-1,187.53	-1,212.64	983.05	945.45	37.61	26.141	
4,400.00	3,215.00	4,189.40	3,225.58	22.76	18.84	91.45	-1,394.10	-1,217.29	984.49	943.34	41.15	23.927	
4,500.00	3,215.00	4,276.97	3,225.48	24.01	20.00	91.44	-1,481.66	-1,216.04	983.06	939.42	43.64	22.526	
4,600.00	3,215.00	4,387.65	3,224.56	25.29	21.49	91.39	-1,592.33	-1,214.82	982.02	935.65	46.37	21.178	
4,700.00	3,215.00	4,507.09	3,222.76	26.58	23.12	91.29	-1,711.68	-1,210.42	978.22	929.01	49.20	19.881	
4,800.00	3,215.00	4,607.34	3,221.31	27.89	24.51	91.21	-1,811.81	-1,205.98	973.79	921.87	51.92	18.757	
4,900.00	3,215.00	4,717.14	3,222.85	29.22	26.04	91.31	-1,921.43	-1,200.01	968.34	913.62	54.72	17.695	
5,000.00	3,215.00	4,822.45	3,224.57	30.56	27.53	91.42	-2,026.58	-1,194.37	963.07	905.55	57.52	16.744	
5,100.00	3,215.00	4,935.95	3,228.64	31.91	29.14	91.68	-2,139.77	-1,187.09	956.79	896.42	60.38	15.847	
5,200.00	3,215.00	5,021.05	3,231.35	33.27	30.36	91.85	-2,224.63	-1,181.30	950.17	887.09	63.08	15.063	
5,300.00	3,215.00	5,113.52	3,233.62	34.64	31.68	92.00	-2,316.94	-1,176.63	945.22	879.38	65.83	14.358	
5,400.00	3,215.00	5,196.47	3,235.39	36.02	32.87	92.11	-2,399.81	-1,173.21	941.22	872.70	68.52	13.736	
5,500.00	3,215.00	5,276.41	3,237.20	37.41	34.02	92.23	-2,479.71	-1,171.61	939.32	868.15	71.17	13.199	
5,600.00	3,215.00	5,370.31	3,238.81	38.80	35.37	92.33	-2,573.59	-1,170.81	938.58	864.65	73.93	12.695	
5,606.08	3,215.00	5,374.33	3,238.86	38.88	35.42	92.33	-2,577.61	-1,170.80	938.57	864.49	74.09	12.669	
5,700.00	3,215.00	5,448.05	3,239.48	40.19	36.48	92.37	-2,651.32	-1,171.93	939.97	863.44	76.52	12.283	
5,800.00	3,215.00	5,538.00	3,239.96	41.60	37.76	92.39	-2,741.23	-1,174.31	942.67	863.44	79.23	11.898	
5,900.00	3,215.00	5,611.42	3,239.48	43.00	38.80	92.35	-2,814.55	-1,178.17	947.76	866.06	81.70	11.600	
6,000.00	3,215.00	5,719.30	3,238.49	44.41	40.32	92.28	-2,922.27	-1,183.75	952.88	868.24	84.64	11.258	
6,100.00	3,215.00	5,818.30	3,238.80	45.83	41.73	92.28	-3,021.13	-1,188.99	958.22	870.76	87.46	10.956	
6,200.00	3,215.00	5,910.14	3,238.27	47.24	43.03	92.24	-3,112.81	-1,194.63	964.33	874.15	90.18	10.693	
6,300.00	3,215.00	6,007.61	3,236.53	48.66	44.41	92.12	-3,210.08	-1,200.36	970.17	877.19	92.99	10.434	
6,400.00	3,215.00	6,160.02	3,234.05	50.09	46.59	91.96	-3,362.32	-1,206.69	974.55	878.03	96.52	10.097	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Offset Design Hi Bob Federal #1H - #1H - Drilling - Surveys — Offset Site Error: 2.00 usft

Survey Program: 100-GYRO-NS-CT-1328-MWD+HDGM, 2689-MWD+HDGM — Rule Assigned: — Offset Well Error: 2.80 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,500.00	3,215.00	6,295.42	3,237.20	51.51	48.55	92.15	-3,497.63	-1,203.60	971.93	872.22	99.71	9.748	
6,600.00	3,215.00	6,376.00	3,239.20	52.94	49.73	92.27	-3,578.17	-1,202.30	970.40	867.97	102.43	9.474	
6,700.00	3,215.00	6,474.32	3,241.08	54.37	51.15	92.39	-3,676.47	-1,201.79	969.99	864.70	105.29	9.213	
6,800.00	3,215.00	6,585.22	3,243.82	55.80	52.77	92.55	-3,787.32	-1,200.07	968.54	860.28	108.26	8.947	
6,900.00	3,215.00	6,690.31	3,245.87	57.23	54.30	92.68	-3,892.38	-1,198.75	967.45	856.27	111.18	8.702	
7,000.00	3,215.00	6,780.75	3,246.61	58.67	55.62	92.72	-3,982.81	-1,197.57	966.17	852.17	114.00	8.476	
7,100.00	3,215.00	6,882.06	3,248.02	60.11	57.09	92.81	-4,084.10	-1,196.13	964.85	847.95	116.90	8.254	
7,200.00	3,215.00	6,983.67	3,249.27	61.55	58.58	92.89	-4,185.69	-1,194.54	963.37	843.57	119.80	8.041	
7,300.00	3,215.00	7,085.46	3,250.71	62.98	60.07	92.98	-4,287.45	-1,192.89	961.85	839.15	122.71	7.839	
7,400.00	3,215.00	7,185.23	3,253.86	64.43	61.53	93.17	-4,387.15	-1,191.00	960.17	834.58	125.59	7.645	
7,500.00	3,215.00	7,280.98	3,256.98	65.87	62.93	93.37	-4,482.83	-1,189.04	958.36	829.92	128.45	7.461	
7,600.00	3,215.00	7,377.44	3,258.98	67.31	64.34	93.49	-4,579.26	-1,188.19	957.62	826.32	131.30	7.293	
7,700.00	3,215.00	7,470.04	3,259.78	68.76	65.69	93.54	-4,671.86	-1,187.45	956.94	822.80	134.13	7.134	
7,701.80	3,215.00	7,471.53	3,259.78	68.78	65.71	93.54	-4,673.34	-1,187.45	956.94	822.75	134.18	7.132	
7,800.00	3,215.00	7,563.87	3,259.67	70.20	67.06	93.53	-4,765.68	-1,187.91	957.44	820.47	136.97	6.990	
7,900.00	3,215.00	7,659.76	3,259.16	71.65	68.45	93.50	-4,861.57	-1,188.33	957.88	818.06	139.83	6.850	
8,000.00	3,215.00	7,763.95	3,259.31	73.10	69.97	93.50	-4,965.75	-1,189.35	958.91	816.14	142.77	6.716	
8,100.00	3,215.00	7,873.47	3,262.77	74.54	71.56	93.71	-5,075.21	-1,189.17	958.97	813.22	145.75	6.580	
8,164.93	3,215.00	7,934.75	3,264.22	75.48	72.46	93.80	-5,136.48	-1,188.84	958.75	811.16	147.59	6.496	
8,200.00	3,215.00	7,962.73	3,264.73	75.99	72.87	93.83	-5,164.45	-1,188.90	958.88	810.35	148.53	6.456	
8,300.00	3,215.00	8,058.49	3,265.80	77.44	74.26	93.89	-5,260.20	-1,190.02	960.14	808.77	151.37	6.343	
8,400.00	3,215.00	8,166.00	3,265.66	78.89	75.83	93.88	-5,367.71	-1,190.46	960.54	806.18	154.36	6.223	
8,500.00	3,215.00	8,261.42	3,265.07	80.34	77.22	93.84	-5,463.12	-1,191.06	961.16	803.94	157.22	6.113	
8,600.00	3,215.00	8,372.71	3,264.62	81.79	78.84	93.81	-5,574.41	-1,191.00	961.07	800.82	160.25	5.997	
8,609.75	3,215.00	8,379.61	3,264.52	81.94	78.94	93.81	-5,581.30	-1,191.00	961.06	800.55	160.51	5.988	
8,700.00	3,215.00	8,458.23	3,262.89	83.25	80.09	93.71	-5,659.90	-1,191.92	961.97	798.95	163.02	5.901	
8,793.25	3,215.00	8,532.00	3,261.01	84.60	81.16	93.59	-5,733.64	-1,192.85	963.24	797.76	165.48	5.821	ES, SF

