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

**State of New Mexico**
**Energy Minerals and Natural Resources**
**Oil Conservation Division**
**1220 South St. Francis Dr.**
**Santa Fe, NM 87505**

HOBBSOCD
MAR 03 2015
RECEIVED

Form C-101
Revised December 16, 2011

Permit

# APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

| [1] Operator Name and Address | [2] OGRID Number |
|---|---|
| Devon Energy Production Company, LP<br>333 W. Sheridan Avenue<br>Oklahoma City, OK 73102-5010 | 6137 |
| | [3] API Number<br>30-25-34767 |

| [4] Property Code | [5] Property Name | [6] Well No. |
|---|---|---|
| 30884 | THISTLE UNIT | 6 |

## [7] Surface Location

| UL - Lot | Section | Township | Range | Lot Idn | Feet from | N/S Line | Feet From | E/W Line | County |
|---|---|---|---|---|---|---|---|---|---|
| O | 34 | 23S | 33E | | 660 | South | 1560 | East | Lea |

## [8] Pool Information

| | |
|---|---|
| Triple X; Bone Spring | 59900 |

## Additional Well Information

| [9] Work Type | [10] Well Type | [11] Cable/Rotary | [12] Lease Type | [13] Ground Level Elevation |
|---|---|---|---|---|
| Recompletion | G | R | S | 3648' |
| [14] Multiple | [15] Proposed Depth | [16] Formation | [17] Contractor | [18] Spud Date |
| | CIBP @ 12,350' | 2nd Bone Spring | | |

| Depth to Ground water | Distance from nearest fresh water well | Distance to nearest surface water |
|---|---|---|
| | | |

## [19] Proposed Casing and Cement Program

| Type | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|---|---|---|---|---|---|---|
| Surface | 17-1/2" | 13-3/8" | 48# | 585' | 600sx | Surface |
| Intermediate | 12-1/4" | 9-5/8" | 40# | 5,035' | 1,300sx | Surface |
| Prod Csg | 8-3/4" | 7" | 26# | 12,629' | 1,300sx | 7,050' |
| Prod Liner | 6-1/8" | 4-1/2" | 13.5# | 1st CIBP @ 12,900' | Dump Bail 35' cmt | |
| | | | | 2nd CIBP @ 12,450' | Dump Bail 100' cmt | 12,350' |
| | | | | | | |

## Casing/Cement Program: Additional Comments

Set CIBP @ approx.. 12, 950' to plug back Wolfcamp and dump bail approx. 35' of class H Neat cmt on top of CIBP.
Isolate 7" x 4-1/2" liner top. RIH & set CIBP 50' below liner top @ +/- 12,450'. Dump bail approx. 25 sx Cl H Neat cmt on top of CIBP. Confirm TOC to be approx. 12,350'.
RIH w/bit & scrapper to clean hole. Load w/ approx. 450 bbls 10 ppg Nadine Brine; apply 6K psi f/30 min. MIRU WL services to prep for perforation of 2nd Bone Spring @ 11,200' – 11,202'.
See attached recompletion procedure for complete details.

## Proposed Blowout Prevention Program

| Type | Working Pressure | Test Pressure | Manufacturer |
|---|---|---|---|
| BOPE Annular & Double Ram | 10K | 10K | |

I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
**I further certify that the drilling pit will be constructed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☒.**

Signature:

Printed name: David H. Cook

Title: Regulatory Compliance

E-mail Address: david.cook@dvn.com

Date: 3/2/2015 Phone: (405) 552-7848

OIL CONSERVATION DIVISION

Approved By:

Title: Petroleum Engineer

Approved Date: 03/03/15 Expiration Date: 03/03/17

Conditions of Approval Attached

MAR 04 2015

Brian Connolly
Engineer
405.228.8296

# Thistle Un 6
# 2BSSS Recompletion
# WBS#: XX-108139.01

**Objective** - PA the Wolfcamp; recomplete and stimulate the 2nd Bone Spring.

API# - 30-025-34767
GL - 3,648'
TD - 13,775'

Location - Lea Co. -- Sec 34-23S-33E
KB - 3,666' (18')
PBTD - 13,723' (175 sx Cl H)

Lat: 32.255572574
Long: -103.556178132
PBTD - 13,723' (175 sx Cl H)

| Casing | OD | ID | Drift | WT/FT | Grade | Top | Bottom | TOC | Collapse (psi, 100%) | Burst (psi, 100%) |
|---|---|---|---|---|---|---|---|---|---|---|
| Surface | 13-3/8" | 12.515" | 12.359" | 61 | J-55 | 18' | 585' | Surface | 1,540 | 3,090 |
| Intermediate | 9-5/8" | 8.835" | 8.679" | 40 | J-55 | 18' | 5,035' | Surface | 4,230 | 6,820 |
| Production Csg | 7" | 6.276" | 6.151" | 26 | P-110 | 18' | 12,629' | 7,050' | 6,230 | 9,950 |
| Production Liner | 4-1/2" | 3.92" | 3.795" | 13.5 | P-110 | 12,401' | 13,773' | | 10,680 | 12,410 |

