State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Adrienne Sandoval, Division Director
Oil Conservation Division

New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 5/2/2019
Well information;
Operator DJR, Well Name and Number North Alamito Unit 333H
API# 30-043-21333 (214), Section 31, Township 23 N/S, Range 7 E/W

Conditions of Approval: (See the below checked and handwritten conditions)

- ✓ Notify Aztec OCD 24hrs prior to casing & cement.
- ✓ If cement doesn't circulate on any casing string or stage tool a CBL will be required. Contact the regulatory agencies prior to proceeding.
- ✓ Hold C-104 for directional survey & "As Drilled" Plat
- ✓ Hold C-104 for: NSL, NSP, DHC, 5.9 Compliance
- ○ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ○ 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
- ○ Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- ✓ 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.

Once well is Spud status will change to New & work type will change to Re-entry

- File Sundry to BLM for API # Change

NMOCD Approved by Signature

1/24/20
Date - See Change of Plans Next document

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.
NMNM006681

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.
/1/NORTH ALAMITO UNIT / NMNM13522

8. Lease Name and Well No.
NORTH ALAMITO UNIT
333H

2. Name of Operator
DJR OPERATING LLC

9. API Well No.
30-043-21314

3a. Address
1600 Broadway #1960 Denver CO 80202

3b. Phone No. *(include area code)*
(303)595-7430

10. Field and Pool, or Exploratory
ALAMITO MANCOS N (OIL)

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWSE / 2215 FSL / 2531 FEL / LAT 36.182089 / LONG -107.615097
At proposed prod. zone NESW / 2336 FSL / 2263 FWL / LAT 36.16781 / LONG -107.598993

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 31 / T23N / R7W / NMP

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

12. County or Parish
SANDOVAL

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
2215 feet

16. No of acres in lease
642.56

17. Spacing Unit dedicated to this well
480.65

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
20 feet

19. Proposed Depth
5098 feet / 12283 feet

20. BLM/BIA Bond No. in file
FED: NMB001464

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6979 feet

22. Approximate date work will start*
01/05/2020

23. Estimated duration
10 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)	Shaw-Marie N. Ford / Ph: (505)632-3476	05/02/2019

Title
Regulatory Specialist

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Dave Mankiewicz / Ph: (505)564-7761	12/23/2019

Title	Office
AFM-Minerals	FARMINGTON

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.

NMOCD
DEC 24 2019
DISTRICT III

APPROVED WITH CONDITIONS

(Continued on page 2)

Approval Date: 12/23/2019

*(Instructions on page 2)

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, 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
30-043-21214	98174	~~NORTH ALAMITO MANCOS OIL POOL~~ Alamito N; Mancos

4 Property Code	5 Property Name	6 Well Number
325267	NORTH ALAMITO UNIT	333H

7 OGRID No.	8 Operator Name	9 Elevation
371838	DJR OPERATING, LLC	6979'

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
J	31	23N	7W		2215'	SOUTH	2531'	EAST	SANDOVAL

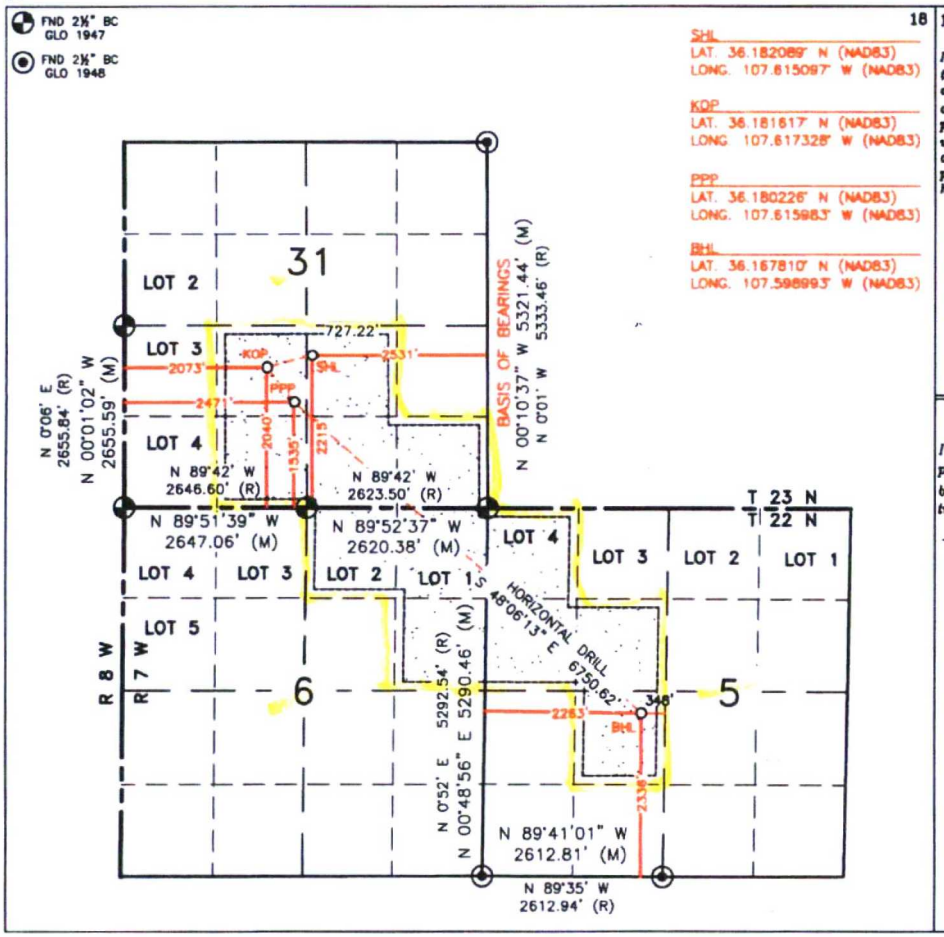
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	5	22N	7W		2336'	SOUTH	2263'	WEST	SANDOVAL

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
PENETRATED SPACING UNIT: SEC 31: NW/SE, NE/SW, SE/SW SW/SE & SE/SE (200 AC.); SEC 6: LOT1, LOT 2 & SE/NE (120.36 AC.) SEC 5: LOT 4, SW/NW, SE/NW & NE/SW (160.29 AC.) = 480.65 ACRES TOTAL			R-14081, R-14081A

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

16



18

SHL
LAT. 36.182089° N (NAD83)
LONG. 107.615097° W (NAD83)

KOP
LAT. 36.181617° N (NAD83)
LONG. 107.617328° W (NAD83)

PPP
LAT. 36.180226° N (NAD83)
LONG. 107.615983° W (NAD83)

BHL
LAT. 36.167810° N (NAD83)
LONG. 107.598993° W (NAD83)

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 working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Steven Merrell 6/14/19
Signature Date

Steven Merrell
Printed Name

Smerrell@djrllc.com
E-mail Address

SURVEYOR CERTIFICATION

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

MARCH 15, 2019
Date of Survey

Signature and Seal of Professional Surveyor:

HENRY P. BROADHURST
NEW MEXICO
11393
PROFESSIONAL SURVEYOR

Certificate Number 11393

Surface - Federal

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, N.M. 88210
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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