Anticollision Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Offset Design: Hi Bob Federal #4H - Hi Bob Fed #4H - Planning - Lateral 1r1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+HDGM — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.70	0.70	0.00	0.00	88.85	0.80	40.00	40.01				
100.00	100.00	100.70	100.70	0.15	0.15	88.85	0.80	40.00	40.01	39.71	0.30	133.342	
200.00	200.00	200.70	200.70	0.51	0.51	88.85	0.80	40.00	40.01	38.99	1.02	39.340	
300.00	300.00	300.70	300.70	0.87	0.87	88.85	0.80	40.00	40.01	38.27	1.73	23.074	
400.00	400.00	400.70	400.70	1.22	1.23	88.85	0.80	40.00	40.01	37.56	2.45	16.324	
500.00	500.00	500.70	500.70	1.58	1.59	88.85	0.80	40.00	40.01	36.84	3.17	12.630	
600.00	600.00	600.70	600.70	1.94	1.94	88.85	0.80	40.00	40.01	36.12	3.88	10.299	
700.00	700.00	700.70	700.70	2.30	2.30	88.85	0.80	40.00	40.01	35.41	4.60	8.694	
800.00	800.00	800.70	800.70	2.66	2.66	88.85	0.80	40.00	40.01	34.69	5.32	7.522	
900.00	900.00	900.70	900.70	3.02	3.02	88.85	0.80	40.00	40.01	33.97	6.04	6.629	
1,000.00	1,000.00	1,000.70	1,000.70	3.38	3.38	88.85	0.80	40.00	40.01	33.26	6.75	5.925	
1,100.00	1,100.00	1,100.70	1,100.70	3.73	3.74	88.85	0.80	40.00	40.01	32.54	7.47	5.356	
1,200.00	1,200.00	1,200.70	1,200.70	4.09	4.09	88.85	0.80	40.00	40.01	31.82	8.19	4.887	
1,300.00	1,300.00	1,300.70	1,300.70	4.45	4.45	88.85	0.80	40.00	40.01	31.10	8.90	4.494	CC
1,300.00	1,300.00	1,300.70	1,300.70	4.45	4.45	88.85	0.80	40.00	40.01	31.10	8.90	4.494	ES
1,400.00	1,400.00	1,400.00	1,400.00	4.80	4.80	178.88	0.80	40.44	40.89	31.28	9.61	4.256	
1,500.00	1,499.93	1,498.22	1,498.16	5.15	5.14	179.04	0.80	43.83	47.83	37.55	10.28	4.654	
1,600.00	1,599.79	1,597.65	1,597.44	5.49	5.49	179.21	0.80	49.04	58.28	47.32	10.96	5.316	
1,700.00	1,699.66	1,697.10	1,696.76	5.84	5.83	179.33	0.80	54.24	68.73	57.08	11.65	5.900	
1,800.00	1,799.52	1,796.55	1,796.08	6.19	6.18	179.42	0.80	59.45	79.19	66.84	12.34	6.416	
1,900.00	1,899.38	1,896.00	1,895.39	6.54	6.53	179.49	0.80	64.65	89.64	76.60	13.04	6.877	
2,000.00	1,999.25	1,995.46	1,994.71	6.90	6.88	179.54	0.80	69.86	100.09	86.36	13.73	7.289	
2,100.00	2,099.11	2,094.91	2,094.02	7.25	7.23	179.58	0.80	75.06	110.54	96.11	14.43	7.661	
2,200.00	2,198.97	2,194.36	2,193.34	7.61	7.59	179.62	0.80	80.27	121.00	105.87	15.13	7.997	
2,300.00	2,298.84	2,293.81	2,292.66	7.97	7.94	179.65	0.80	85.47	131.45	115.62	15.83	8.303	
2,400.00	2,398.70	2,393.26	2,391.97	8.32	8.30	179.68	0.80	90.68	141.90	125.37	16.53	8.582	
2,500.00	2,498.56	2,492.72	2,491.29	8.68	8.65	179.70	0.80	95.88	152.35	135.12	17.24	8.838	
2,600.00	2,598.42	2,592.17	2,590.60	9.04	9.01	179.72	0.80	101.09	162.81	144.86	17.94	9.073	
2,700.00	2,698.29	2,691.62	2,689.92	9.40	9.37	179.73	0.80	106.29	173.26	154.61	18.65	9.290	
2,800.00	2,797.99	2,786.56	2,784.66	9.76	9.71	-122.95	-0.73	111.74	184.84	165.53	19.31	9.572	
2,900.00	2,895.04	2,875.00	2,871.27	10.12	10.03	-108.50	-15.36	120.89	204.32	184.44	19.88	10.278	
3,000.00	2,985.23	2,960.59	2,950.78	10.48	10.35	-103.71	-43.84	134.04	232.03	211.59	20.44	11.352	
3,100.00	3,064.63	3,044.54	3,022.16	10.87	10.67	-100.25	-84.57	150.62	266.74	245.66	21.08	12.656	
3,200.00	3,129.75	3,126.81	3,083.64	11.33	11.05	-96.96	-135.57	169.92	307.03	285.18	21.85	14.052	
3,300.00	3,177.77	3,208.26	3,134.42	11.89	11.50	-93.64	-195.37	191.44	351.38	328.58	22.80	15.411	
3,400.00	3,206.56	3,290.17	3,173.88	12.55	12.07	-90.34	-263.09	214.86	398.21	374.28	23.94	16.637	
3,500.00	3,215.00	3,374.27	3,201.09	13.29	12.77	-87.87	-338.46	240.05	445.92	420.68	25.25	17.664	
3,600.00	3,215.00	3,465.07	3,214.36	14.11	13.65	-89.83	-423.79	267.65	491.93	465.15	26.78	18.369	
3,700.00	3,215.00	3,572.16	3,215.00	15.02	14.81	-89.92	-526.25	298.75	533.44	504.70	28.74	18.558	
3,800.00	3,215.00	3,688.26	3,215.00	15.99	16.16	-89.93	-638.55	328.20	568.16	537.12	31.04	18.302	
3,900.00	3,215.00	3,808.93	3,215.00	17.01	17.64	-89.93	-756.42	353.95	595.64	562.07	33.57	17.742	
4,000.00	3,215.00	3,933.19	3,215.00	18.08	19.21	-89.93	-878.84	375.27	615.57	579.31	36.27	16.974	
4,100.00	3,215.00	4,059.86	3,215.00	19.19	20.80	-89.94	-1,004.45	391.51	628.54	589.50	39.04	16.100	
4,200.00	3,215.00	4,187.77	3,215.00	20.34	22.41	-89.94	-1,131.89	402.26	636.92	595.08	41.84	15.222	
4,300.00	3,215.00	4,316.38	3,215.00	21.53	23.99	-89.94	-1,260.40	407.32	640.83	596.21	44.62	14.361	
4,400.00	3,215.00	4,427.20	3,215.00	22.76	25.35	-89.94	-1,371.21	407.74	641.12	593.90	47.21	13.579	
4,500.00	3,215.00	4,527.20	3,215.00	24.01	26.59	-89.94	-1,471.21	407.74	641.09	591.34	49.75	12.886	
4,600.00	3,215.00	4,627.20	3,215.00	25.29	27.84	-89.94	-1,571.21	407.75	641.07	588.74	52.33	12.251	
4,700.00	3,215.00	4,727.20	3,215.00	26.58	29.12	-89.94	-1,671.21	407.76	641.04	586.10	54.94	11.668	
4,800.00	3,215.00	4,827.20	3,215.00	27.89	30.42	-89.94	-1,771.21	407.76	641.02	583.43	57.58	11.132	
4,900.00	3,215.00	4,927.20	3,215.00	29.22	31.73	-89.94	-1,871.21	407.77	640.99	580.73	60.26	10.638	
5,000.00	3,215.00	5,027.20	3,215.00	30.56	33.06	-89.94	-1,971.21	407.77	640.96	578.01	62.95	10.182	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Offset Design Hi Bob Federal #4H - Hi Bob Fed #4H - Planning - Lateral 1r1 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM — Rule Assigned: — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	3,215.00	5,127.20	3,215.00	31.91	34.39	-89.94	-2,071.21	407.78	640.94	575.27	65.67	9.760	
5,200.00	3,215.00	5,227.20	3,215.00	33.27	35.74	-89.94	-2,171.21	407.79	640.91	572.51	68.40	9.370	
5,300.00	3,215.00	5,327.20	3,215.00	34.64	37.09	-89.94	-2,271.21	407.79	640.89	569.74	71.15	9.007	
5,400.00	3,215.00	5,427.20	3,215.00	36.02	38.46	-89.94	-2,371.21	407.80	640.86	566.95	73.92	8.670	
5,500.00	3,215.00	5,527.20	3,215.00	37.41	39.83	-89.94	-2,471.21	407.80	640.84	564.14	76.69	8.356	
5,600.00	3,215.00	5,627.20	3,215.00	38.80	41.21	-89.94	-2,571.21	407.81	640.81	561.33	79.48	8.062	
5,700.00	3,215.00	5,727.20	3,215.00	40.19	42.59	-89.94	-2,671.21	407.82	640.79	558.51	82.28	7.788	
5,800.00	3,215.00	5,827.20	3,215.00	41.60	43.98	-89.94	-2,771.21	407.82	640.76	555.67	85.09	7.530	
5,900.00	3,215.00	5,927.20	3,215.00	43.00	45.38	-89.94	-2,871.21	407.83	640.74	552.83	87.91	7.289	
6,000.00	3,215.00	6,027.20	3,215.00	44.41	46.78	-89.94	-2,971.21	407.83	640.71	549.98	90.73	7.062	
6,100.00	3,215.00	6,127.20	3,215.00	45.83	48.18	-89.94	-3,071.21	407.84	640.69	547.12	93.56	6.848	
6,200.00	3,215.00	6,227.20	3,215.00	47.24	49.59	-89.94	-3,171.21	407.85	640.66	544.26	96.40	6.646	
6,300.00	3,215.00	6,327.20	3,215.00	48.66	51.00	-89.94	-3,271.21	407.85	640.63	541.39	99.24	6.455	
6,400.00	3,215.00	6,427.20	3,215.00	50.09	52.41	-89.94	-3,371.21	407.86	640.61	538.52	102.09	6.275	
6,500.00	3,215.00	6,527.20	3,215.00	51.51	53.83	-89.94	-3,471.21	407.86	640.58	535.64	104.94	6.104	
6,600.00	3,215.00	6,627.20	3,215.00	52.94	55.25	-89.94	-3,571.21	407.87	640.56	532.76	107.80	5.942	
6,700.00	3,215.00	6,727.20	3,215.00	54.37	56.67	-89.94	-3,671.21	407.88	640.53	529.87	110.66	5.788	
6,800.00	3,215.00	6,827.20	3,215.00	55.80	58.09	-89.94	-3,771.21	407.88	640.51	526.98	113.53	5.642	
6,900.00	3,215.00	6,927.20	3,215.00	57.23	59.52	-89.94	-3,871.21	407.89	640.48	524.08	116.40	5.502	
7,000.00	3,215.00	7,027.20	3,215.00	58.67	60.95	-89.94	-3,971.21	407.89	640.46	521.19	119.27	5.370	
7,100.00	3,215.00	7,127.20	3,215.00	60.11	62.38	-89.94	-4,071.21	407.90	640.43	518.28	122.15	5.243	
7,200.00	3,215.00	7,227.20	3,215.00	61.55	63.81	-89.94	-4,171.21	407.91	640.41	515.38	125.02	5.122	
7,300.00	3,215.00	7,327.20	3,215.00	62.98	65.24	-89.94	-4,271.21	407.91	640.38	512.47	127.91	5.007	
7,400.00	3,215.00	7,427.20	3,215.00	64.43	66.68	-89.94	-4,371.21	407.92	640.35	509.57	130.79	4.896	
7,500.00	3,215.00	7,527.20	3,215.00	65.87	68.11	-89.94	-4,471.21	407.92	640.33	506.65	133.67	4.790	
7,600.00	3,215.00	7,627.20	3,215.00	67.31	69.55	-89.94	-4,571.21	407.93	640.30	503.74	136.56	4.689	
7,700.00	3,215.00	7,727.20	3,215.00	68.76	70.99	-89.94	-4,671.21	407.93	640.28	500.83	139.45	4.591	
7,800.00	3,215.00	7,827.20	3,215.00	70.20	72.43	-89.94	-4,771.21	407.94	640.25	497.91	142.34	4.498	
7,900.00	3,215.00	7,927.20	3,215.00	71.65	73.87	-89.94	-4,871.21	407.95	640.23	494.99	145.24	4.408	
8,000.00	3,215.00	8,027.20	3,215.00	73.10	75.31	-89.94	-4,971.21	407.95	640.20	492.07	148.13	4.322	
8,100.00	3,215.00	8,127.20	3,215.00	74.54	76.76	-89.94	-5,071.21	407.96	640.18	489.15	151.03	4.239	
8,200.00	3,215.00	8,227.20	3,215.00	75.99	78.20	-89.94	-5,171.21	407.96	640.15	486.22	153.93	4.159	
8,300.00	3,215.00	8,327.20	3,215.00	77.44	79.65	-89.94	-5,271.21	407.97	640.13	483.30	156.83	4.082	
8,400.00	3,215.00	8,427.20	3,215.00	78.89	81.09	-89.94	-5,371.21	407.98	640.10	480.37	159.73	4.007	
8,500.00	3,215.00	8,527.20	3,215.00	80.34	82.54	-89.94	-5,471.21	407.98	640.08	477.44	162.63	3.936	
8,600.00	3,215.00	8,627.20	3,215.00	81.79	83.99	-89.94	-5,571.21	407.99	640.05	474.52	165.53	3.867	
8,700.00	3,215.00	8,727.20	3,215.00	83.25	85.43	-89.94	-5,671.21	407.99	640.02	471.59	168.44	3.800	
8,767.37	3,215.00	8,794.57	3,215.00	84.23	86.41	-89.94	-5,738.58	408.00	640.01	469.61	170.40	3.756	
8,793.25	3,215.00	8,819.19	3,215.00	84.60	86.77	-89.94	-5,763.20	408.00	640.00	468.87	171.13	3.740 SF	

