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

OIL CONS. DIV DIST. 3
MAY 18 2016

Form C-101
Revised July 18, 2013

☐ AMENDED REPORT

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

1. Operator Name and Address	2. OGRID Number
Western Refining Southwest, Inc #50 County Road 4990 (PO Box 159) Bloomfield, NM 87413	267595
	3. API Number 30-045-35747

4. Property Code	5. Property Name	6. Well No.
316242	Waste Disposal Well (WDW)	#2

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
H	27	29N	11W		2028'	North	111'	East	San Juan

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County

9. Pool Information

Pool Name	Pool Code
SWD; Entrada	96436

Additional Well Information

11. Work Type	12. Well Type	13. Cable/Rotary	14. Lease Type	15. Ground Level Elevation
N	S	R	P	5535' GL
16. Multiple	**17. Proposed Depth**	**18. Formation**	**19. Contractor**	**20. Spud Date**
NO	~ 7500'	Entrada	TBD	Est Marc 2016

Depth to Ground water	Distance from nearest fresh water well	Distance to nearest surface water
Less than 50'	660 '	1334'

KP

☐ **We will be using a closed-loop system in lieu of lined pits**

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17-1/2"	13-3/8"	48 ppf – H40	~ 300'	464 sx	Surface
Int	12- ¼"	9-5/8"	36 ppf – J55	~ 3600'	857 sx	Surface
Prod	8-3/4"	7"	26 ppf – L80	~ 7500'	850 sx	Surface

Casing/Cement Program: Additional Comments

Will utilize a 2 stage cement job on the 7" casing w/ DV tool at ~ 4000'

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
2M	2000 psi	2000 psi	Schaffer

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☐, if applicable.
Signature: John C. Thompson

Printed name: John C. Thompson
Title: Engineer / Agent
E-mail Address: johnewalsheng.net
Date: 5/18/16 Phone: 505-327-4892

OIL CONSERVATION DIVISION

Approved By: Mark Ebe
Title: SUPERVISOR DISTRICT #3
Approved Date: JUN 16 2016 Expiration Date: JUN 16 2018
Conditions of Approval Attached

SEE ATTACHED NMOCD CONDITIONS OF APPROVAL

AV

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State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-35747	96436	SWD; Entrada

[4] Property Code	[5] Property Name	[6] Well Number
316242	Waste Disposal Well (WDW)	2

[7] OGRID No.	[8] Operator Name	[9] Elevation
267595	Western Refining Southwest, Inc.	5535'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	27	29-N	11-W		2028'	NORTH	111'	EAST	SAN JUAN

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

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

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

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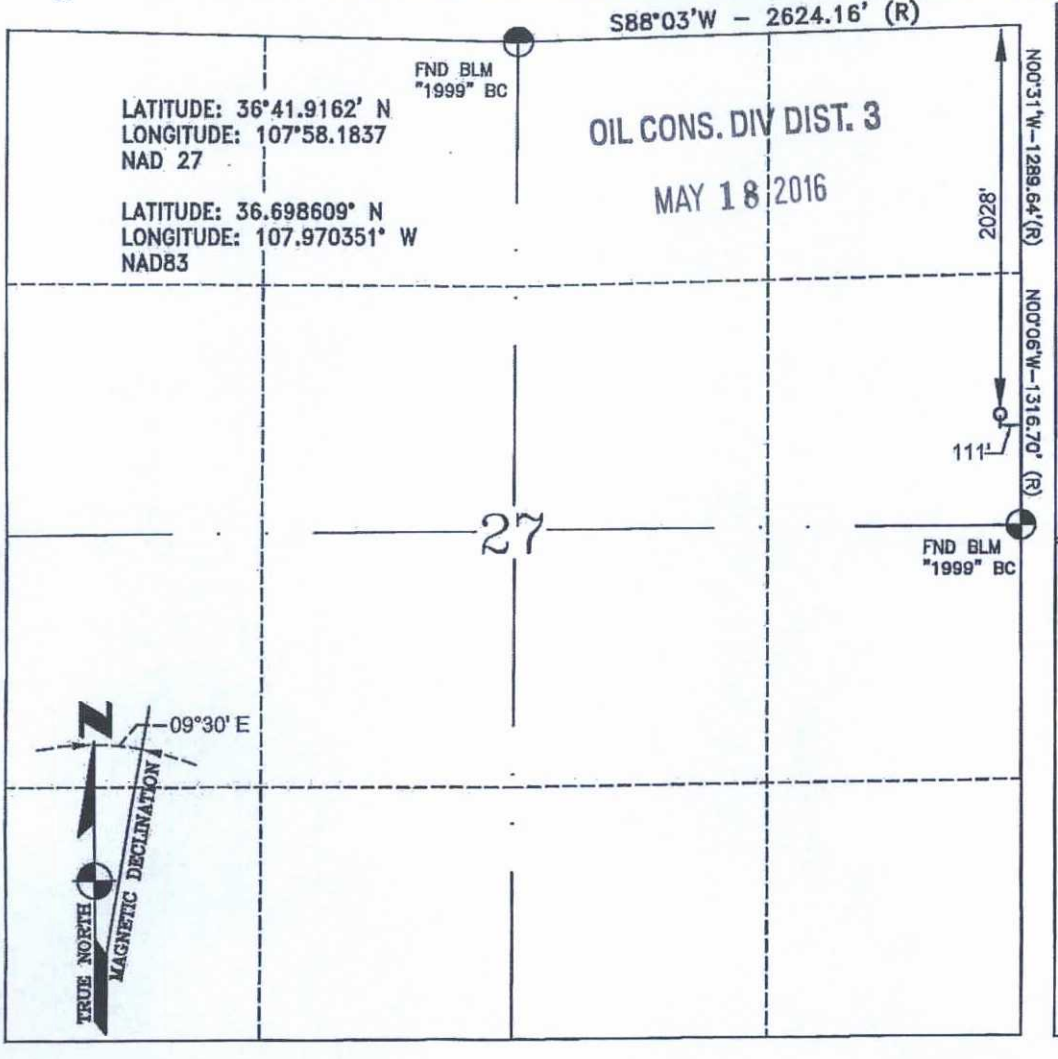