***NOTE: CONFIRM TBG MAKE WHEN PULLING – INCONSISTENT RECORDS***

Current perforations - 13,445'-13,583' (Wolfcamp)
Expected TOC (temp survey 3/21/2000) - 7,050'

**Safety: All personnel will wear hard hats, safety glasses with side shields and steel toed boots while on location. Assess wellhead working height for safety. If needed, use work platform or man-lift for fall protection.**

| Devon Contacts | Contact Name | Office Location | Office Phone | Cell Phone | E-mail |
|---|---|---|---|---|---|
| Sr. Completions Foreman | Ronnie Carre | Artesia | 575-748-0179 | 575-748-5528 | Ronnie.Carre@dvn.com |
| Completions Foreman | Martin Jimenez | Artesia | 575-748-0197 | 575-513-5819 | Martin.Jimenez@dvn.com |
| Completions Foreman | Steve Armer | Artesia | 575-746-5593 | 575-513-0533 | Steve.Armer@dvn.com |
| Production Foreman | Merle Lewis | Artesia | 575-748-0184 | 575-748-6304 | Merle.Lewis@dvn.com |
| Production Asst. Foreman | Jim Huerta | Artesia | 575-234-0245 | 575-513-0529 | Santiago.Huerta@dvn.com |
| Production Engineer | Brian Connolly | OKC | 405-228-8296 | 254-203-0532 | Brian.Connolly@dvn.com |
| Completions Engineer | P.J. Edsall | OKC | 405-552-5362 | 405-435-9970 | P.J.Edsall@dvn.com |
| Construction/Facilities Foreman | Rick Campos | Artesia | 575-746-5576 | 575-513-1933 | Enrique.Campos@dvn.com |
| Construction/Facilities Foreman | Jack Pittman | Artesia | 575-748-0186 | 575-513-1740 | Jack.Pittman@dvn.com |
| EHS Professional | Amancio Cruz | Artesia | 575-746-5582 | 575-513-2453 | Amancio.Cruz@dvn.com |
| Automation Foreman | Danny Nolen | Artesia | 575-748-0198 | 575-746-7810 | Danny.Nolen@dvn.com |
| Measurement Foreman | Robert Hernandez | Artesia | 575-748-9924 | 575-513-0060 | Robert.Hernandez@dvn.com |

Brian Connolly
Engineer
405.228.8296

**Procedure: Please note BLM's COA and required BLM notifications/witnessing. Hold tailgate safety meetings prior to RU, each morning and before each operational change or event.**

1) Test and/or install and test anchors. MIRU WSU (Well Service Unit). Spot necessary enclosed tanks, gas buster with flare stack and temporary flow lines to equipment. Record pressures on tbg and csg.

2) Top kill csg (if necessary) with 2% KCL.

3) ND tree (send in tree to be serviced/maintained and tested for future use). NU 10K BOPE, w/ 1 set of blind rams on bottom plus 1 set of 3-1/2" pipe ram on top. Test BOPE to Devon guidelines.

4) Plugback existing Wolfcamp as follows (notify BLM for witness if required):

   a) RU WLU (Wireline Unit).
   b) RIH w/ GRJB for 4-1/2" csg to +/- 12,950' KBM or just above top of tbg. POOH (Pull Out Of Hole).
   c) RIH w/ WL and 4-1/2", 13.5#, 10k CIBP to 12,900' KBM and set CIBP. POOH.
   d) RIH and dump bail at least 35' of class H neat cmnt on top of CIBP @ 12,900' KBM. Make multiple runs if necessary. POOH.
   e) Drop down and tag TOC if necessary.
   f) If ok, proceed to step 5. If not, contact field supervisor and OKC engineer.

5) Isolate 7"x4-1/2" liner top as followed:

   a) RIH w/ WL and 4-1/2", 13.5#, 10k CIBP and set CIBP 50' below liner top @ +/- 12,450' KBM.
   b) Dump bail at least 25 sks (or 100') of class H neat cmnt on top of CIBP. Make multiple runs if necessary to ensure 50' of cement above and below liner top.
   c) Drop down and tag TOC if necessary (@ +/- 12,350' KBM).
   d) If ok, POOH w/ WL.
   e) Load hole and MIT the 7" csg to ~500 psi at surface for 30 min. Submit results to BLM. If ok, proceed with work. If not, contact field supervisor and OKC engineer.

6) RIH w/ WL and GRJB for 7", 26#, P-110 csg to TOC @ +/- 12,350'. Pending results of GRJB run, we may RIH w/ bit and scraper to clean up 7" wellbore.

7) Bring in ~450 bbls 10 ppg Nadine Brine. Load hole.