Anticollision Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Offset Design PRINCE RUPERT FEDERAL #4H - PRINCE RUPERT FEDERAL #4H - Drilling - Surveys — Offset Site Error: 0.00 usft

Survey Program: 217-MWD+HDGM — Rule Assigned: — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-170.57	-5,220.97	-867.15	5,292.68				
100.00	100.00	79.23	79.23	0.15	0.14	-170.57	-5,220.76	-867.33	5,292.37	5,292.08	0.29	N/A	
200.00	200.00	222.99	222.97	0.51	0.40	-170.55	-5,219.29	-868.56	5,291.50	5,290.59	0.91	5,822.848	
300.00	300.00	345.46	345.41	0.87	0.85	-170.53	-5,217.11	-870.51	5,290.01	5,288.29	1.72	3,078.819	
400.00	400.00	447.78	447.69	1.22	1.22	-170.50	-5,214.98	-872.38	5,288.26	5,285.81	2.44	2,163.628	
500.00	500.00	544.00	543.88	1.58	1.57	-170.49	-5,213.05	-873.75	5,286.51	5,283.37	3.15	1,679.185	
600.00	600.00	597.32	597.20	1.94	1.75	-170.48	-5,212.27	-874.31	5,285.26	5,281.57	3.69	1,432.135	
687.40	687.40	642.63	642.50	2.25	1.91	-170.47	-5,212.03	-874.67	5,284.91	5,280.75	4.16	1,270.481	
700.00	700.00	649.16	649.03	2.30	1.93	-170.47	-5,212.03	-874.71	5,284.92	5,280.69	4.23	1,250.144	
800.00	800.00	726.00	725.87	2.66	2.19	-170.47	-5,212.59	-875.04	5,285.61	5,280.75	4.85	1,089.712	
900.00	900.00	762.87	762.73	3.02	2.32	-170.47	-5,213.18	-875.09	5,286.92	5,281.59	5.33	991.295	
1,000.00	1,000.00	834.08	833.93	3.38	2.56	-170.47	-5,214.63	-875.11	5,288.94	5,283.01	5.93	891.535	
1,100.00	1,100.00	912.00	911.82	3.73	2.82	-170.48	-5,216.70	-874.98	5,291.51	5,284.96	6.55	807.372	
1,200.00	1,200.00	1,123.61	1,123.37	4.09	3.55	-170.51	-5,220.76	-873.08	5,293.35	5,285.71	7.64	692.813	
1,300.00	1,300.00	1,233.55	1,233.30	4.45	3.93	-170.52	-5,221.44	-871.57	5,293.73	5,285.35	8.38	631.720	
1,400.00	1,400.00	1,329.09	1,328.83	4.80	4.26	-80.54	-5,222.14	-870.24	5,294.14	5,285.08	9.07	583.927	
1,500.00	1,499.93	1,434.77	1,434.51	5.15	4.63	-80.60	-5,222.83	-868.95	5,294.01	5,284.24	9.78	541.362	
1,600.00	1,599.79	1,533.94	1,533.66	5.49	4.98	-80.66	-5,223.37	-867.92	5,293.53	5,283.06	10.47	505.433	
1,700.00	1,699.66	1,628.28	1,628.00	5.84	5.31	-80.73	-5,223.95	-867.01	5,293.14	5,281.98	11.15	474.559	
1,800.00	1,799.52	1,717.71	1,717.42	6.19	5.63	-80.79	-5,224.61	-866.21	5,292.88	5,281.06	11.82	447.804	
1,849.01	1,848.46	1,759.64	1,759.35	6.37	5.78	-80.82	-5,224.98	-865.88	5,292.85	5,280.71	12.14	435.974	
1,900.00	1,899.38	1,803.26	1,802.97	6.54	5.93	-80.84	-5,225.43	-865.57	5,292.88	5,280.41	12.47	424.317	
2,000.00	1,999.25	1,901.38	1,901.08	6.90	6.28	-80.91	-5,226.59	-864.98	5,293.12	5,279.95	13.17	401.770	
2,100.00	2,099.11	2,024.23	2,023.93	7.25	6.72	-80.99	-5,227.70	-864.19	5,293.09	5,279.12	13.96	379.031	
2,200.00	2,198.97	2,237.46	2,237.13	7.61	7.46	-81.12	-5,226.01	-862.91	5,290.96	5,275.90	15.06	351.278	
2,300.00	2,298.84	2,336.60	2,336.25	7.97	7.80	-81.18	-5,224.59	-861.99	5,288.60	5,272.83	15.76	335.527	
2,400.00	2,398.70	2,454.95	2,454.59	8.32	8.22	-81.25	-5,222.69	-860.87	5,286.06	5,269.53	16.53	319.771	
2,500.00	2,498.56	2,491.84	2,491.47	8.68	8.35	-81.28	-5,222.21	-860.62	5,283.93	5,266.91	17.02	310.447	
2,600.00	2,598.42	2,522.00	2,521.63	9.04	8.45	-81.30	-5,222.18	-860.49	5,283.05	5,265.56	17.49	302.145	
2,609.97	2,608.38	2,522.00	2,521.63	9.08	8.45	-81.30	-5,222.18	-860.49	5,283.04	5,265.52	17.52	301.530	
2,700.00	2,698.29	2,522.00	2,521.63	9.40	8.45	-81.30	-5,222.18	-860.49	5,283.80	5,265.96	17.84	296.169	
2,800.00	2,797.99	2,522.00	2,521.63	9.76	8.45	-24.41	-5,222.18	-860.49	5,283.24	5,265.06	18.19	290.483	
2,900.00	2,895.04	2,572.90	2,572.51	10.12	8.63	-11.12	-5,223.61	-860.66	5,264.35	5,245.64	18.71	281.326	
3,000.00	2,985.23	2,616.00	2,615.49	10.48	8.78	-8.13	-5,226.71	-861.34	5,228.00	5,208.80	19.20	272.358	
3,100.00	3,064.63	2,616.00	2,615.49	10.87	8.78	-7.11	-5,226.71	-861.34	5,173.58	5,154.09	19.49	265.466	
3,200.00	3,129.75	2,616.00	2,615.49	11.33	8.78	-7.04	-5,226.71	-861.34	5,104.03	5,084.29	19.74	258.594	
3,300.00	3,177.77	2,616.00	2,615.49	11.89	8.78	-7.88	-5,226.71	-861.34	5,021.85	5,001.92	19.93	251.960	
3,400.00	3,206.56	2,616.00	2,615.49	12.55	8.78	-10.72	-5,226.71	-861.34	4,930.08	4,910.02	20.06	245.755	
3,500.00	3,215.00	2,616.00	2,615.49	13.29	8.78	-20.78	-5,226.71	-861.34	4,832.32	4,812.19	20.13	240.088	
3,600.00	3,215.00	2,616.00	2,615.49	14.11	8.78	-4.60	-5,226.71	-861.34	4,733.04	4,712.88	20.15	234.857	
3,700.00	3,215.00	2,616.00	2,615.49	15.02	8.78	11.98	-5,226.71	-861.34	4,633.75	4,613.58	20.17	229.699	
3,800.00	3,215.00	2,616.00	2,615.49	15.99	8.78	26.48	-5,226.71	-861.34	4,534.58	4,514.39	20.19	224.620	
3,900.00	3,215.00	2,616.00	2,615.49	17.01	8.78	37.86	-5,226.71	-861.34	4,435.67	4,415.47	20.20	219.613	
4,000.00	3,215.00	2,616.00	2,615.49	18.08	8.78	46.38	-5,226.71	-861.34	4,337.16	4,316.95	20.20	214.658	
4,100.00	3,215.00	2,616.00	2,615.49	19.19	8.78	48.60	-5,226.71	-861.34	4,239.06	4,218.85	20.21	209.702	
4,200.00	3,215.00	2,616.00	2,615.49	20.34	8.78	48.60	-5,226.71	-861.34	4,141.09	4,120.85	20.23	204.652	
4,300.00	3,215.00	2,616.00	2,615.49	21.53	8.78	48.60	-5,226.71	-861.34	4,043.21	4,022.94	20.26	199.519	
4,400.00	3,215.00	2,616.00	2,615.49	22.76	8.78	48.60	-5,226.71	-861.34	3,945.44	3,925.13	20.31	194.298	
4,500.00	3,215.00	2,616.00	2,615.49	24.01	8.78	48.60	-5,226.71	-861.34	3,847.78	3,827.42	20.36	188.988	
4,600.00	3,215.00	2,616.00	2,615.49	25.29	8.78	48.60	-5,226.71	-861.34	3,750.25	3,729.82	20.43	183.584	
4,700.00	3,215.00	2,616.00	2,615.49	26.58	8.78	48.60	-5,226.71	-861.34	3,652.85	3,632.34	20.51	178.086	
4,800.00	3,215.00	2,616.00	2,615.49	27.89	8.78	48.60	-5,226.71	-861.34	3,555.60	3,534.99	20.61	172.491	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Offset Design: PRINCE RUPERT FEDERAL #4H - PRINCE RUPERT FEDERAL #4H - Drilling - Surveys — **Offset Site Error:** 0.00 usft