[17] OPERATOR CERTIFICATION

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

Signature 12/23/15 Date

John C. Thompson
Printed Name

johnew@isbeng.net
E-mail Address

[18] SURVEYOR CERTIFICATION

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

DECEMBER 12, 20
Date of Survey

Signature and Seal of Professional Surveyor:

GLEN W. RUSSELL NEW MEXICO 15703 LICENSED PROFESSIONAL SURVEYOR

GLEN W. RUSSELL
Certificate Number 15703

DRILLING PROGRAM
Western Refining Southwest, Inc.
WDW #2
San Juan County, NM

Surface Location
2028' FNL & 111' FEL
Section 27, T29N, R11W
Graded Elevation 5535'

SHL Geographical Coordinates (NAD-83)
Latitude 36.698609° N
Longitude 107.970351° W

Bottom Hole Location (Vertical Well)
Same as Surface

DIRECTIONS TO Western Refining - WDW #2

- From Bloomfield NM, go on South on HWY 550 to CR 4990
- Turn left and go easterly on CR 4990 for ~ 1.0 mi.
- Turn left (north) for 0.1 miles to new location.

Pre-Spud

- Identify Safe Briefing Areas on location. Prevailing wind is NW to SE. Attempt to locate briefing areas upwind in the corners of location. Note location of access road and provide for alternate exit if not up wind.
- Conduct rig inspection and pre-spud. Record "Rig-On-Daywork" and the Time & Date of well spud on both the Daily Drilling Report and the IADC Daily Drilling Report.
- Ensure regulatory notifications are made - Notify the NMOCD, 24 hours prior to spudding the well, testing BOPE, casing, and cement jobs. The following information must be included: well name, legal location, permit number, drilling contractor, company representative, date & time of spud.
- Contact NMOCD Field Inspector Supervisor Brandon Powell 505-320-0200. Record time & date of notification on reports.
- Review and post NMOCD permits and conditions of approval. Ensure 100% compliance with all regulations and conditions.

Wellplan

- Drill 17-1/2" surface hole from 0' to 350'.
- Drill surface with a fresh water gel mud system.
- 8.3 -9.4 ppg, 32-75 vis, NC fluid loss, <5% LGS.
- Perform a deviation surveys at 100', 250' and TD.

- Control deviation as necessary.
- Run and cement 13-3/8" casing and cement to the surface.
- Contact NMOCD if cement is not circulated to surface to get remediation approved prior to 1" cement. If cement is below 200' from surface, a CBL may have to be run to determine cement top.
- Nipple up BOP and test BOPE
- Ensure all drill pipe has casing friendly hardbanding.
- Install ditch magnets and measure metal cuttings in a vis cup every tour.
- Drill 12-1/4" intermediate to ~ 3600' with a fresh water LSND mud.
- Short trip to surface casing to prepare hole for 9-5/8" casing.
- Run 9-5/8", 36 ppf J-55 casing to Intermediate TD (Clean threads & drift casing once it's on location, prior to running).
- Cement 9-5/8" casing in single stage. Calculate cement volumes to circulate cement to surface.
- Drill 8-3/4" to ~ 7500' w/ fresh water LSND mud.
- Short trip to intermediate to prepare hole for logs and 7" casing.
- Run triple combo open hole logs.
- Run 7", 26 ppf, L80 casing to TD (clean threads & drift casing once it's on location prior to running)
- Nipple down BOP, clean mud tanks.
- Release rig.