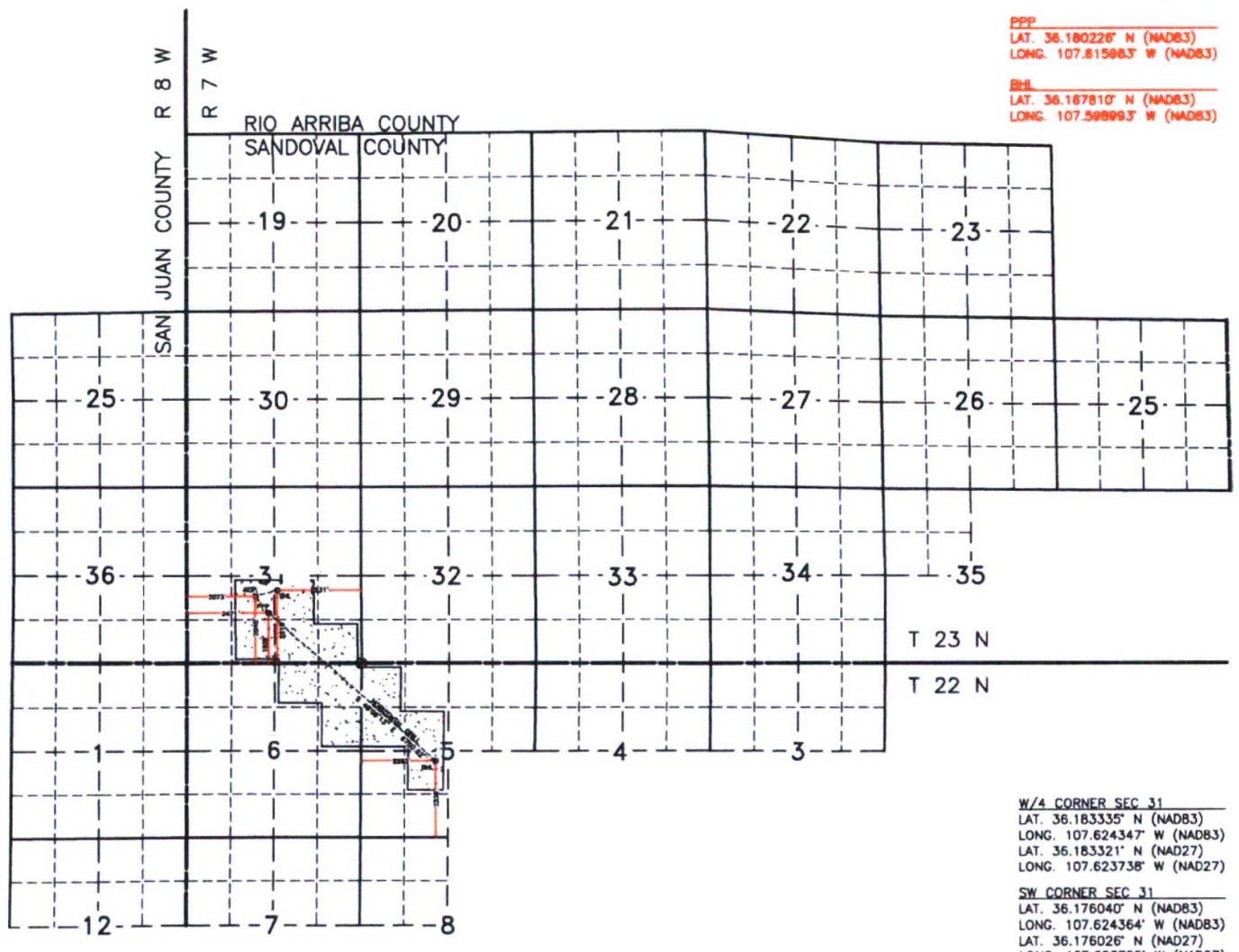
DJR OPERATING, LLC
NORTH ALAMITO UNIT #333H

SHL
LAT. 36.182089° N (NAD83)
LONG. 107.615097° W (NADB3)

KOP
LAT. 36.181617° N (NAD83)
LONG. 107.617328° W (NADB3)

PPP
LAT. 36.180226° N (NAD83)
LONG. 107.615983° W (NADB3)

BHL
LAT. 36.167810° N (NAD83)
LONG. 107.598993° W (NADB3)



W/4 CORNER SEC 31
LAT. 36.183335° N (NAD83)
LONG. 107.624347° W (NADB3)
LAT. 36.183321° N (NAD27)
LONG. 107.623738° W (NAD27)

SW CORNER SEC 31
LAT. 36.176040° N (NAD83)
LONG. 107.624364° W (NADB3)
LAT. 36.176026° N (NAD27)
LONG. 107.623755° W (NAD27)

S/4 CORNER SEC 5
LAT. 36.161386° N (NAD83)
LONG. 107.597962° W (NADB3)
LAT. 36.161372° N (NAD27)
LONG. 107.597354° W (NAD27)

S/4 CORNER SEC 31
LAT. 36.176006° N (NAD83)
LONG. 107.615395° W (NADB3)
LAT. 36.175992° N (NAD27)
LONG. 107.614786° W (NAD27)

SW CORNER SEC 5
LAT. 36.161443° N (NAD83)
LONG. 107.606813° W (NADB3)
LAT. 36.161429° N (NAD27)
LONG. 107.606205° W (NAD27)

SE CORNER SEC 31
LAT. 36.175974° N (NAD83)
LONG. 107.606516° W (NADB3)
LAT. 36.175960° N (NAD27)
LONG. 107.605908° W (NAD27)

PENETRATED SPACING UNIT;
SEC 31: NW/SE, NE/SW, SE/SW SW/SE & SE/SE (200 AC.);
SEC 6: LOT 1, LOT 2 & SE/NE (120.36 AC.)
SEC 5: LOT 4, SW/NW, SE/NW & NE/SW (160.29 AC.) =
480.65 ACRES TOTAL
TOTAL 14,262.78 ACRES: T23N R7W SEC. 19-23, 25, 26-34 (ALL); 35 (NW/4); T22N R7W SEC. 3 & 4 (N/2); 5 (N/2, SW/4); 6 (ALL); 7 (N/2); 8 (NW/4); T23N R8W SEC. 25, 36 (ALL); T22N R8W SEC. 1 (ALL); SEC. 12 (N/2) - UNDIVIDED UNIT

DJR Operating

DRILLING PLAN
North Alamito Unit 333H
Sandoval County, New Mexico

Surface Location
2531-ft FEL & 2215-ft FSL
Sec 31 T23N R7W
Graded Elevation 6979' MSL
RKB Elevation 6993' (14' KB)

SHL Geographical Coordinates (NAD-83)
Latitude 36.1820890° N
Longitude 107.6150970° W

Kick Off Point for Horizontal Build Curve
4467-ft MD
4405-ft TVD

Local Coordinates (from SHL)
173-ft South
658-ft West

Heel Location (Pay zone entry)
2471-ft FWL & 1535-ft FSL
Sec 31 T23N R7W

Heel Geographical Coordinates (NAD-83)
Latitude 36.1802257° N
Longitude 107.61598320° W

Bottom Hole Location (TD)
2263-ft FWL & 2336-ft FSL
Sec 5 T22N R7W

BHL Geographical Coordinates (NAD-83)
Latitude 36.1678098° N
Longitude 107.5989933° W

First Take Point (FTP)
5593-ft MD
Gallup C Sand

FTP Geographical Coordinates (NAD-83)
Latitude 36.1801154° N
Longitude 107.6158322° W

Last Take Point (LTP)
12223-ft MD
Gallup C Sand

LTP Geographical Coordinates (NAD-83)
Latitude 36.1679202° N
Longitude 107.5991444° W

Well objectives
This well is planned as a 6750-ft lateral in the Gallup C sand.