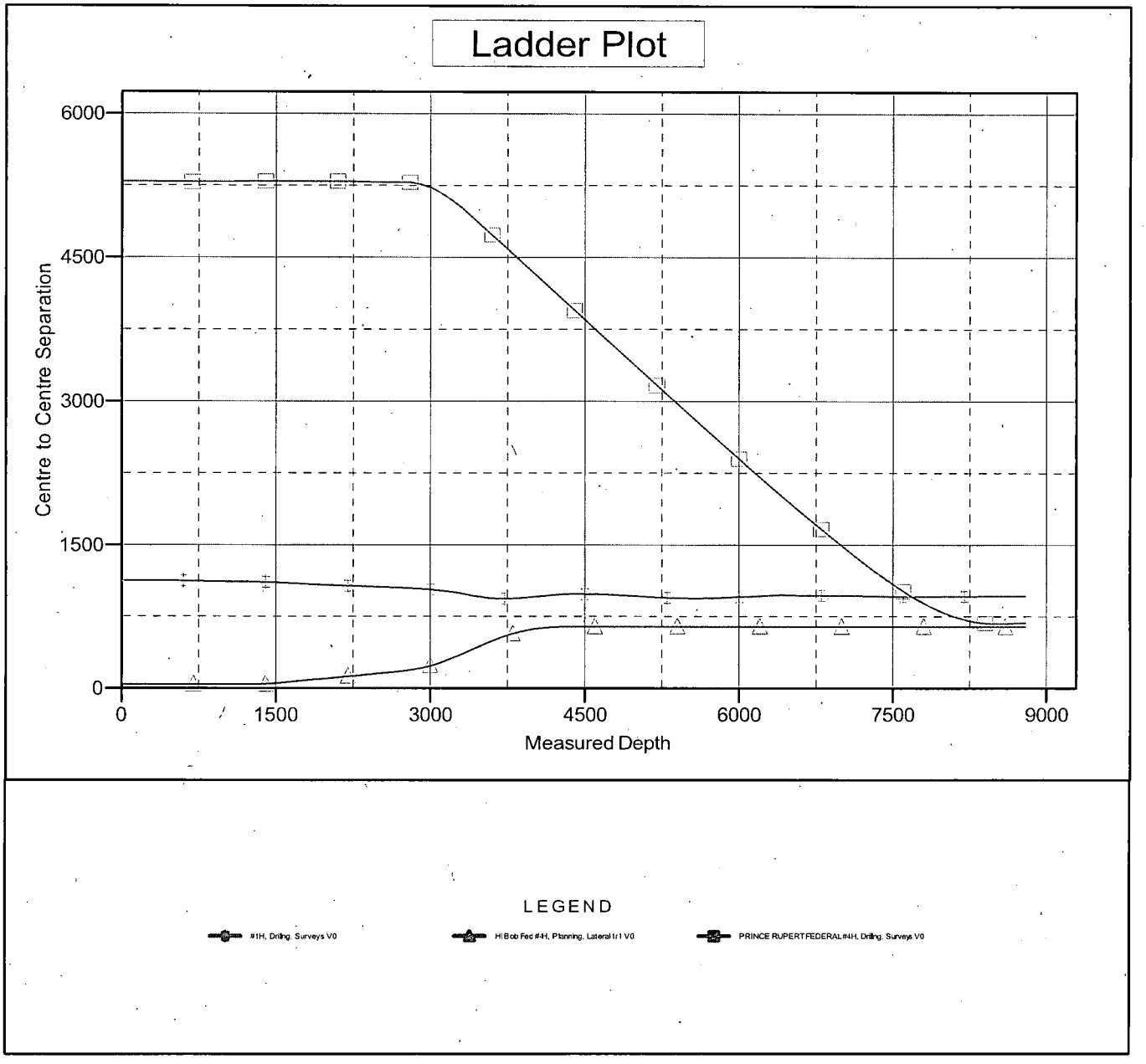
Survey Program: 217-MWD+HDGM — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	3,215.00	2,657.08	2,656.26	29.22	8.93	50.82	-5,231.54	-862.64	3,457.13	3,436.28	20.85	165.796	
5,000.00	3,215.00	2,659.69	2,658.84	30.56	8.94	50.97	-5,231.92	-862.75	3,360.01	3,339.02	21.00	160.017	
5,100.00	3,215.00	2,662.42	2,661.54	31.91	8.95	51.12	-5,232.32	-862.87	3,263.06	3,241.89	21.17	154.150	
5,200.00	3,215.00	2,665.28	2,664.36	33.27	8.96	51.28	-5,232.76	-863.00	3,166.28	3,144.92	21.37	148.198	
5,300.00	3,215.00	2,668.29	2,667.32	34.64	8.97	51.45	-5,233.22	-863.14	3,069.70	3,048.10	21.59	142.166	
5,400.00	3,215.00	2,671.44	2,670.43	36.02	8.98	51.63	-5,233.73	-863.29	2,973.32	2,951.47	21.85	136.060	
5,500.00	3,215.00	2,710.00	2,708.25	37.41	9.11	53.90	-5,240.87	-865.54	2,878.22	2,856.00	22.23	129.490	
5,600.00	3,215.00	2,710.00	2,708.25	38.80	9.11	53.90	-5,240.87	-865.54	2,782.14	2,759.58	22.55	123.351	
5,700.00	3,215.00	2,710.00	2,708.25	40.19	9.11	53.90	-5,240.87	-865.54	2,686.34	2,663.41	22.93	117.160	
5,800.00	3,215.00	2,710.00	2,708.25	41.60	9.11	53.90	-5,240.87	-865.54	2,590.85	2,567.50	23.36	110.933	
5,900.00	3,215.00	2,710.00	2,708.25	43.00	9.11	53.90	-5,240.87	-865.54	2,495.72	2,471.88	23.84	104.688	
6,000.00	3,215.00	2,710.00	2,708.25	44.41	9.11	53.90	-5,240.87	-865.54	2,400.99	2,376.60	24.39	98.445	
6,100.00	3,215.00	2,710.00	2,708.25	45.83	9.11	53.90	-5,240.87	-865.54	2,306.70	2,281.69	25.01	92.226	
6,200.00	3,215.00	2,710.00	2,708.25	47.24	9.11	53.90	-5,240.87	-865.54	2,212.91	2,187.20	25.71	86.056	
6,300.00	3,215.00	2,710.00	2,708.25	48.66	9.11	53.90	-5,240.87	-865.54	2,119.69	2,093.18	26.51	79.962	
6,400.00	3,215.00	2,710.00	2,708.25	50.09	9.11	53.90	-5,240.87	-865.54	2,027.12	1,999.71	27.40	73.972	
6,500.00	3,215.00	2,710.00	2,708.25	51.51	9.11	53.90	-5,240.87	-865.54	1,935.28	1,906.87	28.41	68.113	
6,600.00	3,215.00	2,710.00	2,708.25	52.94	9.11	53.90	-5,240.87	-865.54	1,844.30	1,814.75	29.55	62.414	
6,700.00	3,215.00	2,710.00	2,708.25	54.37	9.11	53.90	-5,240.87	-865.54	1,754.30	1,723.47	30.83	56.905	
6,800.00	3,215.00	2,710.00	2,708.25	55.80	9.11	53.90	-5,240.87	-865.54	1,665.43	1,633.17	32.27	51.612	
6,900.00	3,215.00	2,745.41	2,742.56	57.23	9.24	56.09	-5,249.18	-868.23	1,576.55	1,542.64	33.91	46.494	
7,000.00	3,215.00	2,753.33	2,750.17	58.67	9.27	56.60	-5,251.28	-868.90	1,489.88	1,454.14	35.74	41.688	
7,100.00	3,215.00	2,761.96	2,758.43	60.11	9.30	57.15	-5,253.67	-869.67	1,404.83	1,367.03	37.80	37.163	
7,200.00	3,215.00	2,771.41	2,767.43	61.55	9.33	57.76	-5,256.41	-870.55	1,321.68	1,281.55	40.13	32.937	
7,300.00	3,215.00	2,804.00	2,798.13	62.98	9.45	59.90	-5,266.83	-873.87	1,241.35	1,198.58	42.76	29.028	
7,400.00	3,215.00	2,804.00	2,798.13	64.43	9.45	59.90	-5,266.83	-873.87	1,162.70	1,116.99	45.71	25.439	
7,500.00	3,215.00	2,804.00	2,798.13	65.87	9.45	59.90	-5,266.83	-873.87	1,087.56	1,038.57	48.99	22.200	
7,600.00	3,215.00	2,804.00	2,798.13	67.31	9.45	59.90	-5,266.83	-873.87	1,016.72	964.09	52.62	19.321	
7,700.00	3,215.00	2,840.40	2,831.71	68.76	9.59	62.34	-5,280.33	-877.70	949.72	892.98	56.73	16.740	
7,800.00	3,215.00	2,861.79	2,851.05	70.20	9.67	63.77	-5,289.21	-879.81	888.45	827.29	61.15	14.528	
7,900.00	3,215.00	2,899.00	2,883.91	71.65	9.81	66.27	-5,306.31	-883.26	833.64	767.75	65.89	12.652	
8,000.00	3,215.00	2,899.00	2,883.91	73.10	9.81	66.27	-5,306.31	-883.26	786.12	715.47	70.65	11.127	
8,100.00	3,215.00	2,951.29	2,928.14	74.54	10.03	69.74	-5,333.82	-887.58	746.32	670.74	75.58	9.875	
8,200.00	3,215.00	2,993.00	2,961.55	75.99	10.21	72.43	-5,358.60	-890.61	715.62	635.45	80.18	8.925	
8,300.00	3,215.00	3,044.05	2,999.87	77.44	10.45	75.57	-5,392.15	-893.86	693.87	609.54	84.33	8.228	
8,400.00	3,215.00	3,105.37	3,042.19	78.89	10.78	79.12	-5,436.36	-897.31	680.49	592.58	87.91	7.741	
8,500.00	3,215.00	3,176.60	3,086.96	80.34	11.19	82.91	-5,491.61	-901.00	674.36	583.47	90.90	7.419	
8,547.25	3,215.00	3,209.94	3,106.32	81.03	11.39	84.57	-5,518.70	-902.66	673.61	581.51	92.10	7.314	CC
8,600.00	3,215.00	3,250.00	3,129.00	81.79	11.65	86.50	-5,551.65	-905.00	674.48	581.13	93.35	7.225	ES
8,700.00	3,215.00	3,353.88	3,183.79	83.25	12.42	91.16	-5,639.66	-910.45	679.29	583.66	95.63	7.103	
8,793.25	3,215.00	3,459.23	3,225.62	84.60	13.29	94.66	-5,736.19	-912.59	683.44	585.84	97.60	7.002	SF