8) Apply 6,000 psi to surface and hold pressure for 30 minutes to test csg/CIBP integrity.

9) MIRU WL Services with full lubricator. Test lubricator to Devon specifications. Make GR/CCL run in 7" csg to just above TOC @ +/- 12,300' KBM.

10) RU WL perforation equipment with full lubricator. Test Lubricator to Devon specifications. Perf 2BSSS as follows:

| Formation | Perf Interval (ft) | Feet | Density (spf) | Phasing (°) | Charge (in) | # of Holes |
|---|---|---|---|---|---|---|
| 2BSSS | 11,200'-11,202' | 2 | 6 | 60 | 0.57 | 12 |

Brian Connolly
Engineer
405.228.8296

11) RIH w/ 3-1/2" L-80 frac string and (2) 4-1/2" downhole pressure gauges. See frac string design for specifics (we may use a 7" treating packer).

12) RU frac crew and all surface equipment per Devon guidelines.

13) Perform DFIT analysis on 2BSSS. Ensure that all surface measurement equipment is in place and records accurate pressures throughout the job.

14) Frac 2BSSS per vendor proposal. **Max surface pressure = 6,000 psi.**
   Frac general info:
   - 16-20 BPM
   - Expected max STP is ~4,700 psi
   - 95,000 lbs proppant
   - Record average treating pressure, rates and job load along with ISIP, 5, 10 & 15 minute readings

15) SWI. RDMO frac crew.

16) Flow well back according to attached flowback procedure.

17) When the well dies, MIRU N2 unit and pressure monitoring equipment.

18) Perform Nitrogen stimulation. Record all injection pressures/rates at surface and downhole. Shut well in.

19) RDMO N2 unit.

20) RU all lines and production equipment.

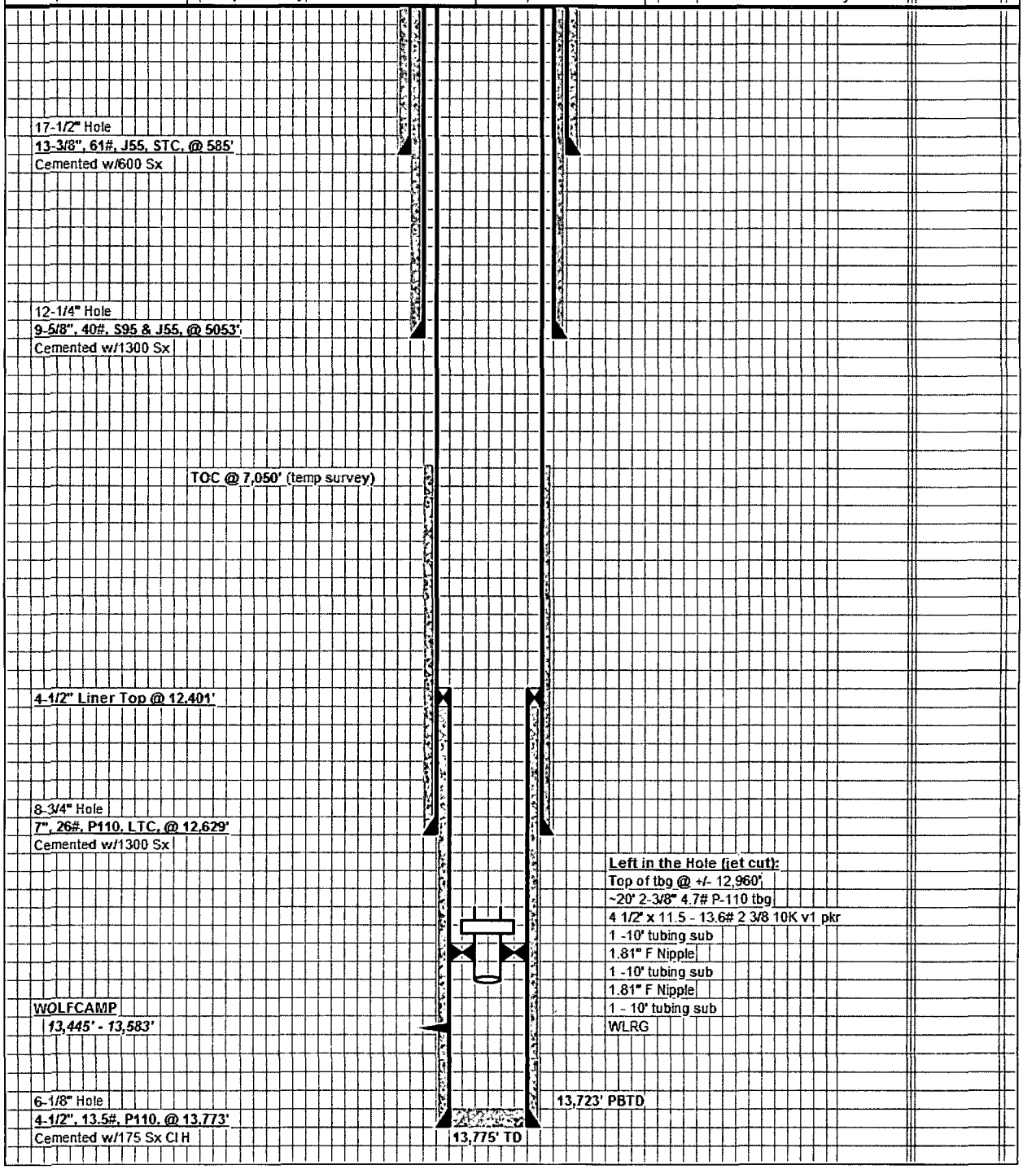
21) RIH w/ 2-3/8" production tbg.