Bottom Hole temperature and pressure
The temperature in the Gallup C horizontal objective is 138°F. Bottom hole pressure in the Gallup C is forecast to be 1985 psi.

Formation Tops (Sd = Sand; Sh = Shale; Siltstone = Slt, Coal = C; W = water; O = oil; G = gas; NP = no penetration)

Name	MD (ft)	TVD (ft)	Lithology	Pore fluid	Expected Pore Pressure (ppg)	Planned Mud Weight (ppg)
Ojo Alamo	877	875	Sd	W	8.3	8.4 – 8.8
Kirtland	930	929	Sh	-	8.3	8.4 – 8.8
Fruitland	1177	1172	C	G	8.3	9.0 - 9.5
Picture Cliffs	1466	1456	Sd	W	8.3	9.0 - 9.5
Lewis	1637	1624	Sh	-		9.0 - 9.5
Chacra	2245	2222	Sd	-	8.3	9.0 - 9.5
Menefee	2963	2927	Sd, C	G	8.3	9.0 - 9.5
Point Lookout	3878	3826	Sd	-	8.3	9.0 - 9.5
Mancos	4061	4006	Sh	-		9.0 - 9.5
Mancos Silt	4401	4340	Slt	O/G	6.6	9.0 - 9.5
Gallup A	4903	4815	Slt	O/G	6.6	9.0 - 9.5
Gallup B	4945	4849	Sd	O/G	6.6	8.8 -9.0
Gallup C	5088	4951	Sd	O/G	6.6	8.8 -9.0
Target	5533	5098	Sd	O/G	6.6	8.8 -9.0

Casing Program

Casing OD	Hole Size	Weight (#/ft)	Grade	Coupling	MD Top	MD Bottom	TVD Top	TVD Bottom	Top of Cement
9-5/8"	12-1/4"	36	K-55	STC	surf	350	surf	350	surface
7"	8-3/4"	26	K-55	LTC	surf	5523	surf	5098	surface
4-1/2"	6-1/8"	11.6	P-110	BTC	5313	12283	5064	5098	5313

Note: all casing will be new

Casing Design Load Cases

	Description	Casing String 9-5/8" Surface	7" Intermediate	4-1/2" Production Liner
Collapse	Full internal evacuation[1]	✓	✓	✓
	Cementing	✓	✓	✓
Burst	Pressure test	✓[2]	✓[2]	✓
	Gas kick		✓[3]	
	Fracture at shoe, 1/3 BHP at surface		✓[4]	
	Injection down casing			✓[5]
Axial	Dynamic load on casing coupling[6]	✓	✓	✓
Axial	Overpull[7]	✓	✓	✓

Note #

1 Fluid level at shoe, air column to surface, pore pressure outside
2 Tested to 80% of minimum internal yield with freshwater inside, pore pressure outside
3 50 bbl kick at TD, 0.50 ppg intensity, 4" drill pipe, 9.0 ppg mud, fracture gradient at shoe
4 2060 psi BHP, 687 psi surface pressure, 12.5 ppg EMW shoe integrity
5 Surface stimulation pressure of 8000 psi on 8.3 ppg fluid column. Stimulation will be down frac string, so load does not apply to 7" intermediate casing.
6 Shock load from abrupt pipe deceleration, evaluated against coupling rating
7 Overpull values as follows: Surface casing 20,000 lbs, Intermediate & Production 100,000 lbs

Casing Design Factors

Casing string	Casing OD	Design Factors Burst	Collapse	Axial	Triaxial
Surface	9-5/8"	1.25	13.38	8.16	1.56
Intermediate	7"	1.25	1.50	1.68	1.34
Production liner	4-1/2"	1.37	3.68	1.88	1.69

Cement Design

Additives: A=Accelerator; B=Bond Enhancer; De=Defoamer; Di=Dispersant; Ex=Extender; Fl=Fluid Loss L=Lost Circulation; R=Retarder; SA=Suspending Agent; THX=Thixotropic Additive; V=Viscosifier

9-5/8" Surface Casing	Lead
Name	Redi-Mix
Type	I-II
Additives	20% Fly Ash
Planned top	Surface
Density (ppg)	14.50
Yield (cf/sx)	1.61
Mix water (gal/sx)	7.41
Volume (sx)	114
Volume (bbls)	33

7" Intermediate Casing	Lead	Tail
Halliburton Name	HALCEM	VARICEM
Type	Poz/G	Poz/G
Additives	Ex, L, SA	Ex, Fl, SA, L, THX
Planned top	Surface	3561-ft
Density (ppg)	12.30	13.50
Yield (cf/sx)	1.95	1.30
Mix water (gal/sx)	10.14	5.64
Volume (sx)	450	392
Volume (bbls)	157	91

4-1/2" Production Liner	Lead
Halliburton Name	EXTENDACEM
Type	Poz/G
Additives	B, De, Di, Fl, Re, V
Planned top	5313-ft
Density (ppg)	13.3
Yield (cf/sx)	1.36
Mix water (gal/sx)	5.94
Volume (sx)	718
Volume (bbls)	174

Wellhead & Pressure Control
The well head will be an 11" 5M multi-bowl system. A 2M BOPE conforming to Onshore Order #2 will be installed on the surface casing. The BOP and accumulator will meet API 16D and 16E respectively.

A PVT mud monitoring system and a trip tank will be rigged up and operational for all hole intervals. An electronic geolograph will be employed to monitor and record drilling data (ROP, WOB, SPM, Pressure, RPM and torque).

Mud Program
Surface hole will be drilled with a fresh water, native mud system. In intermediate hole, a low weight 7% KCl LSND drilling fluid will be used, with KCl providing chemical stability for the young shales and clays present in the interval. In production hole a LSND system with polymer and lubricant additives is programmed. Sufficient drill water and mud additives will be on hand to maintain adequate pit volumes and maintain well control.

Hole Section	Fluid type	Interval (MD)	Density (ppg)	Funnel Viscosity	Yield Point	Fluid Loss (cc/30 min)
Surface	Fresh water spud mud	0 – 350	8.4 – 8.8	32 – 44	2 – 12	NC
Intermediate	7% KCl Low solids, non-dispersed	350 – 5523	9.0 – 9.5	38 – 45	8 – 14	<20
Production	Low solids, non-dispersed	5523 – 12283	8.8 – 9.2	34 – 38	6 – 8	6 – 8

Cores, tests and logs
Wellbore surveying: Drift (inclination only) surveys will be obtained in surface hole. MWD directional surveys will be taken in intermediate and production hole.