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
Reference Site:	Hi Bob Federal #3H	**MD Reference:**	Well @ 3833.60usft (Stoneham 6)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Hi Bob Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 3833.60usft (Stoneham 6)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Hi Bob Federal #3H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.16°



Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Hi Bob Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3833.60usft (Stoneham 6)
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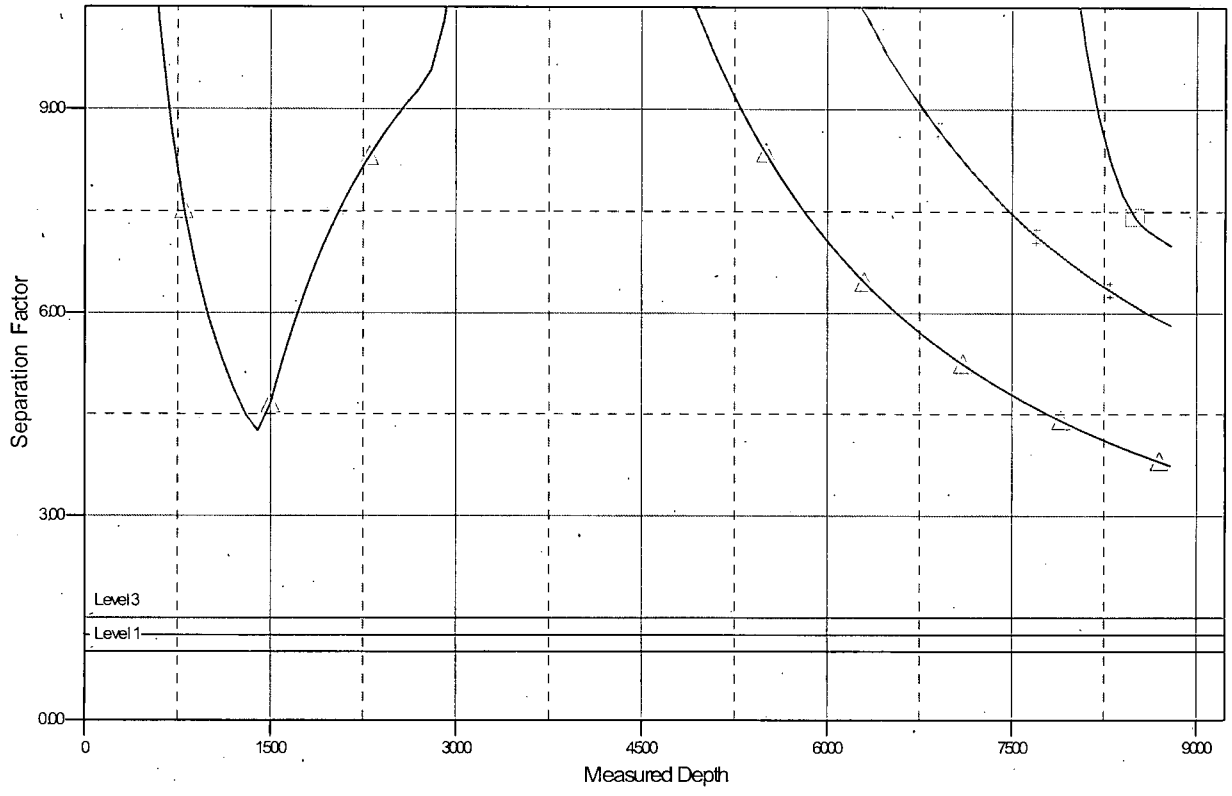
Reference Wellbore	Planning	**Database:**	EDMRESTORED
Reference Design:	Lateral 1r1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 3833.60usft (Stoneham 6)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Hi Bob Federal #3H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.16°

Separation Factor Plot



LEGEND

#1H, Drilling, Surveys V0 | Hi Bob Fed #4H, Planning, Lateral 1r1 V0 | PRINCE RUPERT FEDERAL #4H, Drilling, Surveys V0

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 08/12/2019

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: Marshall & Winston, Inc. 14187

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comment
Hi Bob Federal 3H	30-005-	P-8-15S-29E	517' FSL, 805' FEL	50	Flared	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to Durando and will be connected to Durango low/high pressure gathering system located in Chaves County, New Mexico. It will require 400' of pipeline to connect the facility to low/high pressure gathering system. Marshall & Winston provides (periodically) to Durango a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Marshall & Winston and Durango have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Durango Processing Plant located in Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Durango system at that time. Based on current information, it is Marshall & Winston belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

APD ID: 10400046135 **Submission Date:** 08/22/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Hi_Bob_Federal_3H_Existing_Roads_20190821100557.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Hi_Bob_Federal_3H_ACCESS_ROAD_20190821100636.pdf

New road type: RESOURCE

Length: 1166 Feet **Width (ft.):** 25

Max slope (%): 2 **Max grade (%):** 2

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 15

New road access erosion control: Road construction requirements and regular maintenance would alleviate potential impacts to the access road from water erosion damage.

New road access plan or profile prepared? N

New road access plan attachment:

Access road engineering design? N

Access road engineering design attachment:

Turnout? N

Access surfacing type: OTHER

Access topsoil source: BOTH

Access surfacing type description: Native caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description: Material will be obtained from BLM caliche pit in SWNE Section 34-T15S-R29E or BLM pit in SENE Section 1-T16S-R30E
Onsite topsoil removal process: The top 6 inches of topsoil is pushed off and stockpiled along the side of the location. An approximate 150' X 150' area is used within the proposed well site to remove caliche. Subsoil is removed and stockpiled within the pad site to build the location and road. Then subsoil is pushed back in the hole and caliche is spread accordingly across proposed access road.
Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Proposed access road will be crowned and ditched and constructed of 6 inch rolled and compacted caliche. Water will be diverted where necessary to avoid ponding, maintain good drainage, and to be consistent with local drainage patterns.
Road Drainage Control Structures (DCS) description: The ditches will be 3' wide with 3:1 slopes

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

HI_BOB_FEDERAL_3H_1_MILE_DATA_20190821100825.pdf
Hi_Bob_Federal_3H_1_MILE_MAP_20190821100826.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Battery will include 250# 2-phase separator, 6' x 20' Heater treater, 4 500bbl steel tanks and 3 500 bbl fiberglass tanks set on the north or south side of location.

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: BRINE WATER

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: OTHER

Describe transportation land ownership: Transporta State and County.

Water source volume (barrels): 20000

Source volume (acre-feet): 2.577862

Source volume (gal): 840000

Water source type: OTHER

Describe type: FRESH WATER

Water source use type: OTHER
STIMULATION
SURFACE CASING

Describe use type: ROAD & PAD CONSTRUCTION &

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: OTHER

Describe transportation land ownership: Transporta State and County.

Water source volume (barrels): 250000

Source volume (acre-feet): 32.223274

Source volume (gal): 10500000

Water source and transportation map:

Hi_Bob_Federal_3H_Water_Source_Map_20190821100906.pdf

Water source comments: Water source transportation land ownership is a mixture of Federal, State and County.

New water well? N

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: On site caliche will be used for construction if sufficient. In the event insufficient quantities of caliche are available onsite, caliche will be trucked in from BLM's caliche pit in SWNE Section 34-T15S-R29E or SENE Section 1-T16S-R30E.

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

Waste content description: Miscellaneous trash

Amount of waste: 500 pounds

Waste disposal frequency : One Time Only

Safe containment description: Trash produced during drilling and completion operations will be collected in a trash container and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and grey water

Amount of waste: 1000 gallons

Waste disposal frequency : One Time Only

Safe containment description: Waste material will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Waste type: DRILLING

Waste content description: Drilling fluids and cuttings

Amount of waste: 4000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling fluids will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Reserve Pit

Reserve Pit being used? N

Temporary disposal of produced water into reserve pit? NO

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? Y

Description of cuttings location Cuttings will be stored in roll off bins

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Hi_Bob_Federal_3H_Well_Site_Layout_20190821101114.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:**

Multiple Well Pad Number:

Recontouring attachment:

Drainage/Erosion control construction: During construction proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.