22) Swab well in and put back on production.

## Current Wellbore Schematic

**DEVON ENERGY PRODUCTION COMPANY LP**

| | | | |
|---|---|---|---|
| Well Name: THISTLE UNIT 6 | | Field: JOHNSON RANCH | |
| Location: 660' FSL & 1560' FEL; SEC 34-T23S-R33E | | County: LEA | State: NM |
| Elevation: 3666' KB; 3648' GL; 18' KB-GL | | Spud Date: 2/21/00 | Compl Date: 5/6/00 |
| API#: 30-025-34767 | Prepared by: Ronnie Slack | Date: 7/23/08 | Rev: 2/16/15 - Connolly |



Brian Connolly
Engineer
405.228.8296

## Proposed Wellbore Schematic

**DEVON ENERGY PRODUCTION COMPANY LP**

| | | | |
|---|---|---|---|
| Well Name: THISTLE UNIT 6 | Field: JOHNSON RANCH | | |
| Location: 660' FSL & 1560' FEL; SEC 34-T23S-R33E | County: LEA | State: NM | |
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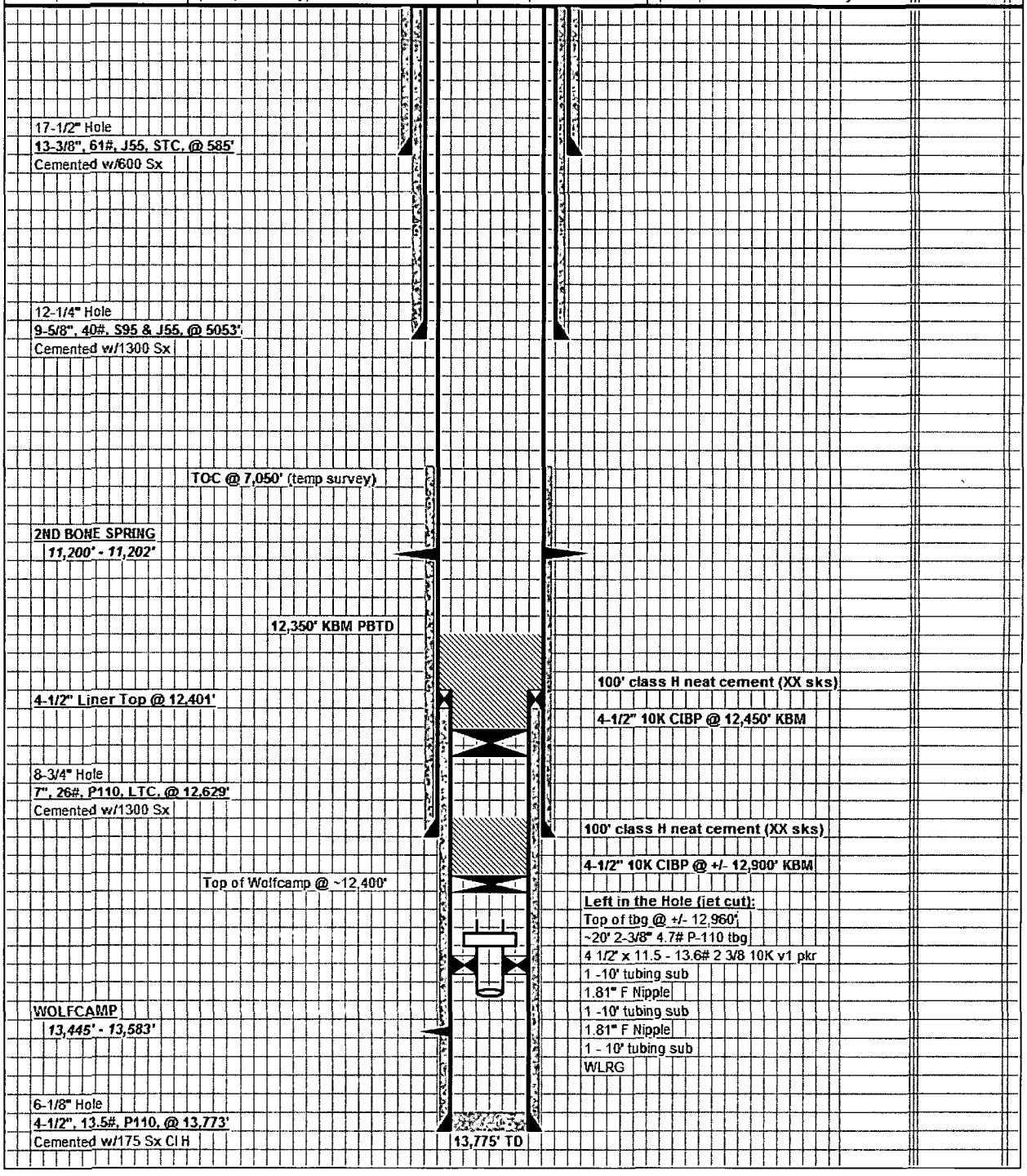