Geology

MD	Formation
Surface	Quaternary Alluvium
10'	Nacimiento
515'	Ojo Alamo
625'	Kirtland
1718'	Pictured Cliffs
1880'	Lewis
2688'	Chacra
3335'	Cliffhouse
3394'	Menefee
4037'	Point Lookout
4423'	Mancos Shale
5599'	Gallup
6060'	Greenhorn
6149'	Dakota
6365'	Burro Canyon
6411'	Morrison
7287'	Todilto
7315'	Entrada
7483'	Chinle

Casing Program:

Casing & Hole Size	Weight	Grade	Coupling	Setting Depth (MD)	Top of Cement
13-3/8" (17-1/2")	48 ppf	H-40	LT&C	0-350 ft	To surface
9-5/8" (12-1/4")	36 ppf	J-55	LT&C	0-3600 ft	To surface
7" (8-3/4")	26 ppf	L-80	LT&C	0-7500	To surface

Mud logging: Commences at 300', 30-ft samples to TD, or as required to pick formation tops to TD

Open-Hole Logs: Triple Combo

Cased-Hole Logs: CBL

Rig-up

During rig-up, ensure that the following items are properly rigged up:

- Hydraulic remote choke and control panel (ensure that the choke manifold is configured properly to NMOCD standards)
- Trip tank (including piping, valves, etc.)
- Reliable wet-system bulk barite hopper (ensure that it is rigged up so that barite can be mixed prior to the suction tank and also so that barite can be mixed in the pre-mix tank)

Rig items to be taken care of the following issues prior to spud:

- Change seats and valves in mud pumps, redress relief valves, check pre-charge pressures of pulsation dampeners
- Repair all suction valves, etc., in mud tanks as required
- Check all centrifugal pumps, including charger pumps, mud mixing pumps, desander/desilter pumps, etc.

17 1/2" Surface Hole

MIRU During rig-up and while drilling surface hole, ensure that the following items are properly rigged up:.

Conduct rig inspection and pre-spud. Record "Rig-On-Daywork" and well spud time/date on Daily Report and on IADC Daily Drilling Report.

- Ensure regulatory notifications are made – NMOCD, 24 hours prior to spudding the well, testing BOPE, casing, and cement jobs. The following information must be included: well name, legal location, permit number, drilling contractor, company representative, date & time of spud.

- Contact BLM & NMOCD Field Inspector. Record name of government personnel contacted and time & date of notification on reports.

Procedure

Bottom-Hole Assembly (BHA) is to consist of the following:

1. PU 17-1/2" BHA
   - 17-1/2" surface hole bit
   - Bit sub (ported for float) 7-5/8" reg x 6-5/8" reg
   - Shock Sub
   - 4 ea. 8" DC's
   - Cross over 6-5/8" x 4-1/2"
   - 8 ea. 6" DC's
2. Drill 17-1/2" surface hole from 0' to 350'.
3. Drill surface with fresh water gel mud system. Drill surface with a fresh water gel mud system containing fresh water gel, poly-plus RD, detergent and 2% KCL
4. 8.3 -9.4 ppg, 32-75 vis, NC fluid loss, <5% LGS
5. Control deviation as necessary by varying RPM & WOB.
6. Install ditch magnets and measure metal cuttings in a vis cup every tour.
   a. Take survey at 100', if the hole is straight take a second survey halfway to TD and at 13-3/8" casing point.
7. Ensure that all rig solids control equipment are working properly.

   Target mud properties:

MW (PPG)	Funnel Viscosity Sec	PV	YP	Gels 10s/10m	MBT	Ca	Cl-	LGS
8.3 – 9.4	38 - 45	<12	8 - 18	½	<15 ppb	800-1200 mg/l	<1200 mg/l	ALAP

8. Drill to a minimum of 350-ft RKB. Adjust TD depth as required to fit the casing to the hole. Circulate and pump high viscosity sweeps as required. Make a wiper trip if any drag coming off bottom, otherwise continue POOH to run pipe.
9. RU and run 13-3/8" 48# H-40 LT&C casing.
   a. Clean, visually inspect, and drift the casing on the rack.
   b. Test slurries with actual mix water in advance. Ensure that Cement Company provides pumping time data from lab tests based on actual mix water and bulk cement as loaded for the job.
   c. Run casing as follows:
      - Float Shoe
      - One (1) joint of 9-5/8" 36# J-55 LT&C casing
      - Float Collar
      - 13-3/8" 48# H-40 LT&C casing to surface.
   d. Thread-lock the float shoe and float collar with equivalent thread-lock compound. Make up remaining joints with API modified thread compound. Ensure the float equipment is PDC friendly. Run 5 bow-spring centralizers with one 10-ft from the shoe, then on every jt to surface.
   e. Fill the pipe as it is run.
   f. Follow Wellhead Recommended Installation Procedure.
10. With the 13-3/8" casing run to bottom, circulate a minimum of one complete hole volume (casing volume + annular volume) before cementing as follows:

a. Pump schedule (based on 125% excess)

- 10-bbls Freshwater spacer
- 394 sx (548 cf) 15.6 ppg
- Drop top plug
- Displace with surface drilling mud

b. Bump the plug with 500 psi over final circulating pressure. Release pressure and then check the integrity of the float equipment.