Drainage/Erosion control reclamation: Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Well pad proposed disturbance (acres): 3.673095 **Well pad interim reclamation (acres):** 0.734619 **Well pad long term disturbance (acres):** 2.938476

Road proposed disturbance (acres): 0.669192 **Road interim reclamation (acres):** 0.401515 **Road long term disturbance (acres):** 0.267677

Powerline proposed disturbance (acres): 0 **Powerline interim reclamation (acres):** 0 **Powerline long term disturbance (acres):** 0

Pipeline proposed disturbance (acres): 0 **Pipeline interim reclamation (acres):** 0 **Pipeline long term disturbance (acres):** 0

Other proposed disturbance (acres): 0 **Other interim reclamation (acres):** 0 **Other long term disturbance (acres):** 0

Total proposed disturbance: 4.342287 **Total interim reclamation:** 1.136134 **Total long term disturbance:** 3.206153

Disturbance Comments:

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

Topsoil redistribution: Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations

Soil treatment: To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

Existing Vegetation at the well pad: Shinnery oak; topsoil is sandy.

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Refer to "Existing Vegetation at the well pad'

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: N/A

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: No invasive species present. Standard regular maintenance to maintain a clear location and road.

Weed treatment plan attachment:

Monitoring plan description: Identify areas supporting weeds prior to construction; prevent the introduction and spread of weeds from construction equipment during construction; and contain weed seeds and propagules by preventing segregated topsoil from being spread to adjacent areas. No invasive species present. Standard regular maintenance to maintain a clear location and road.

Monitoring plan attachment:

Success standards: To maintain all disturbed areas as per Gold Book standards

Pit closure description: N/A

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Bogle Ranch **Fee Owner Address:**

Phone: (575)365-6927 **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: AGREEMENT

Surface Access Agreement Need description: Surface use and compensation agreement dated October 29, 2018 between Bogle Limited Company and Marshall & Winston, Inc.

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Bogle Ranch **Fee Owner Address:**

Phone: (575)365-6927 **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: AGREEMENT

Surface Access Agreement Need description: Surface use and compensation agreement dated October 29, 2018 between Bogle Limited Company and Marshall & Winston, Inc.

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Section 12 - Other Information

Right of Way needed? N **Use APD as ROW?**

ROW Type(s):

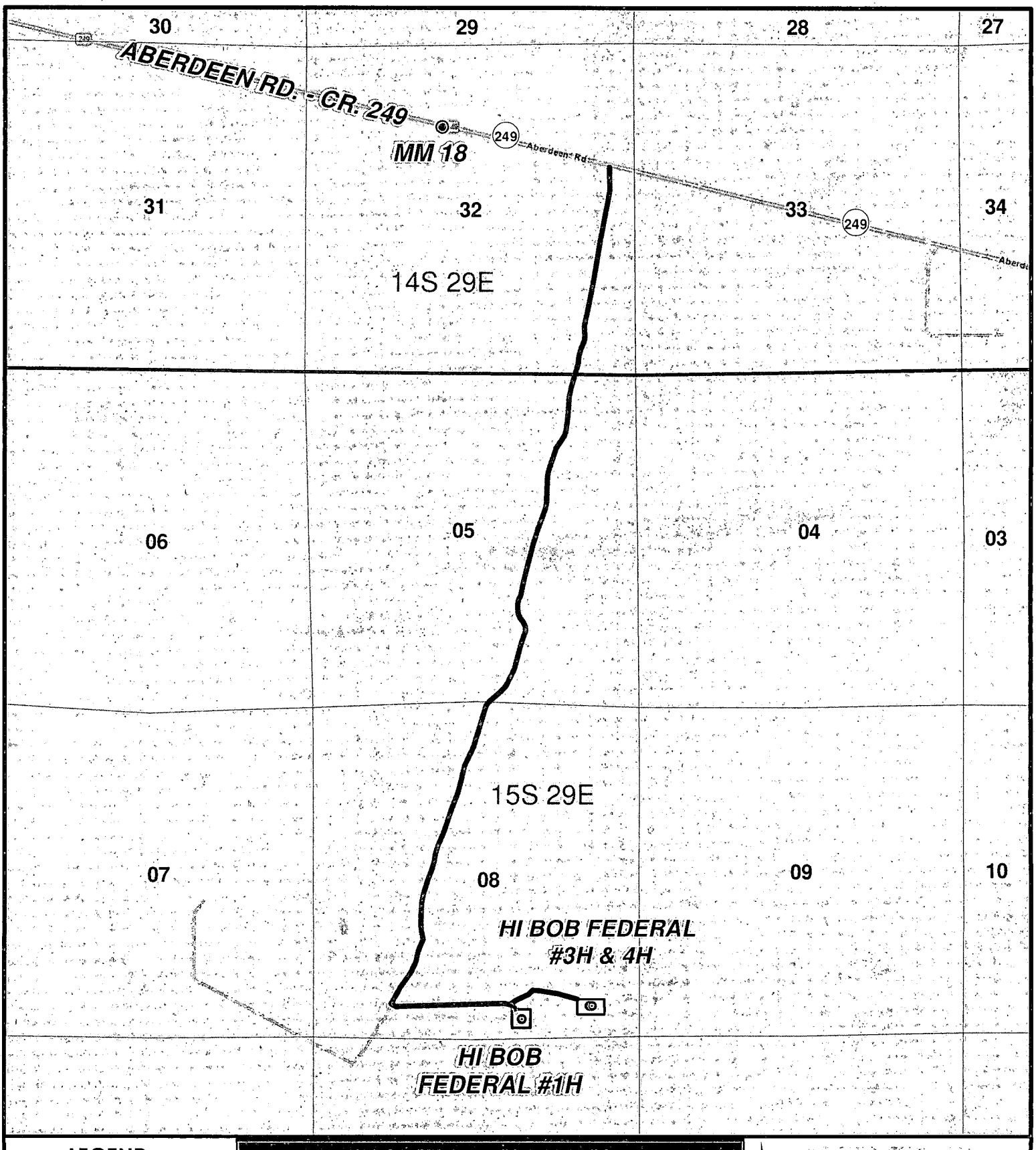
ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? Y

Previous Onsite information: Onsite conducted 04/04/19 with BLM rep, Forrest Mayer and Marshall & Winston rep, Todd Passmore.

Other SUPO Attachment



LEGEND

- WELL
- WELLPAD
- ACCESS RD
- EXISTING RD

HI BOB FEDERAL #3H AND #4H

SECTION: 8	TOWNSHIP: 15 S.	RANGE: 28 E.
STATE: NEW MEXICO	COUNTY: CHAVES	SURVEY: N.M.P.M
W.O. # 19-1322-1323		LEASE: HI BOB

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000 5,500 6,000 FEET

0 0.125 0.25 0.5 Miles

1 IN = 2,000 FT

LOCATION MAP VICINITY MAP 8/5/2019 V.D.

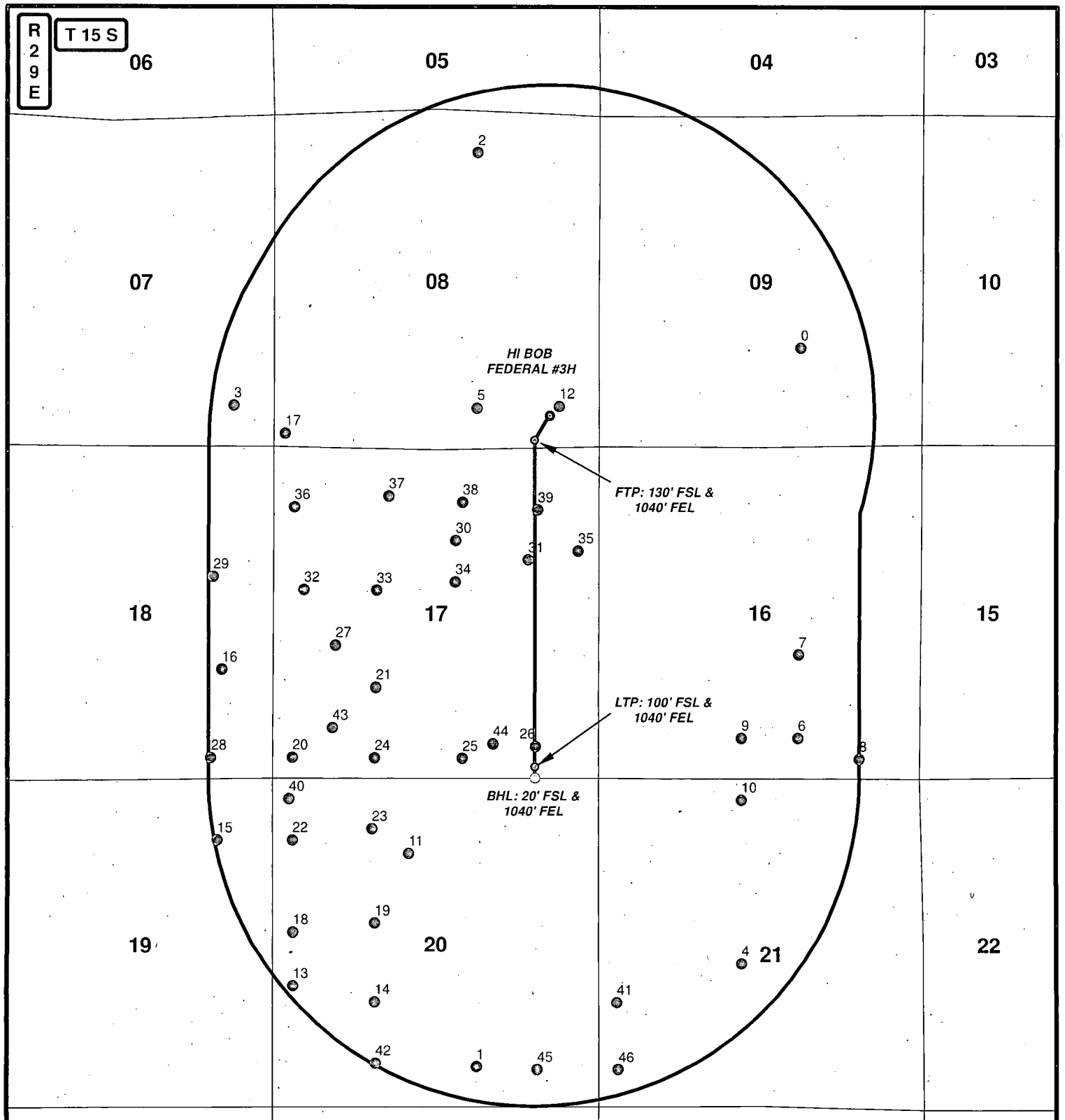
N

Marshall & Winston, Inc.