Brian Connolly
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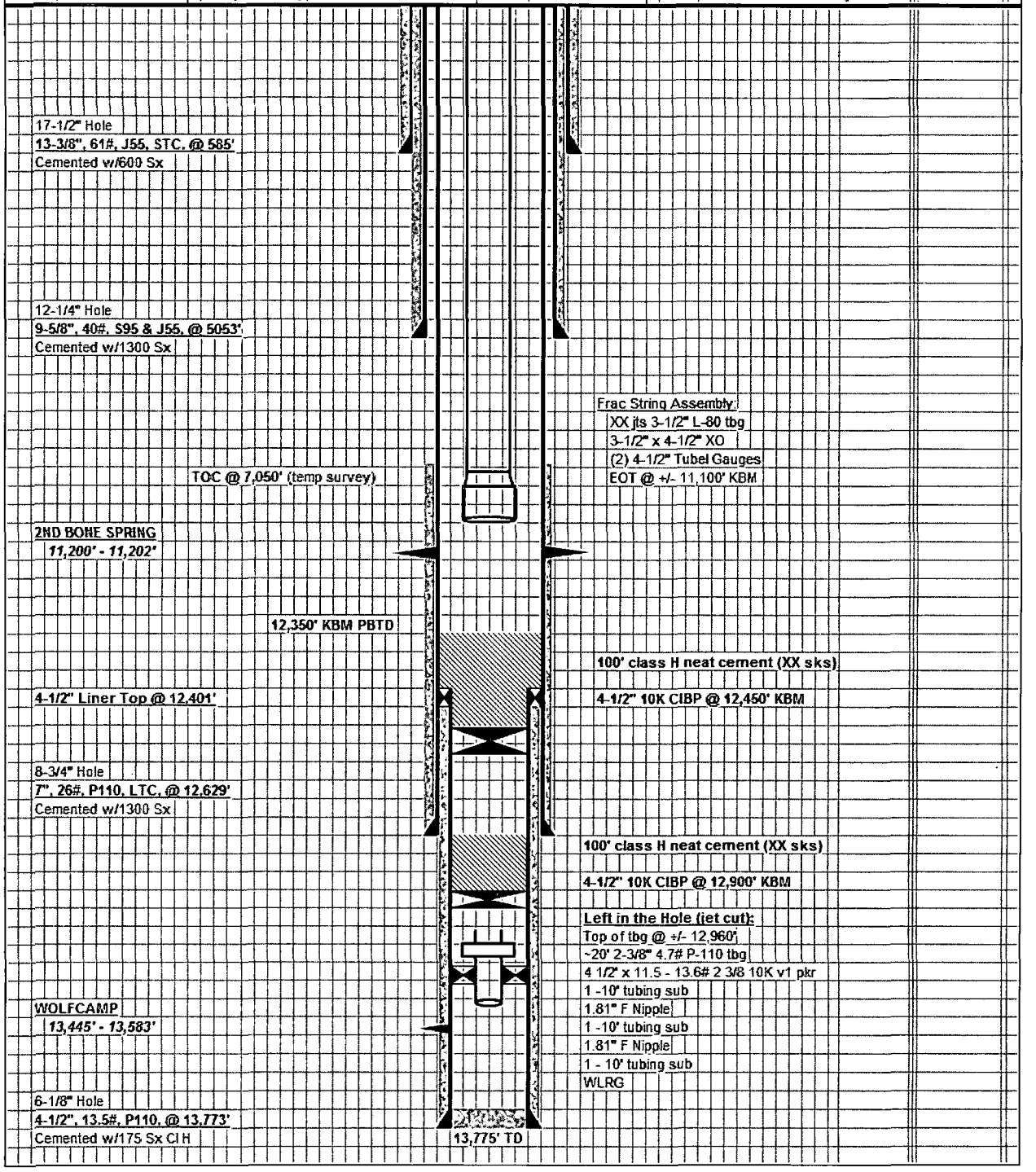
405.228.8296