Logging while drilling: None in surface hole. MWD GR in intermediate and production hole.

Mud logging: a two-person mud logging unit with C1 – C4 gas analysis will be operational in intermediate and production hole.

Electric logging: No open hole electric logs are programmed. A cased hole GR/CCL will be run during completions for perforating depth control.

Cuttings and drilling fluids management
A closed loop, steel tank-based circulating system will be used. In addition to the rig solids control equipment, a dewatering centrifuge and chemical flocculation system will be operational to strip solids from the whole mud. All solids will be collected in 3-sided bins and will then be put into transports with a bucket loader. Drying agents will be

used if necessary. The solids will be taken to a licensed commercial disposal facility. Whole mud will be dewatered back to drill water and used as make up for subsequent wells or hauled off for disposal. A diagram of the closed loop system is included.

Completion
It is envisioned that this well will be completed with a multi-stage sand frac, using the plug and perf technique. After drilling out the plugs, the current plan is to install a 2-7/8" plunger-assisted gas lift tubing string. The stimulation and completion plan will be sundried at a later date.

DJR Operating

Pad name : J31 2307
Well name : NAU 333H

SHL Latitude : 36.18208900
SHL Longitude : -107.61509700

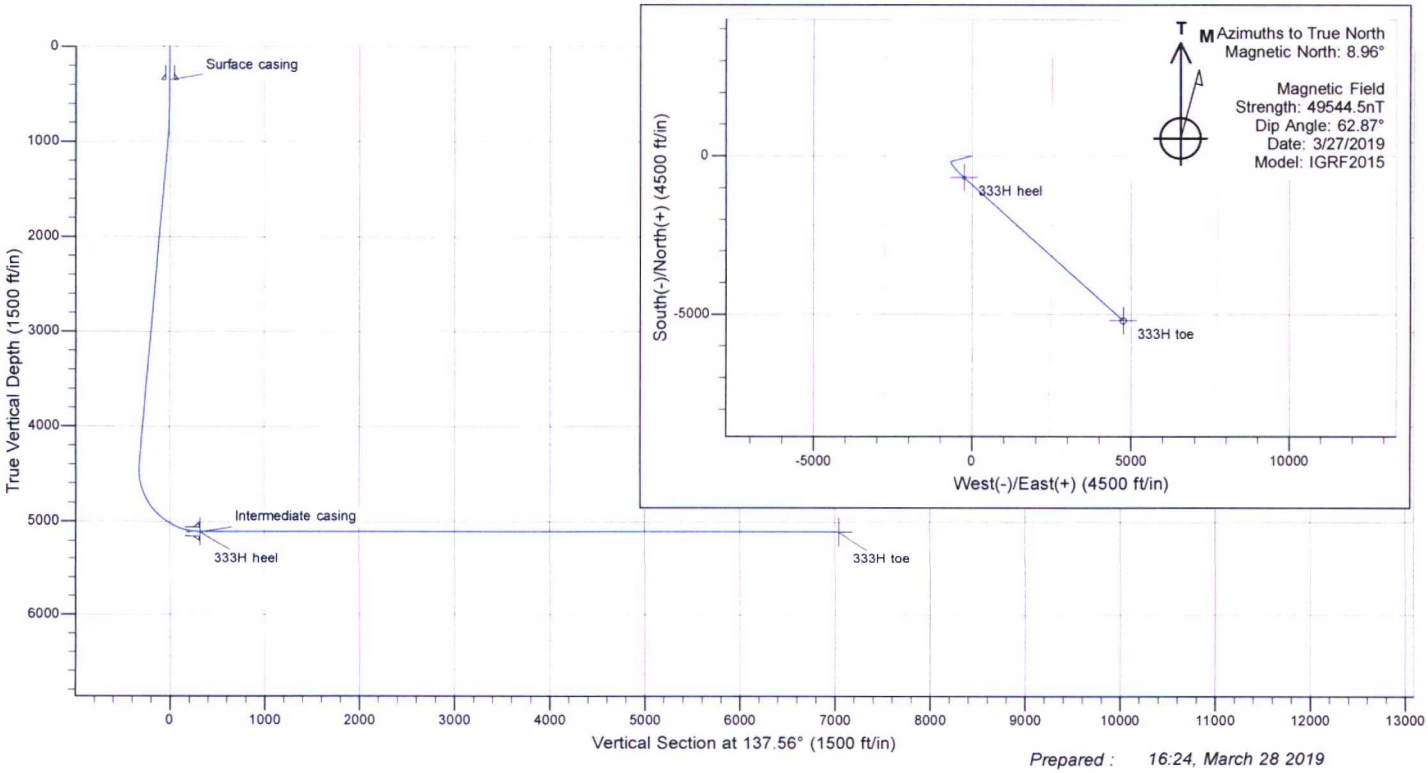
US State Plane 1983
North American Datum 1983
New Mexico Western Zone

TRAJECTORY DETAILS
Pad elevation : 6979 RKB @ 6993ft (RIG TBD)

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0	0.00	0.00	0	0	0	0.00	0.00	0	
550	0.00	0.00	550	0	0	0.00	0.00	0	
1087	10.75	255.31	1084	-13	-49	2.00	255.31	-23	
4467	10.75	255.31	4405	-173	-658	0.00	0.00	-317	
5533	90.00	132.03	5098	-678	-262	9.00	-122.82	324	333H heel
12283	90.00	132.03	5098	-5198	4753	0.00	0.00	7043	333H toe

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
333H heel	5098	-678	-262	1884971	2787235	36.18022570	-107.61598320
333H toe	5098	-5198	4753	1880463	2792259	36.16780980	-107.59899330



Prepared : 16:24, March 28 2019

DJR Operating

North Alamito Unit
J31 2307
NAU 333H

Original drilling

Plan: APD

Standard Planning Report

28 March, 2019

Planning Report

Database:	EDM	**Local Co-ordinate Reference:**	Well NAU 333H
Company:	DJR Operating	**TVD Reference:**	RKB @ 6993ft (RIG TBD)
Project:	North Alamito Unit	**MD Reference:**	RKB @ 6993ft (RIG TBD)
Site:	J31 2307	**North Reference:**	True
Well:	NAU 333H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original drilling		
Design:	APD		

Project	North Alamito Unit		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	J31 2307				
Site Position:		**Northing:**	1,885,650 usft	**Latitude:**	36.18208900
From:	Lat/Long	**Easting:**	2,787,495 usft	**Longitude:**	-107.61509700
Position Uncertainty:	0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.13 °

Well	NAU 333H					
Well Position	**+N/-S**	0 ft	**Northing:**	1,885,650 usft	**Latitude:**	36.18208900
	+E/-W	0 ft	**Easting:**	2,787,495 usft	**Longitude:**	-107.61509700
Position Uncertainty		0 ft	**Wellhead Elevation:**		**Ground Level:**	6979 ft

Wellbore Original drilling

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	3/27/2019	8.96	62.87	49,544.46089392

Design	APD				
Audit Notes:					
Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0	0	0	137.56

Plan Survey Tool Program **Date** 3/28/2019

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0	12,283	APD (Original drilling)	MWD+IGRF	
				OWSG MWD + IGRF or WMM	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0	0.00	0.00	0	0	0	0.00	0.00	0.00	0.00	
550	0.00	0.00	550	0	0	0.00	0.00	0.00	0.00	
1087	10.75	255.31	1084	-13	-49	2.00	2.00	0.00	255.31	
4467	10.75	255.31	4405	-173	-658	0.00	0.00	0.00	0.00	
5533	90.00	132.03	5098	-678	-262	9.00	7.44	-11.57	-122.82	333H heel
12,283	90.00	132.03	5098	-5198	4753	0.00	0.00	0.00	0.00	333H toe

Database:	EDM	**Local Co-ordinate Reference:**	Well NAU 333H
Company:	DJR Operating	**TVD Reference:**	RKB @ 6993ft (RIG TBD)
Project:	North Alamito Unit	**MD Reference:**	RKB @ 6993ft (RIG TBD)
Site:	J31 2307	**North Reference:**	True
Well:	NAU 333H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original drilling		
Design:	APD		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0	0.00	0.00	0	0	0	0	0.00	0.00	0.00
100	0.00	0.00	100	0	0	0	0.00	0.00	0.00
200	0.00	0.00	200	0	0	0	0.00	0.00	0.00
300	0.00	0.00	300	0	0	0	0.00	0.00	0.00
350	0.00	0.00	350	0	0	0	0.00	0.00	0.00
Surface casing									
400	0.00	0.00	400	0	0	0	0.00	0.00	0.00
500	0.00	0.00	500	0	0	0	0.00	0.00	0.00
550	0.00	0.00	550	0	0	0	0.00	0.00	0.00
600	1.00	255.31	600	0	0	0	2.00	2.00	0.00
700	3.00	255.31	700	-1	-4	-2	2.00	2.00	0.00
800	5.00	255.31	800	-3	-11	-5	2.00	2.00	0.00
890	6.80	255.31	889	-5	-19	-9	2.00	2.00	0.00
Ojo Alamo									
900	7.00	255.31	899	-5	-21	-10	2.00	2.00	0.00
930	7.60	255.31	929	-6	-24	-12	2.00	2.00	0.00
Kirtland									
1000	9.00	255.31	998	-9	-34	-16	2.00	2.00	0.00
1087	10.75	255.31	1084	-13	-49	-23	2.00	2.00	0.00
1100	10.75	255.31	1097	-13	-51	-24	0.00	0.00	0.00
1177	10.75	255.31	1172	-17	-65	-31	0.00	0.00	0.00
Fruitland									
1200	10.75	255.31	1195	-18	-69	-33	0.00	0.00	0.00
1300	10.75	255.31	1293	-23	-87	-42	0.00	0.00	0.00
1400	10.75	255.31	1391	-28	-105	-51	0.00	0.00	0.00
1466	10.75	255.31	1456	-31	-117	-56	0.00	0.00	0.00
Picture Cliffs									
1500	10.75	255.31	1490	-32	-123	-59	0.00	0.00	0.00
1600	10.75	255.31	1588	-37	-141	-68	0.00	0.00	0.00
1637	10.75	255.31	1624	-39	-148	-71	0.00	0.00	0.00
Lewis									
1700	10.75	255.31	1686	-42	-159	-77	0.00	0.00	0.00
1800	10.75	255.31	1784	-46	-177	-85	0.00	0.00	0.00
1900	10.75	255.31	1883	-51	-195	-94	0.00	0.00	0.00
2000	10.75	255.31	1981	-56	-213	-103	0.00	0.00	0.00
2100	10.75	255.31	2079	-61	-231	-111	0.00	0.00	0.00
2200	10.75	255.31	2177	-65	-249	-120	0.00	0.00	0.00
2245	10.75	255.31	2222	-68	-258	-124	0.00	0.00	0.00
Chacra									
2300	10.75	255.31	2276	-70	-267	-129	0.00	0.00	0.00
2400	10.75	255.31	2374	-75	-285	-137	0.00	0.00	0.00
2500	10.75	255.31	2472	-80	-303	-146	0.00	0.00	0.00
2600	10.75	255.31	2570	-84	-321	-155	0.00	0.00	0.00
2700	10.75	255.31	2669	-89	-340	-163	0.00	0.00	0.00
2800	10.75	255.31	2767	-94	-358	-172	0.00	0.00	0.00
2900	10.75	255.31	2865	-98	-376	-181	0.00	0.00	0.00
2939	10.75	255.31	2903	-100	-383	-184	0.00	0.00	0.00
Cliffhouse									
2963	10.75	255.31	2927	-101	-387	-186	0.00	0.00	0.00
Menefee									
3000	10.75	255.31	2963	-103	-394	-189	0.00	0.00	0.00
3100	10.75	255.31	3062	-108	-412	-198	0.00	0.00	0.00
3200	10.75	255.31	3160	-113	-430	-207	0.00	0.00	0.00

Database:	EDM	**Local Co-ordinate Reference:**	Well NAU 333H
Company:	DJR Operating	**TVD Reference:**	RKB @ 6993ft (RIG TBD)
Project:	North Alamito Unit	**MD Reference:**	RKB @ 6993ft (RIG TBD)
Site:	J31 2307	**North Reference:**	True
Well:	NAU 333H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original drilling		
Design:	APD		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3300	10.75	255.31	3258	-117	-448	-216	0.00	0.00	0.00
3400	10.75	255.31	3356	-122	-466	-224	0.00	0.00	0.00
3500	10.75	255.31	3455	-127	-484	-233	0.00	0.00	0.00
3600	10.75	255.31	3553	-132	-502	-242	0.00	0.00	0.00
3700	10.75	255.31	3651	-136	-520	-250	0.00	0.00	0.00
3800	10.75	255.31	3749	-141	-538	-259	0.00	0.00	0.00
3878	10.75	255.31	3826	-145	-552	-266	0.00	0.00	0.00
Point Lookout									
3900	10.75	255.31	3848	-146	-556	-268	0.00	0.00	0.00
4000	10.75	255.31	3946	-151	-574	-276	0.00	0.00	0.00
4061	10.75	255.31	4006	-153	-585	-282	0.00	0.00	0.00
Mancos									
4100	10.75	255.31	4044	-155	-592	-285	0.00	0.00	0.00
4200	10.75	255.31	4142	-160	-610	-294	0.00	0.00	0.00
4300	10.75	255.31	4240	-165	-628	-302	0.00	0.00	0.00
4400	10.75	255.31	4339	-169	-646	-311	0.00	0.00	0.00
4401	10.75	255.31	4340	-170	-646	-311	0.00	0.00	0.00
Mancos Silt									
4467	10.75	255.31	4405	-173	-658	-317	0.00	0.00	0.00
KOP									
4500	9.48	240.15	4437	-175	-664	-319	8.99	-3.88	-46.38
4550	9.15	212.15	4486	-180	-669	-319	9.00	-0.66	-56.01
4600	10.85	187.90	4536	-188	-672	-315	9.00	3.40	-48.50
4650	13.86	172.07	4585	-199	-672	-307	9.00	6.01	-31.65
4700	17.50	162.24	4633	-212	-669	-295	9.00	7.29	-19.66
4750	21.47	155.82	4680	-227	-663	-279	9.00	7.93	-12.83
4800	25.60	151.36	4726	-245	-654	-260	9.00	8.27	-8.92
4850	29.84	148.09	4770	-265	-642	-238	9.00	8.47	-6.56
4900	34.14	145.56	4812	-287	-628	-211	9.00	8.60	-5.05
4903	34.42	145.41	4815	-289	-626	-210	9.00	8.64	-4.45
Gallup A									
4945	38.08	143.71	4849	-309	-612	-185	9.00	8.68	-4.04
Gallup B									
4950	38.47	143.54	4853	-312	-610	-182	9.00	8.71	-3.68
5000	42.84	141.88	4891	-337	-591	-150	9.00	8.74	-3.33
5050	47.23	140.47	4926	-365	-568	-114	9.00	8.78	-2.82
5088	50.61	139.51	4951	-387	-550	-85	9.00	8.80	-2.49
Gallup C									
5100	51.63	139.24	4958	-394	-544	-76	9.00	8.82	-2.33
5150	56.05	138.16	4988	-424	-517	-36	9.00	8.83	-2.17
5200	60.47	137.18	5014	-456	-489	7	9.00	8.85	-1.95
5250	64.90	136.29	5037	-488	-458	51	9.00	8.86	-1.79
5300	69.33	135.46	5057	-521	-426	97	9.00	8.87	-1.66
5323	71.34	135.10	5064	-536	-411	118	9.00	8.87	-1.59
Top of liner									
5350	73.77	134.67	5072	-555	-393	144	9.00	8.88	-1.55
5400	78.21	133.92	5084	-589	-358	193	9.00	8.88	-1.50
5450	82.66	133.20	5093	-622	-322	242	9.00	8.89	-1.45
5500	87.10	132.49	5097	-656	-286	292	9.00	8.89	-1.42
5523	89.11	132.17	5098	-672	-269	314	9.00	8.89	-1.41
Intermediate casing									
5533	90.00	132.03	5098	-678	-262	324	9.00	8.89	-1.41

Database:	EDM	**Local Co-ordinate Reference:**	Well NAU 333H
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Site:	J31 2307	**North Reference:**	True
Well:	NAU 333H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original drilling		
Design:	APD		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Target									
5593	90.00	132.03	5098	-718	-217	384	0.00	0.00	0.00
First take point									
5600	90.00	132.03	5098	-723	-211	391	0.00	0.00	0.00
5700	90.00	132.03	5098	-790	-137	491	0.00	0.00	0.00
5800	90.00	132.03	5098	-857	-63	590	0.00	0.00	0.00
5900	90.00	132.03	5098	-924	11	690	0.00	0.00	0.00
6000	90.00	132.03	5098	-991	86	789	0.00	0.00	0.00
6100	90.00	132.03	5098	-1058	160	889	0.00	0.00	0.00
6200	90.00	132.03	5098	-1125	234	988	0.00	0.00	0.00
6300	90.00	132.03	5098	-1192	309	1088	0.00	0.00	0.00
6400	90.00	132.03	5098	-1259	383	1187	0.00	0.00	0.00
6500	90.00	132.03	5098	-1326	457	1287	0.00	0.00	0.00
6600	90.00	132.03	5098	-1393	531	1386	0.00	0.00	0.00
6700	90.00	132.03	5098	-1460	606	1486	0.00	0.00	0.00
6800	90.00	132.03	5098	-1527	680	1586	0.00	0.00	0.00
6900	90.00	132.03	5098	-1594	754	1685	0.00	0.00	0.00
7000	90.00	132.03	5098	-1661	829	1785	0.00	0.00	0.00
7100	90.00	132.03	5098	-1728	903	1884	0.00	0.00	0.00
7200	90.00	132.03	5098	-1795	977	1984	0.00	0.00	0.00
7300	90.00	132.03	5098	-1861	1051	2083	0.00	0.00	0.00
7400	90.00	132.03	5098	-1928	1126	2183	0.00	0.00	0.00
7500	90.00	132.03	5098	-1995	1200	2282	0.00	0.00	0.00
7600	90.00	132.03	5098	-2062	1274	2382	0.00	0.00	0.00
7700	90.00	132.03	5098	-2129	1349	2481	0.00	0.00	0.00
7800	90.00	132.03	5098	-2196	1423	2581	0.00	0.00	0.00
7900	90.00	132.03	5098	-2263	1497	2680	0.00	0.00	0.00
8000	90.00	132.03	5098	-2330	1571	2780	0.00	0.00	0.00
8100	90.00	132.03	5098	-2397	1646	2879	0.00	0.00	0.00
8200	90.00	132.03	5098	-2464	1720	2979	0.00	0.00	0.00
8300	90.00	132.03	5098	-2531	1794	3079	0.00	0.00	0.00
8400	90.00	132.03	5098	-2598	1868	3178	0.00	0.00	0.00
8500	90.00	132.03	5098	-2665	1943	3278	0.00	0.00	0.00
8600	90.00	132.03	5098	-2732	2017	3377	0.00	0.00	0.00
8700	90.00	132.03	5098	-2799	2091	3477	0.00	0.00	0.00
8800	90.00	132.03	5098	-2866	2166	3576	0.00	0.00	0.00
8900	90.00	132.03	5098	-2933	2240	3676	0.00	0.00	0.00
9000	90.00	132.03	5098	-3000	2314	3775	0.00	0.00	0.00
9100	90.00	132.03	5098	-3066	2388	3875	0.00	0.00	0.00
9200	90.00	132.03	5098	-3133	2463	3974	0.00	0.00	0.00
9300	90.00	132.03	5098	-3200	2537	4074	0.00	0.00	0.00
9400	90.00	132.03	5098	-3267	2611	4173	0.00	0.00	0.00
9500	90.00	132.03	5098	-3334	2686	4273	0.00	0.00	0.00
9600	90.00	132.03	5098	-3401	2760	4372	0.00	0.00	0.00
9700	90.00	132.03	5098	-3468	2834	4472	0.00	0.00	0.00
9800	90.00	132.03	5098	-3535	2908	4572	0.00	0.00	0.00
9900	90.00	132.03	5098	-3602	2983	4671	0.00	0.00	0.00
10,000	90.00	132.03	5098	-3669	3057	4771	0.00	0.00	0.00
10,100	90.00	132.03	5098	-3736	3131	4870	0.00	0.00	0.00
10,200	90.00	132.03	5098	-3803	3206	4970	0.00	0.00	0.00
10,300	90.00	132.03	5098	-3870	3280	5069	0.00	0.00	0.00
10,400	90.00	132.03	5098	-3937	3354	5169	0.00	0.00	0.00
10,500	90.00	132.03	5098	-4004	3428	5268	0.00	0.00	0.00
10,600	90.00	132.03	5098	-4071	3503	5368	0.00	0.00	0.00

Database:	EDM	**Local Co-ordinate Reference:**	Well NAU 333H
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Project:	North Alamito Unit	**MD Reference:**	RKB @ 6993ft (RIG TBD)
Site:	J31 2307	**North Reference:**	True
Well:	NAU 333H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original drilling		
Design:	APD		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,700	90.00	132.03	5098	-4138	3577	5467	0.00	0.00	0.00
10,800	90.00	132.03	5098	-4205	3651	5567	0.00	0.00	0.00
10,900	90.00	132.03	5098	-4272	3726	5666	0.00	0.00	0.00
11,000	90.00	132.03	5098	-4338	3800	5766	0.00	0.00	0.00
11,100	90.00	132.03	5098	-4405	3874	5865	0.00	0.00	0.00
11,200	90.00	132.03	5098	-4472	3948	5965	0.00	0.00	0.00
11,300	90.00	132.03	5098	-4539	4023	6065	0.00	0.00	0.00
11,400	90.00	132.03	5098	-4606	4097	6164	0.00	0.00	0.00
11,500	90.00	132.03	5098	-4673	4171	6264	0.00	0.00	0.00
11,600	90.00	132.03	5098	-4740	4246	6363	0.00	0.00	0.00
11,700	90.00	132.03	5098	-4807	4320	6463	0.00	0.00	0.00
11,800	90.00	132.03	5098	-4874	4394	6562	0.00	0.00	0.00
11,900	90.00	132.03	5098	-4941	4468	6662	0.00	0.00	0.00
12,000	90.00	132.03	5098	-5008	4543	6761	0.00	0.00	0.00
12,100	90.00	132.03	5098	-5075	4617	6861	0.00	0.00	0.00
12,200	90.00	132.03	5098	-5142	4691	6960	0.00	0.00	0.00
12,223	90.00	132.03	5098	-5157	4709	6983	0.00	0.00	0.00
Last take point									
12,283	90.00	132.03	5098	-5198	4753	7043	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
333H heel - plan hits target center - Circle (radius 50)	0.00	0.00	5098	-678	-262	1,884,971	2,787,235	36.18022570	-107.61598320
333H toe - plan hits target center - Circle (radius 100)	0.00	0.00	5098	-5198	4753	1,880,463	2,792,259	36.16780980	-107.59899330

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
350	350	Surface casing	9.625	12.250
5523	5098	Intermediate casing	7.000	8.750

Database:	EDM	**Local Co-ordinate Reference:**	Well NAU 333H
Company:	DJR Operating	**TVD Reference:**	RKB @ 6993ft (RIG TBD)
Project:	North Alamito Unit	**MD Reference:**	RKB @ 6993ft (RIG TBD)
Site:	J31 2307	**North Reference:**	True
Well:	NAU 333H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original drilling		
Design:	APD		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
890	889	Ojo Alamo		0.00	
930	929	Kirtland		0.00	
1177	1172	Fruitland		0.00	
1466	1456	Picture Cliffs		0.00	
1637	1624	Lewis		0.00	
2245	2222	Chacra		0.00	
2939	2903	Cliffhouse		0.00	
2963	2927	Menefee		0.00	
3878	3826	Point Lookout		0.00	
4061	4006	Mancos		0.00	
4401	4340	Mancos Silt		0.00	
4903	4815	Gallup A		0.00	
4945	4849	Gallup B		0.00	
5088	4951	Gallup C		0.00	
5533	5098	Target		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4467	4405	-173	-658	KOP
5323	5064	-536	-411	Top of liner
5593	5098	-718	-217	First take point
12,223	5098	-5157	4709	Last take point

DJR Operating

North Alamito Unit
J31 2307
NAU 333H

Original drilling
APD

Anticollision Report

28 March, 2019

Anticollision Report

Company:	DJR Operating	**Local Co-ordinate Reference:**	Well NAU 333H
Project:	North Alamito Unit	**TVD Reference:**	RKB @ 6993ft (RIG TBD)
Reference Site:	J31 2307	**MD Reference:**	RKB @ 6993ft (RIG TBD)
Site Error:	0 ft	**North Reference:**	True
Reference Well:	NAU 333H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Original drilling	**Database:**	EDM
Reference Design:	APD	**Offset TVD Reference:**	Offset Datum

Reference	APD		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000 ft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 3/28/2019

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0	12,283	APD (Original drilling)	MWD+IGRF	OWSG MWD + IGRF or WMM

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
J31 2307						
NAU 332H - Original drilling - APD	403	403	50	47	20.011	CC
NAU 332H - Original drilling - APD	500	499	50	47	15.809	ES
NAU 332H - Original drilling - APD	5413	5349	144	103	3.515	SF
NAU 528H - Original drilling - APD	404	404	40	37	16.036	CC
NAU 528H - Original drilling - APD	500	500	40	37	12.629	ES
NAU 528H - Original drilling - APD	12,283	12,241	860	498	2.377	SF
NAU 529H - Original drilling - APD	550	550	20	16	5.632	CC, ES
NAU 529H - Original drilling - APD	700	700	23	19	5.102	SF
NAU 559H - Original drilling - APD	726	726	18	13	3.698	CC, ES, SF

Offset Design J31 2307 - NAU 332H - Original drilling - APD — Offset Site Error: 0 ft

Survey Program: 0-MWD+IGRF — Offset Well Error: 0 ft

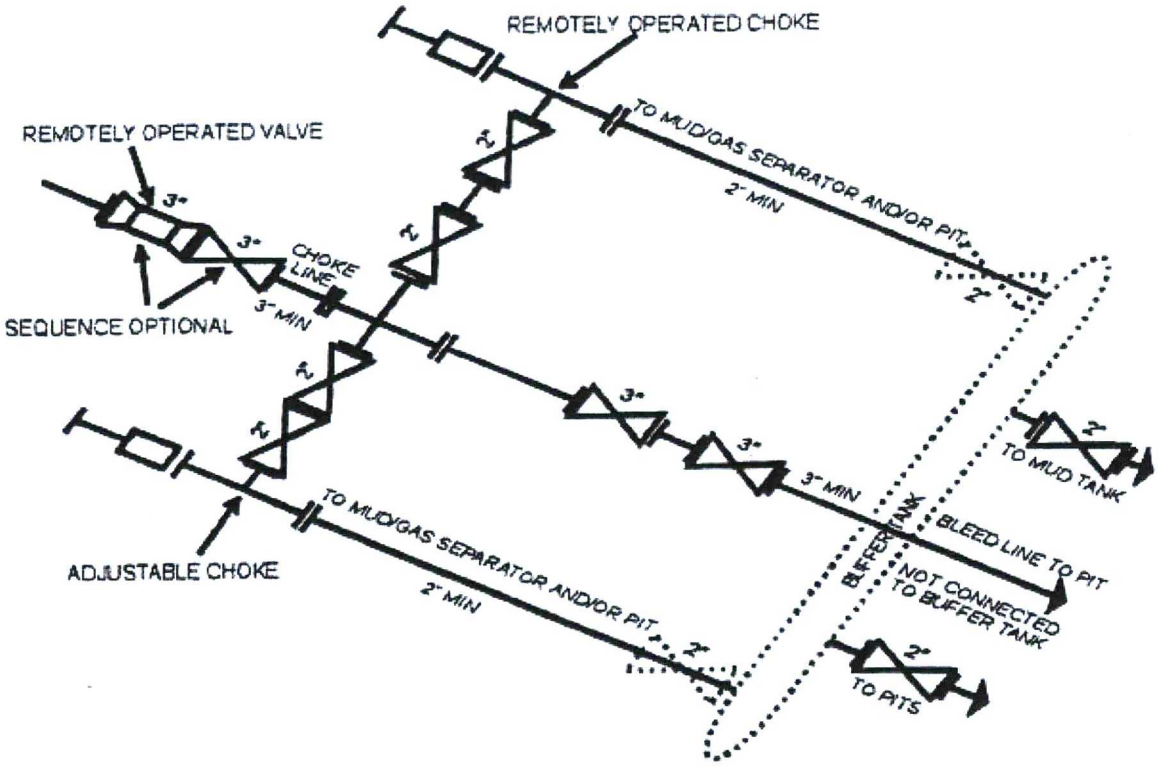
Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0	0	0	0	0	0	-138.33	-37	-33	50				
100	100	100	100	0	0	-138.33	-37	-33	50	49	0.31	161.247	
200	200	200	200	1	1	-138.33	-37	-33	50	49	1.03	48.487	
300	300	300	300	1	1	-138.33	-37	-33	50	48	1.74	28.533	
400	400	400	400	1	1	-138.33	-37	-33	50	47	2.46	20.215	
403	403	403	403	1	1	-138.33	-37	-33	50	47	2.48	20.011	CC
500	500	499	499	2	2	-138.64	-38	-33	50	47	3.17	15.809	ES
550	550	549	549	2	2	-139.57	-39	-33	51	48	3.51	14.545	
600	600	598	598	2	2	-36.60	-41	-33	52	49	3.84	13.619	
700	700	696	696	2	2	-42.95	-48	-33	55	51	4.52	12.255	
800	800	794	793	3	3	-52.34	-58	-33	60	55	5.20	11.528	
900	899	891	889	3	3	-63.24	-71	-34	68	62	5.89	11.482	
1000	998	986	983	3	3	-73.90	-87	-34	80	73	6.60	12.077	
1087	1084	1069	1064	4	4	-82.01	-104	-34	94	87	7.24	13.013	
1100	1097	1081	1076	4	4	-83.10	-106	-34	97	89	7.34	13.175	
1200	1195	1177	1169	4	4	-90.07	-128	-35	118	110	8.14	14.499	
1300	1293	1273	1263	5	5	-94.91	-150	-35	141	132	8.99	15.673	
1400	1391	1370	1357	5	5	-98.40	-173	-36	164	154	9.85	16.680	

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

Choke Manifold

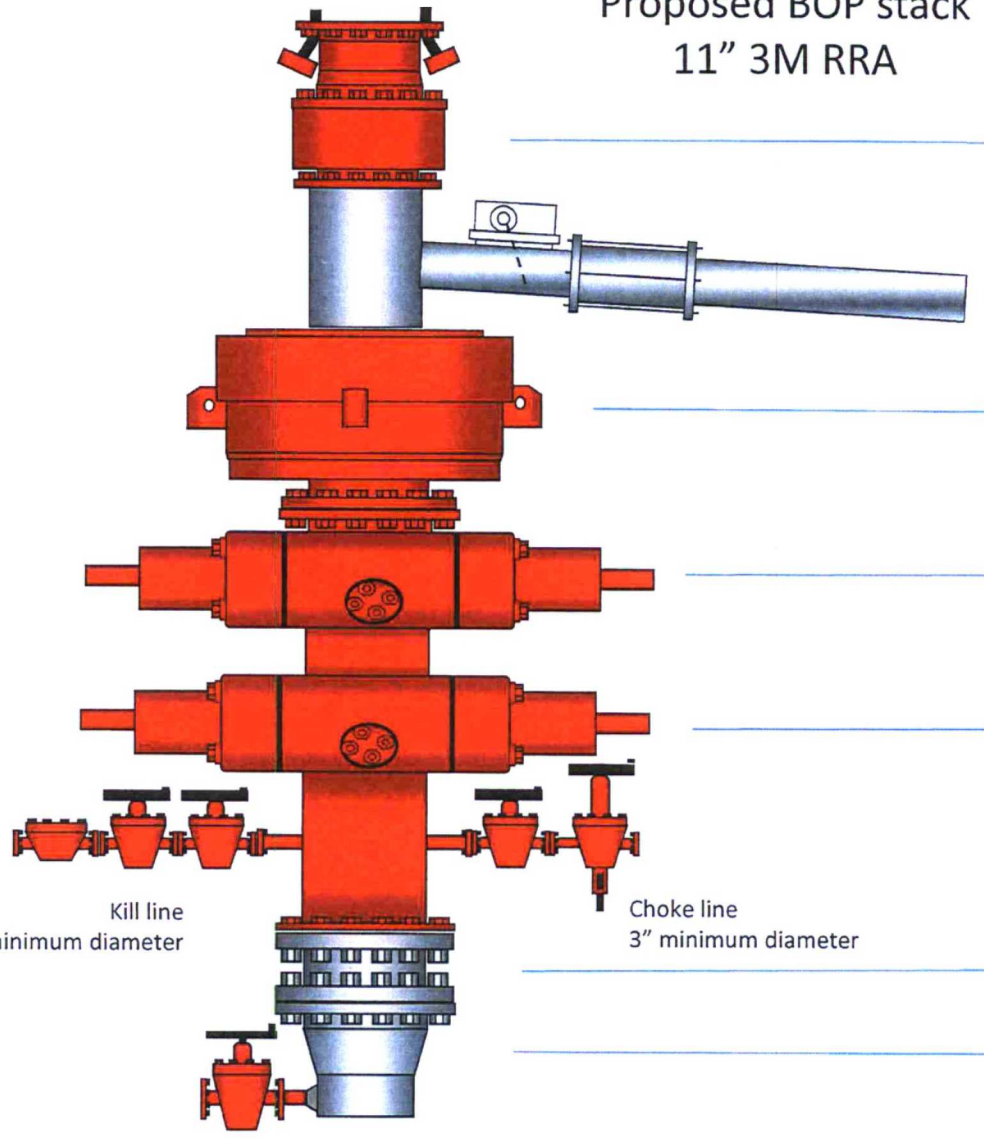
Actual system to conform with Onshore Order 2

DJR Operating



Proposed BOP stack
11" 3M RRA

DJR Operating



Low pressure rotating head

Flowline

3M Annular preventer

3M Pipe rams

3M Blind rams

Double gate with integral choke/kill outlets

Kill line
2" minimum diameter

Choke line
3" minimum diameter

Tie-down flange
(moves with BOP)

11" 5M Multi-bowl casing head