HARCROW SURVEYING, LLC.
2316 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158
c.harcrow@harcrowsurveying.com

HI BOB FEDERAL #3H 1 MILE DATA (19-1322)

FID	WELL_NAME	OPERATOR	API	SECT	TWN	RNG	FTG_NS	NS_CD	FTG_EW	EW_CD	LATITUDE	LONGITUDE	COMPL_STAT
0	BILLINGSLEY 001	ENGLISH & HARON	3000500446	9	15.0S	29E	1575	S	1975	E	33.027538	-104.031299	Plugged
1	FED AC 001	YATES PETROLEUM CORPORATION	3000500453	20	15.0S	29E	660	S	1980	E	32.995999	-104.048477	Plugged
2	PEPPER FED 001	MCCLELLAN OIL CORPORATION	3000560221	8	15.0S	29E	660	N	1980	E	33.036079	-104.048432	Plugged
3	FEDERAL 7 001	MCCLELLAN OIL CORPORATION	3000560288	7	15.0S	29E	660	S	660	E	33.025008	-104.061299	Plugged
4	MOC MULLIS FED 002	MCCLELLAN OIL CORPORATION	3000560295	21	15.0S	29E	2310	S	2310	W	33.000544	-104.034426	Plugged
5	PEPPER FED 002	MCCLELLAN OIL CORPORATION	3000560312	8	15.0S	29E	660	S	1980	E	33.024903	-104.048456	Plugged
6	SOUTH LUCKY LAKE QUEEN UNIT 001A	BAR V BARB LLC	3000560332	16	15.0S	29E	660	S	1980	E	33.010471	-104.031424	Active
7	HARRIS 16 ST 002	READ & STEVENS INC	3000560344	16	15.0S	29E	1980	S	1980	E	33.014099	-104.031383	Plugged
8	SOUTH LUCKY LAKE QUEEN UNIT 001	BAR V BARB LLC	3000560360	16	15.0S	29E	330	S	990	E	33.00956	-104.028189	Active
9	SOUTH LUCKY LAKE QUEEN UNIT 002	BAR V BARB LLC	3000560371	16	15.0S	29E	660	S	2310	W	33.010476	-104.034436	Active
10	HARRIS FEDERAL COM 001	DOMINION OKLA TEXAS EXPL. & PROD INC	3000561902	21	15.0S	29E	330	N	2310	W	33.007755	-104.034439	Plugged
11	EXCALIBUR 20 FEDERAL COM 001	DOMINION OKLA TEXAS EXPL. & PROD INC	3000563460	20	15.0S	29E	1190	N	2180	W	33.005406	-104.052067	Plugged
12	LEANIN L FEDERAL UNIT 001	EOG Y RESOURCES, INC.	3000563738	8	15.0S	29E	660	S	660	E	33.024972	-104.044128	Plugged
13	PRINCE RUPERT FEDERAL 001	MACK ENERGY CORP	3000564222	20	15.0S	29E	1900	S	330	W	32.999574	-104.058183	New (Not drilled or compl)
14	PRINCE RUPERT FEDERAL 002	MACK ENERGY CORP	3000564223	20	15.0S	29E	1650	S	1650	W	32.998877	-104.053864	New (Not drilled or compl)
15	BLIND RIVER FEDERAL 001	MACK ENERGY CORP	3000564224	19	15.0S	29E	990	N	890	E	33.005985	-104.062202	New (Not drilled or compl)
16	BLIND RIVER FEDERAL 005	MACK ENERGY CORP	3000564225	18	15.0S	29E	1725	S	840	E	33.013449	-104.061941	New (Not drilled or compl)
17	REGINA FEDERAL 001	MACK ENERGY CORP	3000564226	8	15.0S	29E	180	S	180	W	33.023793	-104.058594	New (Not drilled or compl)
18	WATERLOO FEDERAL 001	MACK ENERGY CORP	3000564227	20	15.0S	29E	2460	N	330	W	33.001961	-104.058186	New (Not drilled or compl)
19	WATERLOO FEDERAL 004	MACK ENERGY CORP	3000564228	20	15.0S	29E	2310	N	1650	W	33.002352	-104.053861	New (Not drilled or compl)
20	WHISTLER FEDERAL 001	MACK ENERGY CORP	3000564229	17	15.0S	29E	330	S	330	W	33.009629	-104.058194	New (Not drilled or compl)
21	WHISTLER FEDERAL 006	MACK ENERGY CORP	3000564230	17	15.0S	29E	1450	S	1650	W	33.012686	-104.053794	New (Not drilled or compl)
22	WATERLOO FEDERAL 002	MACK ENERGY CORP	3000564238	20	15.0S	29E	990	N	330	W	33.006001	-104.058204	New (Not drilled or compl)
23	WATERLOO FEDERAL 003	MACK ENERGY CORP	3000564239	20	15.0S	29E	805	N	1615	W	33.006489	-104.053994	New (Not drilled or compl)
24	WHISTLER FEDERAL 002	MACK ENERGY CORP	3000564240	17	15.0S	29E	330	S	1650	W	33.009608	-104.053867	New (Not drilled or compl)
25	PRINCE RUPERT FEDERAL 003	MACK ENERGY CORP	3000564241	17	15.0S	29E	330	S	2160	E	33.009585	-104.049221	New (Not drilled or compl)
26	MONTREAL FEDERAL COM 001H	MACK ENERGY CORP	3000564242	17	15.0S	29E	530	S	990	E	33.010116	-104.045378	New (Not drilled or compl)
27	WHISTLER FEDERAL 005	MACK ENERGY CORP	3000564243	17	15.0S	29E	2110	S	990	W	33.01451	-104.055916	New (Not drilled or compl)
28	BLIND RIVER FEDERAL 003	MACK ENERGY CORP	3000564245	18	15.0S	29E	330	S	990	E	33.00961	-104.062522	New (Not drilled or compl)
29	BLIND RIVER FEDERAL 007	MACK ENERGY CORP	3000564252	18	15.0S	29E	2110	N	990	E	33.017509	-104.062396	New (Not drilled or compl)
30	WHISTLER FEDERAL 007	MACK ENERGY CORP	3000564255	17	15.0S	29E	1500	N	2310	E	33.019105	-104.049577	New (Not drilled or compl)
31	WHISTLER FEDERAL 008	MACK ENERGY CORP	3000564256	17	15.0S	29E	1800	N	1140	E	33.018251	-104.045754	New (Not drilled or compl)
32	WHISTLER FEDERAL 009	MACK ENERGY CORP	3000564257	17	15.0S	29E	2310	N	480	W	33.016941	-104.057573	New (Not drilled or compl)
33	WHISTLER FEDERAL 010	MACK ENERGY CORP	3000564258	17	15.0S	29E	2310	N	1650	W	33.016911	-104.053738	New (Not drilled or compl)
34	WHISTLER FEDERAL 011	MACK ENERGY CORP	3000564259	17	15.0S	29E	2160	N	2310	E	33.017292	-104.049603	New (Not drilled or compl)
35	WHISTLER FEDERAL 012	MACK ENERGY CORP	3000564260	17	15.0S	29E	1650	N	330	E	33.018643	-104.043093	New (Not drilled or compl)
36	WHISTLER FEDERAL 013	MACK ENERGY CORP	3000564261	17	15.0S	29E	990	N	330	W	33.020573	-104.05809	New (Not drilled or compl)
37	WHISTLER FEDERAL 014	MACK ENERGY CORP	3000564262	17	15.0S	29E	800	N	1850	W	33.021057	-104.053111	New (Not drilled or compl)
38	WHISTLER FEDERAL 015	MACK ENERGY CORP	3000564263	17	15.0S	29E	886	N	2204	E	33.02079	-104.049206	New (Not drilled or compl)
39	WHISTLER FEDERAL 016	MACK ENERGY CORP	3000564264	17	15.0S	29E	990	N	990	E	33.020473	-104.045231	New (Not drilled or compl)
40	WATERLOO FEDERAL 005	MACK ENERGY CORP	3000564274	20	15.0S	29E	330	N	280	W	33.007816	-104.058376	New (Not drilled or compl)
41	WHITE ROCK FEDERAL 001	MACK ENERGY CORP	3000564283	21	15.0S	29E	1650	S	330	W	32.998845	-104.041041	New (Not drilled or compl)
42	WINDSOR FEDERAL 001H	MACK ENERGY CORP	3000564305	20	15.0S	29E	660	S	1675	W	32.996156	-104.053811	New (Not drilled or compl)
43	CHILLIWACK FEDERAL COM 001H	MACK ENERGY CORP	3000564311	17	15.0S	29E	810	S	965	W	33.010938	-104.056081	New (Not drilled or compl)
44	PRINCE RUPERT FEDERAL 004H	MACK ENERGY CORP	3000564320	17	15.0S	29E	565	S	1675	E	33.010223	-104.047622	New (Not drilled or compl)
45	PRINCE GEORGE FEDERAL COM 002H	MACK ENERGY CORP	3000564321	20	15.0S	29E	565	S	965	E	32.995876	-104.045285	New (Not drilled or compl)
46	YELLOWKNIFE FEDERAL 002H	MACK ENERGY CORP	3000564322	21	15.0S	29E	565	S	355	W	32.995863	-104.040959	New (Not drilled or compl)



DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH MARCH 18, 2019.

LEGEND

- WELL
- BOTTOMHOLE
- TAKE POINT
- DRILL PATH
- 1 MI. BUFFER
- WELLS WITHIN 1 MI.