Note: Pressure test casing to 1500 psi for 30 minutes. Pressure test the casing when pressure testing the BOPE.

c. **Ensure that 13-3/8" landing joint is centered in rotary table when Casing Head is landed.**

d. Report the following on the daily drilling report:

- Spacer and cement slurry volumes, compositions, and properties (density, yield, etc.)
- Displacement volume, fluid type, and density
- Circulating pressure before bumping the plug and pressure that plug was bumped
- Volume of fluid bled back and whether float equipment held or not
- Whether cement was returned to surface and estimated volume of cement returns
- Any other pertinent information about the cement job.

e. If the cement falls back or does not return to surface, perform a top job with 1" tubing. Top Job Cement Slurry to consist of Class "G" Premium w/ 2% $CaCl_2$ (or similar cement).

f. **REGULATORY APPROVAL MUST BE GIVEN PRIOR TO PUMPING TOP JOB.**

g. WOC for a minimum 12 hours before drilling out.

h. While waiting on cement, remove landing joint, nipple up BOPE,

11. Follow Wellhead Recommended Wellhead Installation Procedure for 13-5/8" 3,000 psi wellhead. The technician should remove plugs from side outlets, install side outlet valves, and confirm proper installation of entire 3M wellhead assembly equipment prior to pressure testing BOPE.

12. Nipple up 13-5/8" 3M BOPE, :

a. See attachment showing 2M BOPE (NOTE: Will test per NMOCD specs for 2M System as per APD)

14. Ensure that third party pressure test company personnel perform function and accumulator draw down tests by shutting off air and electric power to accumulator.

- Check nitrogen pre-charge pressure for each accumulator bottle.
- Record initial accumulator manifold pressure, open and shut all BOP equipment and hydraulic valves, and record final accumulator manifold pressure.
- Ensure that results of function and accumulator draw down tests and any equipment deficiencies are noted on the Daily Drilling Report and the IADC Daily Drilling Report. Third party pressure test company personnel should provide report of accumulator unit inspection, including nitrogen pre-charge pressures for each accumulator bottle, to the rig supervisor.

15. Set 13-5/8" 3M BOP test plug (C22) in Casing Head bowl and open lower valve on Casing Head.

Note: Ensure that third party pressure test company personnel test all BOP equipment, choke manifold, and all surface equipment to low pressure of 250 psi and rated working pressure (2000 psi) for 10 minutes each test.

Note: Third party pressure test personnel should record and annotate all BOPE pressure tests on calibrated chart recorder with appropriate scale for test

pressures. One set of pressure recorder charts should be left onsite with drilling foreman and another set of pressure recorder charts should be submitted to the State Inspectors.

16. Remove 3M BOP test plug. Install retrievable long bowl protector (wear bushing) as required.

12-1/4" Section

Important Notes:

- **This interval will be drilled with fresh water-base mud (WBM) LSND system. Weight up as required, 8.5 – 9.4 ppg, 42-60 sec/qt vis, 4-6cc WL, YP 8-18, maintain less than 2% LGS, pH 9.0-9.8.**
- No mud materials should be mixed without explicit instructions from the mud engineer. Also ensure that good housekeeping is practiced on the top of the mud tanks to minimize the possibility of paper, plastic, or some other foreign object being dropped into the mud tanks, which could interfere with the pumps or be pumped down the hole.
- Wiper trip to surface to prepare for casing run.
- Adjust mud weight and LCM as necessary to prevent losses and gains.

Procedure

1. PU 12-1/4" BHA
   - 12-1/4" NOV
   - NOV Mud Motor 7/8 5.0 .28 Revs per gallon
   - 3 pt String IBS (Stabilizer)
   - 2 ea. 6-1/2" DC's
   - 3 pt String IBS (Stabilizer)
   - 12 ea. 6-1/2" DC's
   - 4 ea. 4-1/2" HWDP
   - 4 ½" DP to surface
2. TIH and drill out float equipment
3. Drill 12-1/4" intermediate hole to TD ~ 3600'
   - Record all pressure tests on chart or Pason.
   - Drill out with fresh water based mud system as described above
   - Perform a deviation surveys every 500'
4. Continue to drill ahead with 12-1/4" PDC bit.
   a. The 12-1/4" hole will be drilled with LSND WBM (reference mud program).
   b. Record bit on bottom hours and record mud motor hours daily in remarks section of morning report.
5. Drill to Intermediate TD of ~3600'
6. Circulate hole clean and **Strap Out of Hole.**
7. While circulating prior to POOH, work pipe to assist in solids removal.
8. POOH to Surface Casing Point. If there is any drag, make wiper trip back to bottom and circulate and condition hole before POOH again.

9. Run 9-5/8", 36#, J55 LT&C casing.

- Casing Running Order:
- One (1) Float Shoe
- One (1) joint 9-5/8", 36#, J55 LT&C casing
- One (1) Float Collar
- 9-5/8", 36#, J55 LT&C casing
- If necessary run DV tool to ensure cement to surface (Note: verify DV tool placement with Engineer prior to running casing)
- 9-5/8", 36#, J55 LT&C casing, as required, to surface
- Centralizers:
- One Bow Spring centralizer on bottom 10 jts.
- One Bow Spring centralizer on each 4th joint of casing to surface casing
- Two Bow Spring centralizers above and below each DV tool
- Clean threads, drift & visually inspect the casing on the rack.
- Torque each joint of casing to optimum make-up torque.
- Thread-lock the float collar and float shoe with thread lock compound.
- Use API modified pipe dope for remaining casing joints.
- Utilize a safety clamp (dog collar) on approximately first 10 joints of casing until enough weight is run to ensure casing slips are engaging properly. Upon reaching surface casing shoe, swap out elevators for minimum of 250-ton slip-type elevators and ensure circulating swage is ready to be picked up in the event difficulty is encountered running casing through open hole.

10. Wash casing down as required. Space out and land casing in wellhead with mandrel-type casing hanger.

Note: Record weight that casing is landed in bowl with mandrel-type casing hanger in Daily Drilling Report.

11. Once casing is landed, circulate a minimum of two full bottoms-up or until hole cleans up, whichever is greater, before cementing. Gradually stage pump rate up to 8-10 bpm while circulating to ensure that cavings and/or shale fragments are circulated out of the hole to minimize risk of packing off during the cement operations. Carefully monitor hole for losses while circulating.

12. Cement casing in single stage (if heavy losses or hole conditions dictate install DV tool as needed) Note: verify cement volumes with Engineer prior to ordering cement. Refer to vendor Cement Recommendations for cement details.

a. Pump schedule:

- Pump 10-bbls fresh water to fill lines and prime pumps
- Pressure test lines to 2,000 psi
- Pump 5 bbls of fresh water then 10 bbls of mud clean prior to pumping cement.
- Mix and pump 12.5 ppg lead cement slurry: 806 sx (1621 cf)
- Mix and pump 14.5 ppg tail cement slurry: 50 sx (70.5 cf)

b. Displace with drilling fluid at 6-8 bpm. Carefully observe well for losses, and adjust displacement rate if required. Bump the plug with 500 psi over final circulating pressure.

c. Release pressure and check pressure integrity of the float equipment. NDBOPE. Lift stack.

13. Set slips on 9-5/8" casing. Energize slips with jam bolts.
14. LD 13-5/8" BOPE
15. NUBOPE (9-5/8"*2,000 psi)
16. Test BOPE
    a. Test rams, HCR, manual valves and wellhead to 250 psi low and 2,000 psi high
    b. Test manual chokes to 250 psi low and 2,000 psi high
    c. Test kill line, choke line, choke manifold and all surface tools (TIW's, inside bop, etc) to 250 psi low and 2,000 psi high
    d. Test 9-5/8" casing to 2,000 psi / ~~20~~ minutes. 30 minutes 500 PSI min
    e. Install wear bushing.

8 ¾" Section

Important Notes:

- **This interval will be drilled with fresh water-base mud (WBM) LSND system. Weight up as required, 8.5 – 9.4 ppg, 42-60 sec/qt vis, 4-6cc WL, YP 8-18, maintain less than 2% LGS, pH 9.0-9.8.**
- No mud materials should be mixed without explicit instructions from the mud engineer. Also ensure that good housekeeping is practiced on the top of the mud tanks to minimize the possibility of paper, plastic, or some other foreign object being dropped into the mud tanks, which could interfere with the pumps or be pumped down the hole.
- Wiper trip to Intermediate to prepare for casing run.
- Adjust mud weight and LCM as necessary to prevent losses and gains.

Procedure

13. PU 8 ¾" BHA
    - 8 ¾" NOV DSHI516G-G2
    - NOV Mud Motor 7/8 5.0 .28 Revs per gallon
    - 3 pt String IBS (Stabilizer)
    - 2 ea. 6-1/2" DC's
    - 3 pt String IBS (Stabilizer)
    - 12 ea. 6-1/2" DC's
    - 4 ea. 4-1/2" HWDP
    - 4 ½" DP to surface
14. TIH and drill out float equipment
15. Drill 8-3/4" hole
    - Record all pressure tests on chart or Pason.
    - Drill out with fresh water based mud system as described above
    - Perform a deviation surveys every 500'
16. Continue to drill ahead with 8 ¾" PDC bit to a TD of ~ 7500'.
    c. The 8 ¾" hole will be drilled with LSND WBM (reference mud program).

d. Record bit on bottom hours and record mud motor hours daily in remarks section of morning report.

17. Plan on bit trip at or near top of Dakota formation. Change out bit to 8-3/4" SKHI616D-D2 and fresh mud motor.

18. Continue drilling to TD of ~7500' (10' to 15' into Chinle Formation)

19. Circulate hole clean and **Strap Out of Hole.**

20. While circulating prior to POOH, work pipe to assist in solids removal.

21. POOH to Intermediate Casing Point. If there is any drag, make wiper trip back to bottom and circulate and condition hole before POOH again.

22. TOH & Run Open Hole Logs

23. TIH to TD, circulate & condition hole as necessary. TOH, LDDP & DC's

24. Run 7" 26# L-80 LT&C casing.

- Casing Running Order:
- One (1) Float Shoe
- One (1) joint 7" 26# L-80 LT&C casing
- One (1) Float Collar
- 7" 26# L80 LT&C casing
- Place DV tool at 4000' (Note: verify DV tool placement with Engineer prior to running casing)
- 7" 26# N80 LT&C casing, as required, to surface
- Centralizers:
- One Bow Spring centralizer on bottom 10 jts.
- One Bow Spring centralizer on each 4th joint of casing to surface casing
- Two Bow Spring centralizers above and below each DV tool
- Clean threads, drift & visually inspect the casing on the rack.
- Torque each joint of casing to optimum make-up torque.
- Thread-lock the float collar and float shoe with thread lock compound.
- Use API modified pipe dope for remaining casing joints.
- Utilize a safety clamp (dog collar) on approximately first 10 joints of casing until enough weight is run to ensure casing slips are engaging properly. Upon reaching surface casing shoe, swap out elevators for minimum of 250-ton slip-type elevators and ensure circulating swage is ready to be picked up in the event difficulty is encountered running casing through open hole.

25. Wash casing down as required. Space out and land casing in wellhead with mandrel-type casing hanger.

Note: Record weight that casing is landed in bowl with mandrel-type casing hanger in Daily Drilling Report.

26. Once casing is landed, circulate a <u>minimum</u> of two full bottoms-up or until hole cleans up, whichever is greater, before cementing. Gradually stage pump rate up to 8-10 bpm while circulating to ensure that cavings and/or shale fragments are circulated out of the hole to minimize risk of packing off during the cement operations. Carefully monitor hole for losses while circulating.

27. Cement casing in 2 stages as follows: (Note: verify cement volumes with Engineer prior to ordering cement). Refer to vendor Cement Recommendations for cement details.

First Stage:

f. Pump schedule:

- Pump 10-bbls fresh water to fill lines and prime pumps
- Pressure test lines to 2,000 psi
- Pump 5 bbls of fresh water then 10 bbls of mud clean prior to pumping cement.
- Mix and pump 12.5 ppg lead cement slurry: 224 sx (450 cf)
- Mix and pump 13.0 ppg tail cement slurry: 180 sx (338 cf)
- Drop first-stage shutoff plug (top plug)
- Pump 10-bbls fresh water
- Displace with drilling fluid at 6-8 bpm. Carefully observe well for losses, and adjust displacement rate if required. Be sure to slow down displacement rate to 3 bpm or less for 15-20 bbl before and for 15-20 bbl after the first-stage shutoff plug reaches the DV tool at approximately 4,000'.

g. Bump the plug with 500 psi over final circulating pressure.

h. Release pressure and check pressure integrity of the float equipment.

i. Drop opening plug.

j. Wait required time for opening plug to fall inside casing to top of 2nd DV tool. This time will likely be required to put the cap back on the cement head after dropping the opening plug.

k. Pressure up to required pressure to open 1st stage tool.

l. Break circulation and continue to circulate while WOC. Carefully bring up pump rate and monitor returns for losses. Record volume of cement returned to surface. Circulate and WOC for 4 hours or longer before pumping second stage cement slurry, if samples indicate additional WOC time would be beneficial.

Second Stage:

a. Pump schedule:

- Pump 20-bbls water-based spacer mixed at 8.4 lb/gal.
- Mix and pump 12.5 ppg lead cement slurry: 414 sx (832 cf).
- Mix and pump 14.5 ppg tail cement slurry: 50 sx (70.5 cf)
- Drop closing plug
- Pump 10-bbls freshwater
- Displace with drilling fluid at 6-8 bpm then slow down displacement rate to 3 bpm before bumping plug.

b. Bump the plug with 500 psi over final circulating pressure, then slowly bring pressure up to closing pressure, which will be approximately the final circulating pressure plus required pressure to close 1st DV tool. Release pressure and check for flow back to ensure that the 1st stage tool is closed.

c. Report the estimated volume of cement returns.

m. Release pressure and check pressure integrity of the float equipment.

28. Lay down landing joint. Install the mandrel pack-off using a stand of HWDP and test pack-off seals to 2000 psi.

29. ND 11" 3M BOP Stack. NU 7-1/16" 5M x 4-1/16" Tubing Head Assembly. Be sure that bowl of Tubing Head Assembly is well greased to prevent corrosion while waiting on workover rig to complete well for SWD disposal.

30. NU 4-1/16" 5M Gate Valve, in order to secure well.

31. Release and RD drilling rig.

John Thompson
Engineer

Western Refining Southwest, Inc. – WDW #2

Cement Slurry Details (Attachment for NMOCD – APD)

Note: Actual Slurry Design will vary depending upon vendor selection and actual hole conditions.

17-1/2" Hole – 13-3/8", 40 ppf, J55 casing at ~ 300 ft

394 (548 cf) sacks Type III Cement, 2% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 59.2% Fresh Water

Yield:1.39 cf/sx
Slurry wt 14.60 ppg

12-1/4" Hole - 9-5/8", 36 ppf, J55 casing at ~ 3600 ft

Lead:
806 sacks (1621 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx
Slurry wt: 12.50 ppg

Tail:
50 sacks (70.5 cf) Type III Cement, 2.25% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 0.02% gps FP-6L, 60.4% Fresh Water

Yield: 1.41 cf/sx
Slurry Wt: 14.5 ppg

8-3/4" Hole - 7", 26 ppf, L80 casing at ~ 7500 ft

Stage Tool (DV) at ~ 4000'

Stage no. 1

Lead:
224 sacks (450 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx

Slurry wt: 12.50 ppg

Tail:

180 sacks (338 cf) (10:90) Poz L:Type III Cement, 0.25% bwoc Calcium Chloride, 0.3% bwoc CD-32, 0.02 gps FP-6L, 0.5% bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 5 lbs/sx Kol-Seal, 87.8% Fresh Water

Yield: 1.88 cf/sx
Slurry Wt: 13.0 ppg

Stage no. 2

Lead:

414 sacks (832 cf) (20:80) poz L:Type III cement w/ 0.1 gps FP-6L, 0.25 lbs/sack Cello Flake, 0.3% bwoc CD-32, 5 lbs/sx Kol-Seal, 0.5 % bwoc Sodium Metasilicate, 0.35% bwoc MPA-170, 5 lbs/sx CSE-2, 102.5% Fresh Water

Yield: 2.01 cf/sx

Slurry wt: 12.50 ppg

Tail:

50 sacks (70.5 cf) Type III Cement, 2.25% bwoc Calcium Chloride, 0.25 lbs/sack Cello Flake, 0.02% gps FP-6L, 60.4% Fresh Water

Yield: 1.41 cf/sx
Slurry Wt: 14.5 ppg

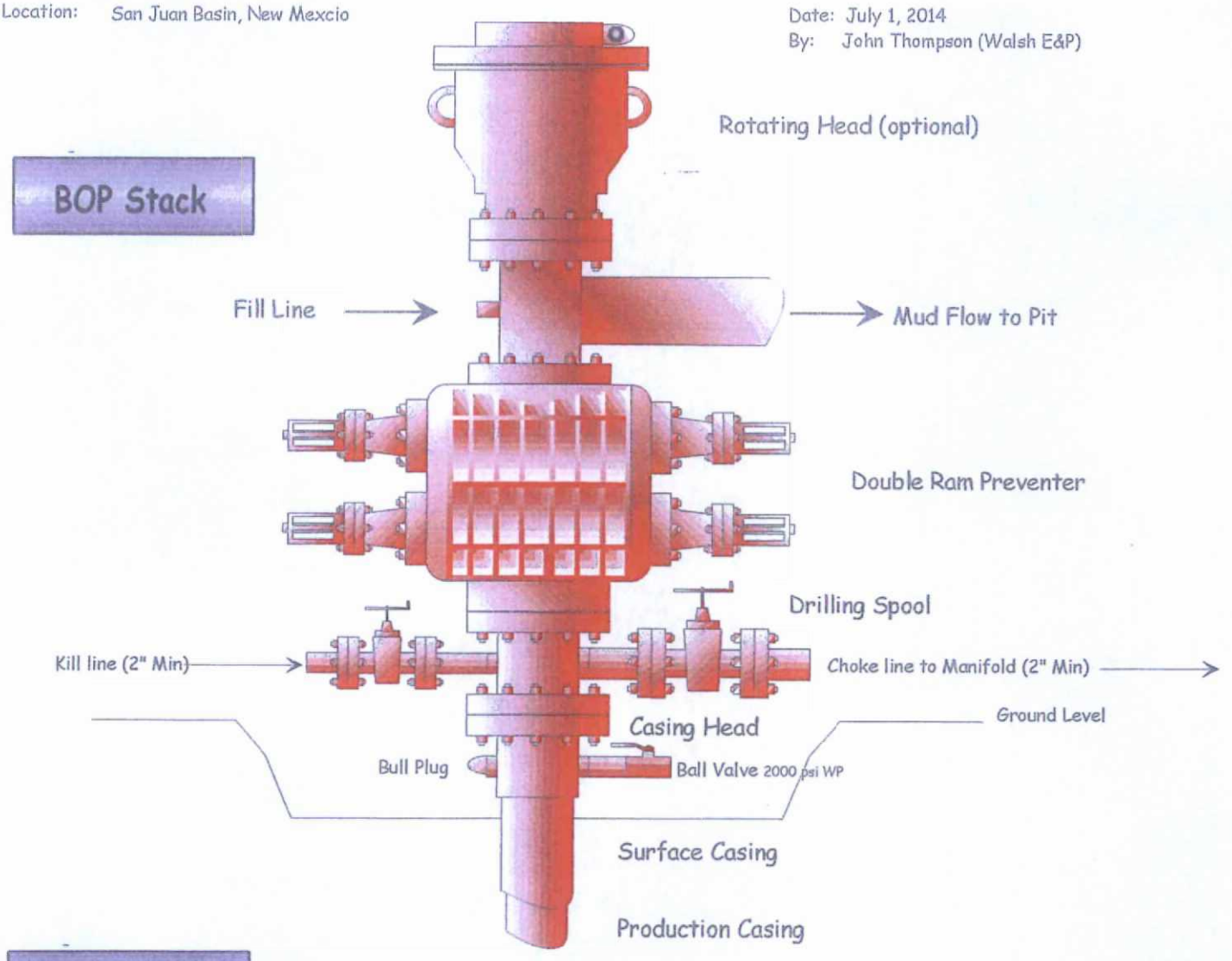
Well Control Equipment Schematic for 2M Service

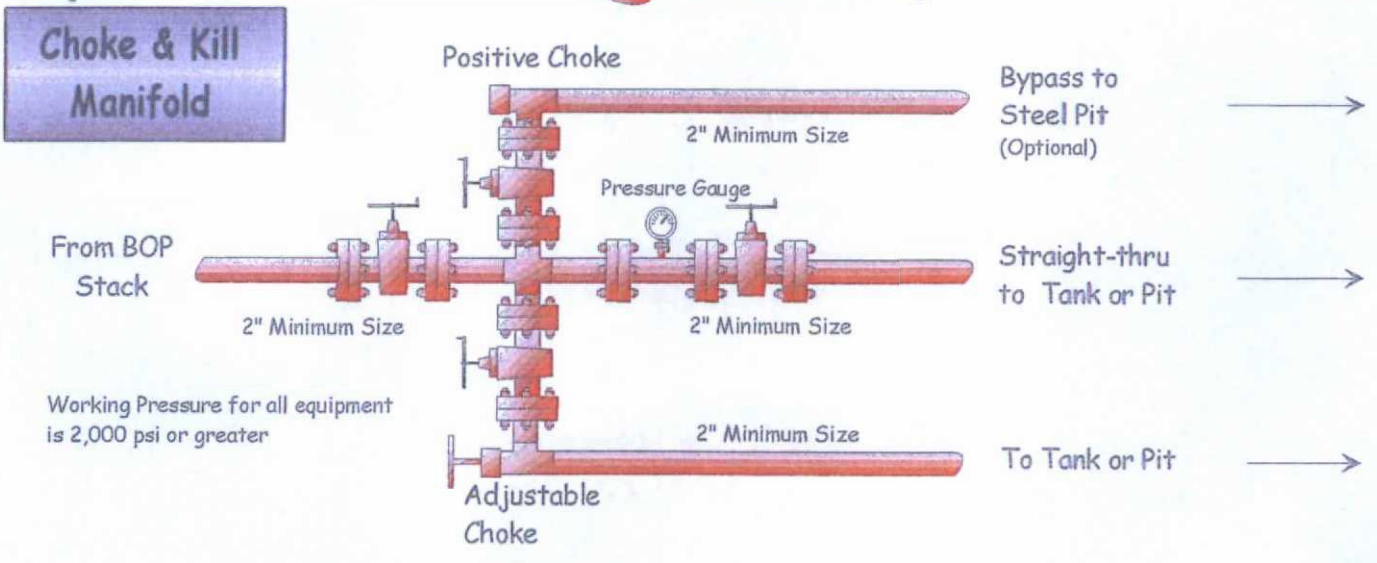
Attachment to Drilling Technical Program

Exhibit #1
Typical BOP setup

Location: San Juan Basin, New Mexcio

Date: July 1, 2014
By: John Thompson (Walsh E&P)





New Mexico Oil Conservation Division Conditions of Approval (C-101 Application for permit to drill)

- ✓ Notify Aztec OCD 24hrs prior to casing & cement.
- ✓ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ✓ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ✓ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ✓ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- ✓ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.
- ✓ Submit a C-105 Final Well Completion Form with all required information for OCD approval before any injection commences. All open hole and cased hole logs shall be included with the C-105.
- ✓ A Salt Water Disposal (SWD) Order shall be obtained from OCD prior to commencing injection
- ✓ After cementing, but before commencing tests all Casing Strings shall stand cemented in accordance with 19.15.16.10.G(2) prior to testing
- ✓ All Casing Strings must be pressure tested for 30 minutes in accordance with 19.15.16.10.I(1)
- ✓ The Operator shall sample the injection zone(s), analyze and submit the injection zone fluid environmental laboratory analytical water quality data with EPA QA/QC and DQO documentation to OCD for approval from the District Supervisor before injection may occur into the well. The chemical parameters to be analyzed are: pH (Method 9040); Eh; Specific

conductance; Specific gravity; Temperature; and general ground water quality parameters (general chemistry/cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, **total dissolved solids**, cation/anion balance, pH, and bromide using the methods specified in 40 CFR 136.3).

- ✓ All casing strings shall be designed for cement to be circulated to surface. A cement bond log (CBL) is required to be submitted and approved by the OCD prior to the continuation of work for all casing strings that do not circulate.
- ✓ Additionally, the operator shall run a CBL for the production casing. The CBL shall be submitted to and approved by the District Supervisor prior to commencing injection.
- ✓ The operator shall conduct a mudlog over the permitted injection zone as part of the logging suite to be submitted to OCD.
- ✓ Any application for an injection pressure increase above the administrative gradient of 0.2 psi per foot shall require a new step rate test conducted following the conclusion of any activities that modify the permitted injection zone including well stimulation, addition of perforations or rehabilitation of the perforated interval.