## Proposed Frac String Assembly

**DEVON ENERGY PRODUCTION COMPANY LP**

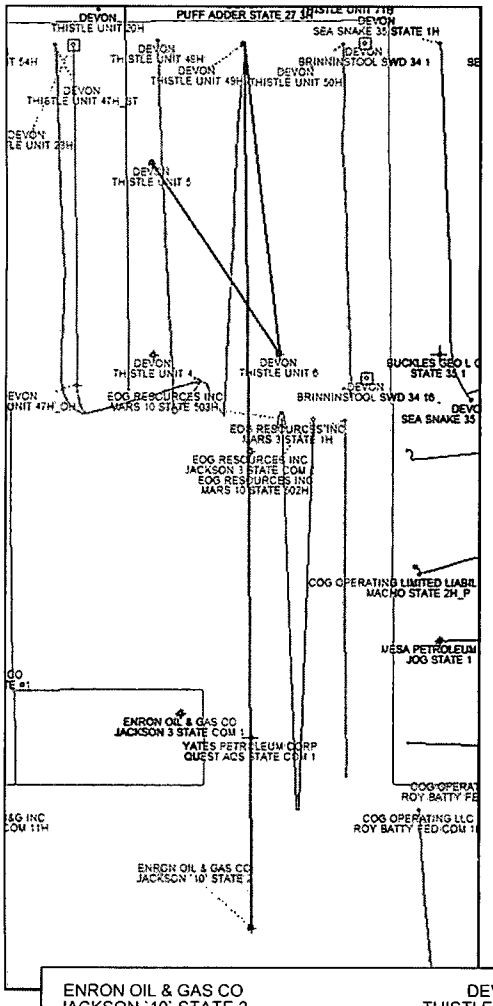
| | | | |
|---|---|---|---|
| Well Name: THISTLE UNIT 6 | Field: JOHNSON RANCH | | |
| Location: 660' FSL & 1560' FEL; SEC 34-T23S-R33E | County: LEA | State: NM | |
| Elevation: 3666' KB; 3648' GL; 18' KB-GL | Spud Date: 2/21/00 | Compl Date: 5/6/00 | |
| API#: 30-025-34767 Prepared by: Ronnie Slack | Date: 7/23/08 | Rev: 2/16/15 - Connolly | |

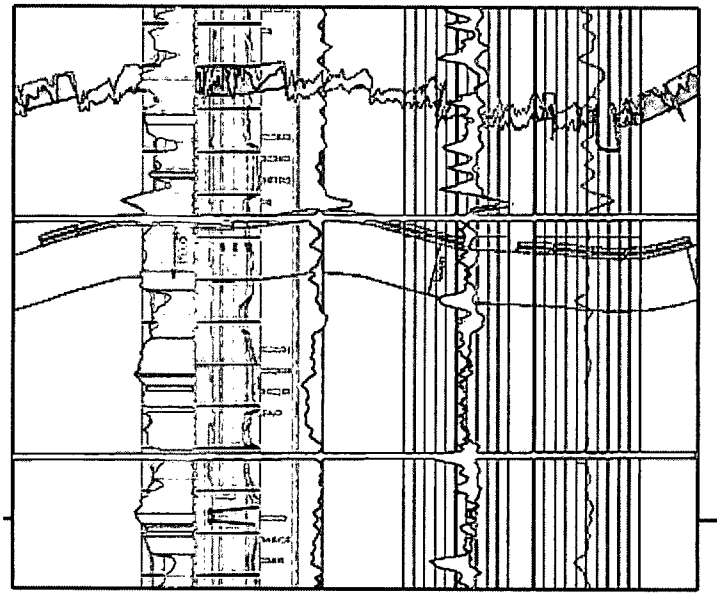


Brian Connolly
Engineer
405.228.8296

# Thistle Un 6
# 2BSSS Recompletion

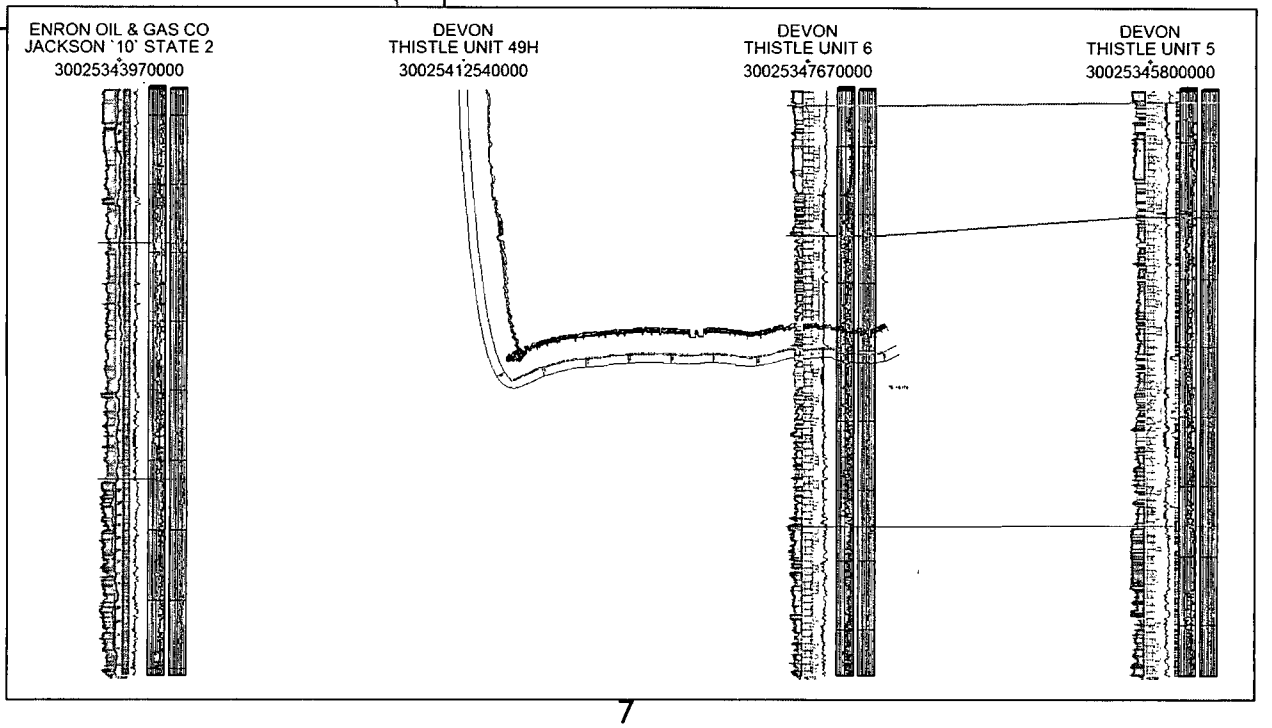
## 2nd Bone Spring Sand



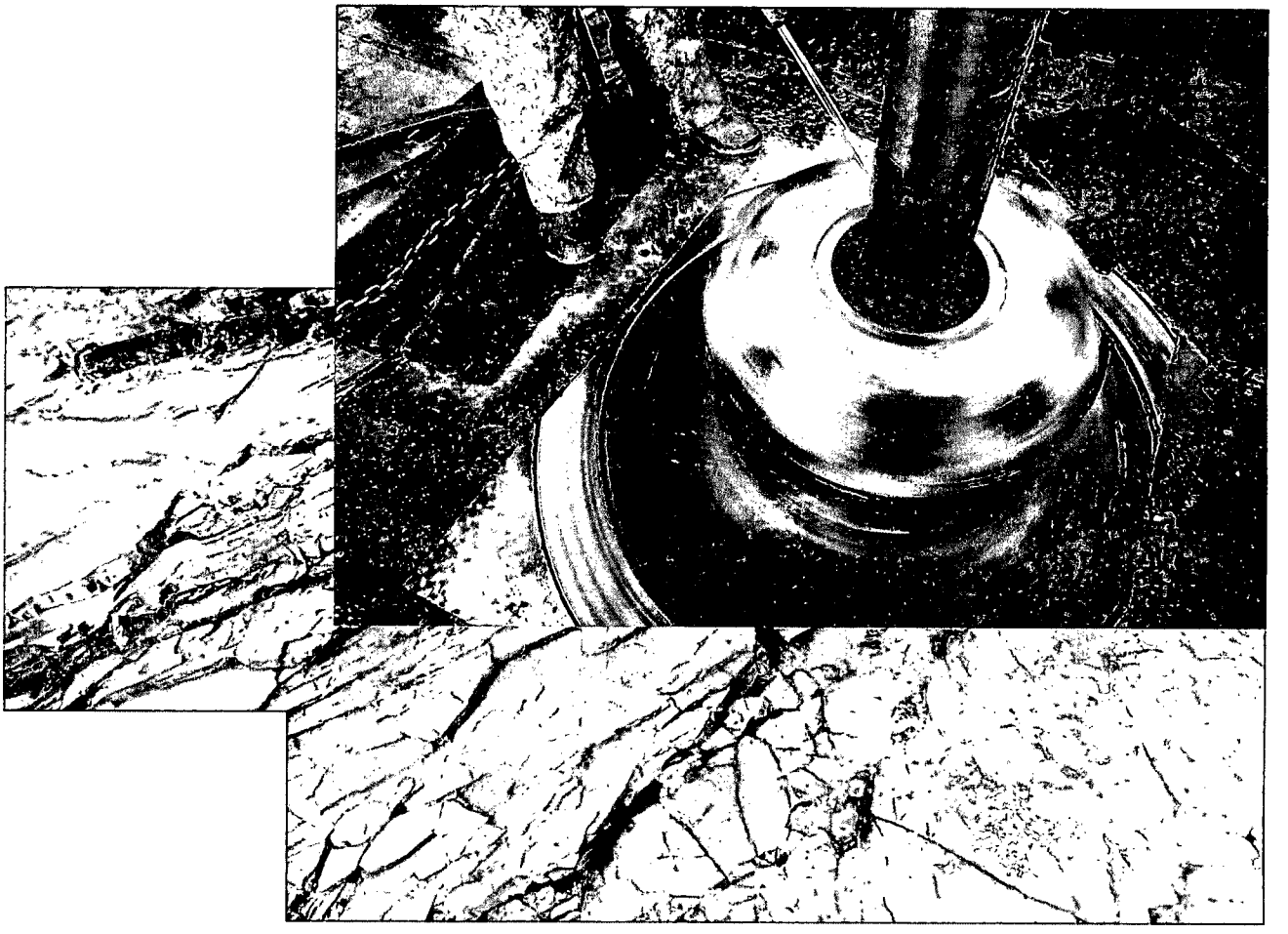
11,193'

11,250'



devon

Commitment Runs Deep



# Design Plan
# Operation and Maintenance Plan
# Closure Plan

SENM - Closed Loop Systems
February 2015

## I. Design Plan

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

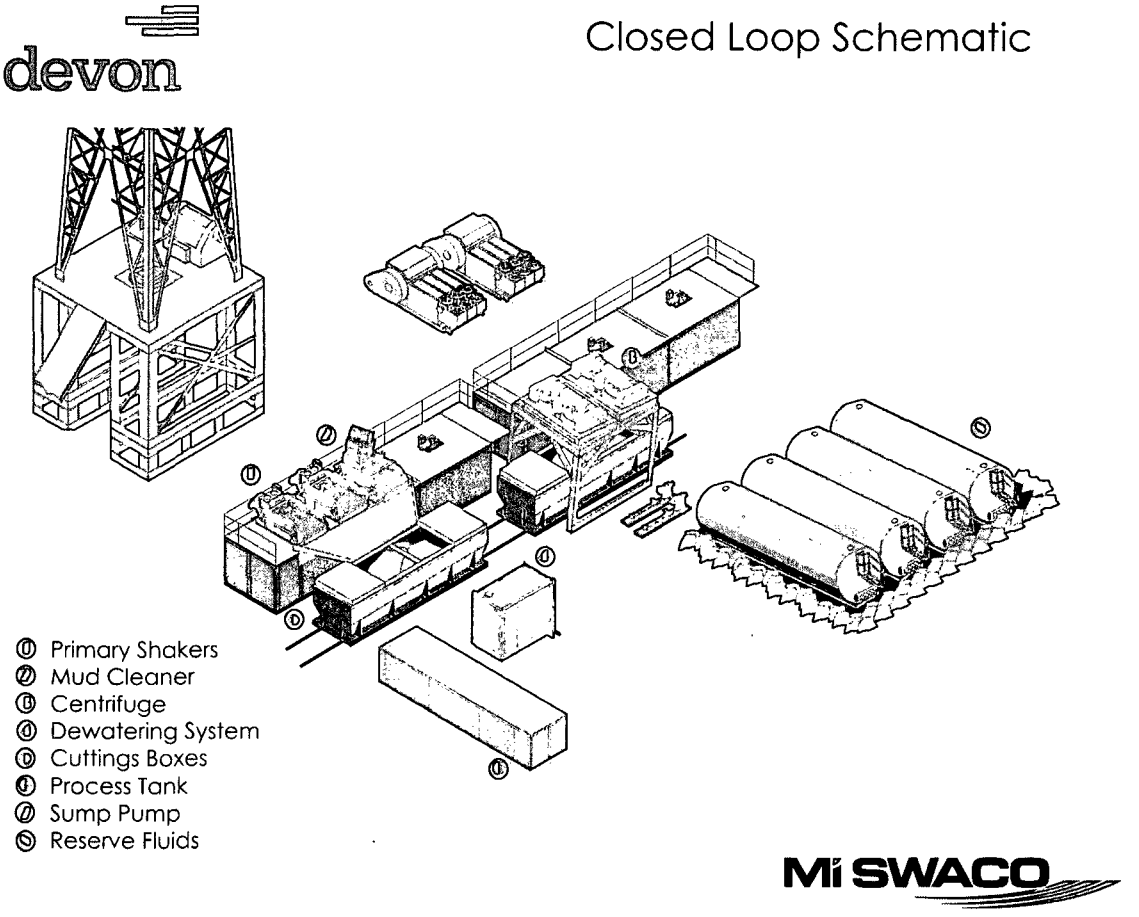
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

## II. Operations and Maintenance Plan

*Primary Shakers:* The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

*Mud Cleaner:* The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.




*Centrifuges*: The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

*Dewatering System:* The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

*Cuttings Boxes:* Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

*Process Tank:* (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

*Sump and Sump Pump:* The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

*Reserve Fluids (Tank Farm):* A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

## III. Closure Plan

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.