HI BOB FEDERAL #3H			
SEC: 8	TWP: 15 S.	RGE: 29 E.	ELEVATION: 3816.6'
STATE: NEW MEXICO		COUNTY: CHAVES	517' FSL & 805' FEL
W.O. # 19-1322		LEASE: HI BOB FED	SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.15 0.3 0.6 Miles

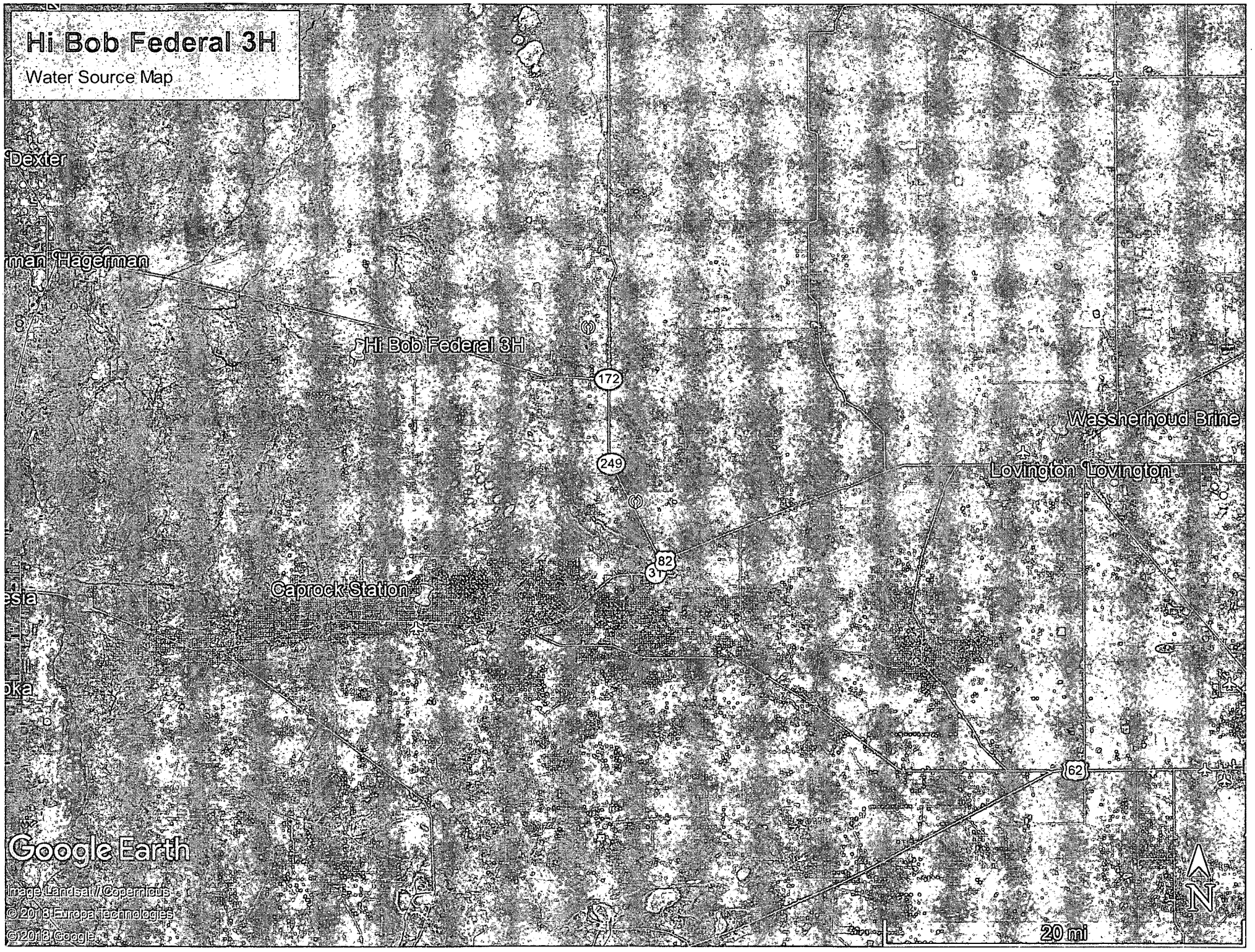
1 IN = 2,500 FT

1 MILE MAP | 8/5/2019 | V.D.

N

M&WA
Marshall & Winston, Inc.

HARCROW SURVEYING, LLC.
2316 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158
c.harcrow@harcrowsurveying.com


Hi Bob Federal 3H
Water Source Map
Dexter
Hagerman
Hi Bob Federal 3H
172
249
82
31
Caprock Station
Wassherhoud Brine
Lovington
Lovington
62
Google Earth
Image Landsat / Copernicus
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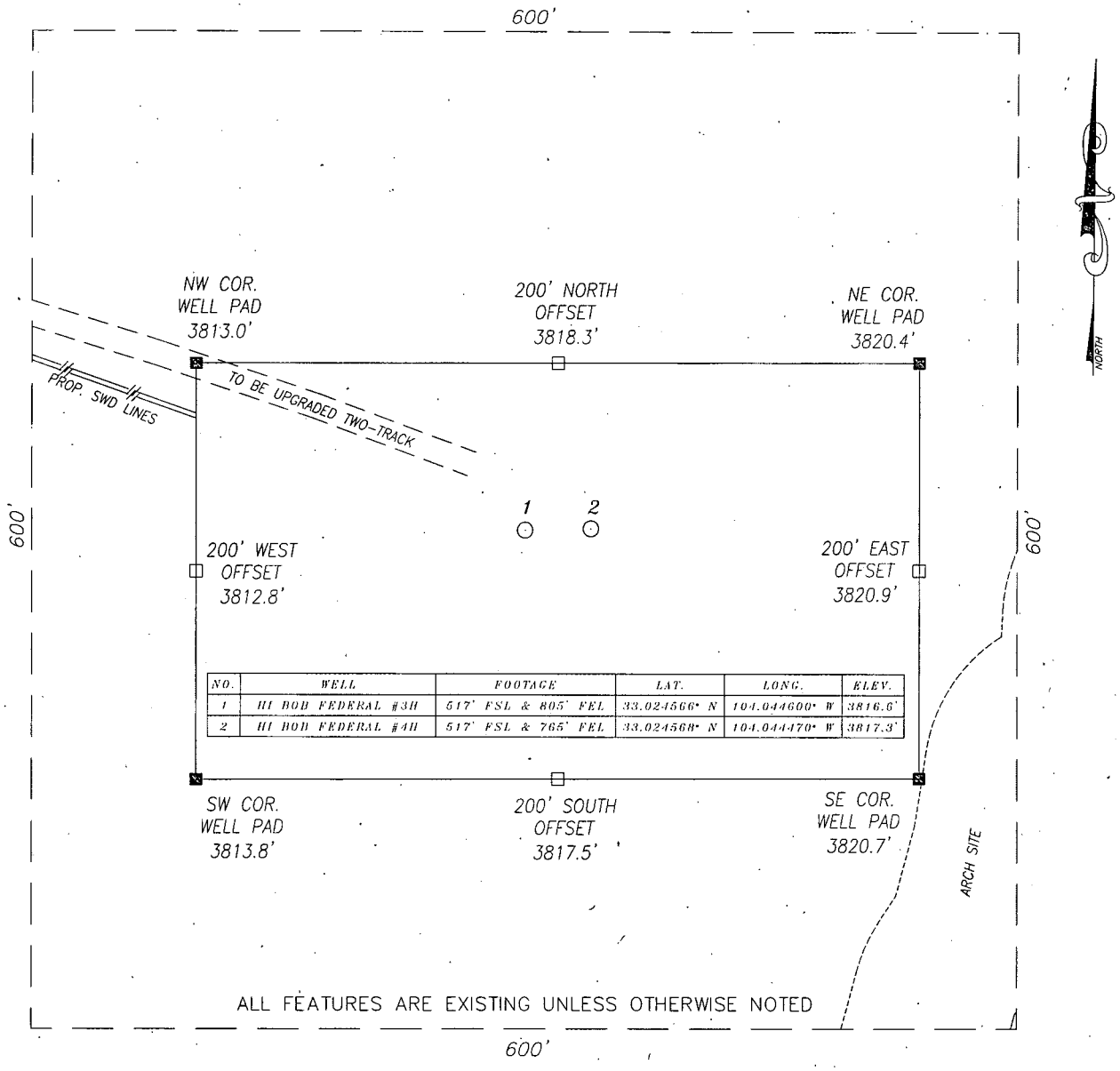
20 mi
N

SECTION 8, TOWNSHIP 15 SOUTH, RANGE 29 EAST, N.M.P.M.,

CHAVES COUNTY NEW MEXICO



NO.	WELL	FOOTAGE	LAT.	LONG.	ELEV.
1	HI BOB FEDERAL #3H	517' FSL & 805' FEL	33.024566° N	104.044600° W	3816.6'
2	HI BOB FEDERAL #4H	517' FSL & 765' FEL	33.024568° N	104.044470° W	3817.3'

DIRECTIONS TO LOCATION:
HEADING EAST ON C.R. 249 TURN RIGHT (SOUTH) APPROX. 0.5 MILES PAST MILE MARKER 18 AND GO APPROX. 2.7 MILES; THEN TURN LEFT (EAST) AND GO APPROX. 0.4 MILES TO A TWO TRACK ROAD; THEN FOLLOW TWO TRACK ROAD FOR APPROX. 0.3 MILES TO PROPOSED WELLS. .

100 0 100 200 Feet

Scale: 1"=100'

HARCROW SURVEYING, LLC
2316 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158
c.harcrow@harcrowsurveying.com

MARSHALL & WINSTON, INC.	
SURVEY DATE: JULY 13, 2019	600S
DRAFTING DATE: JULY 31, 2019	PAGE: 1 OF 1
APPROVED BY: CH / DRAWN BY: CD	FILE: 19-1322-1323

APD ID: 10400046135 **Submission Date:** 08/22/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

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

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

12/02/2019

APD ID: 10400046135 **Submission Date:** 08/22/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: HI BOB FEDERAL **Well Number:** 3H

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

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000807

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: