

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 3160-5 form.

Operator Signature Date: **Original APD 5/15/2014**
Sundry Date 5/8/2019

WELL INFORMATION:

DJR OPERATING, LLC
30-043-21211 N ALAMITO UNIT #238H

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

- ✓ Notify Aztec OCD 24hrs prior to casing & cement.
- ✓ Hold C-104 for directional survey & "As Drilled" Plat
- ☐ Hold C-104 for NSL, NSP, DHC,
- ☐ 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 recompletions operations.
- ✓ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84

June 26, 2019

Page 2

- ✓ 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.
- ✓ Comply with current regulations at time of spud
Prior to production operator needs to be in compliance with RULE 19.15.5.9



NMOCD Approved by Signature

6/3/19
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014

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

SUBMIT IN TRIPLICATE – Other instructions on page 2.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM 6681
2. Name of Operator DJR Operating LLC.		6. If Indian, Allottee or Tribe Name N/A
3a. Address 1 Road 3263 Aztec, New Mexico 87410	3b. Phone No. (include area code) 505-632-3476	7. Unit of CA/Agreement, Name and/or No. NMNM 135229X
4. Location of Well (Footage, Sec., T. R. M., or Survey Description) SHL: 393' FSL and 1341' FEL Section 30, T23N, R7W BHL: 341' FNL and 2241' FWL Section 25, T23N, R8W		8. Well Name and No. North Alamito Unit #238H
		9. API Well No. 30-043-21211
		10. Field and Pool or Exploratory Area North Alamito Unit Mancos Oil Pool
		11. County or Parish, State Sandoval County, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other SHL Change, BHL Change & New Drilling Plan
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

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

DJR Operating LLC. has an approved APD for the proposed well, North Alamito Unit 238H well (API 30-043-21211) which will be a part of the North Alamito Unit. DJR Operating is submitting this sundry to change the SHL (switched SHL between 238H & 240H), BHL and a New Drilling Plan.

Please find attached an updated C-102 package reflecting the SHL change, BHL change and a new drilling plan.

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed) Steven Merrell		Title Regulatory Specialist
Signature 		Date 05/08/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by 	Petroleum Engineer Title	Date 23 May 2019
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.	Office FFO	

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

(Instructions on page 2)

NMOCB

DISTRICT I

1685 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-0181 Fax: (505) 393-0780

DISTRICT II

811 N. First St., Artesia, N.M. 88210
Phone: (505) 748-1288 Fax: (505) 334-8170

DISTRICT III

1000 Rio Brasso Rd., Anteo, N.M. 87410
Phone: (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV

1280 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 478-3480 Fax: (505) 478-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-043-21211		*Pool Code 98174	*Pool Name NORTH ALAMITO UNIT OIL POOL
*Property Code 3252107	*Property Name NORTH ALAMITO UNIT		*Well Number 238H
*GRID No. 371838	*Operator Name DJR OPERATING, LLC		*Elevation 7028'

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
0	30	23N	7W		393'	SOUTH	1341'	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
C	25	23N	8W		341'	NORTH	2241'	WEST	SAN JUAN

*Dedicated Acres
SEC 31: NW/NE & NE/NW (80 AC.); SEC 30:
SW/SE, SW/4, SW/NW (241.94 AC.); SEC 25:
NE/SE, NW/NE, SW/NE, SE/NE, NE/NW (200 AC.)
= 521.94 ACRES

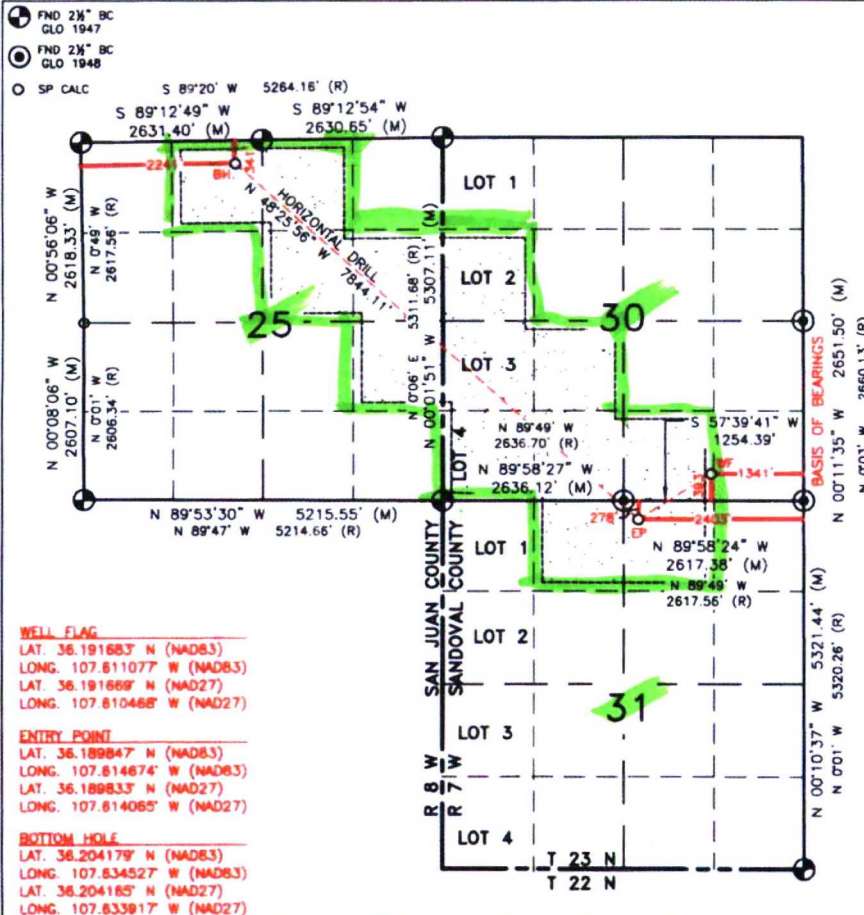
*Joint or Infill

*Consolidation Code

*Order No.

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

16



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.

Signature: *Steven Merrell* Date: 5/1/19

Printed Name: Steven Merrell
E-mail Address: Smerrell@djrlc.com

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.
FEBRUARY 14, 2017

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number: 11393

DISTRICT I

1025 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-8181 Fax: (505) 393-0780

DISTRICT II

811 S. First St., Artesia, N.M. 88210
Phone: (505) 748-1885 Fax: (505) 748-9780

DISTRICT III

1000 Rio Grande Rd., Aztec, N.M. 87410
Phone: (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
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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

DJR OPERATING, LLC
NORTH ALAMITO UNIT #238H

N/4 CORNER SEC. 25
LAT. 36.205127° N (NAD83)
LONG. 107.633221° W (NAD83)
LAT. 36.205113° N (NAD27)
LONG. 107.632612° W (NAD27)

NE CORNER SEC. 25
LAT. 36.205211° N (NAD83)
LONG. 107.624305° W (NAD83)
LAT. 36.205197° N (NAD27)
LONG. 107.623695° W (NAD27)

SE CORNER SEC. 25
LAT. 36.190632° N (NAD83)
LONG. 107.624334° W (NAD83)
LAT. 36.190618° N (NAD27)
LONG. 107.623725° W (NAD27)

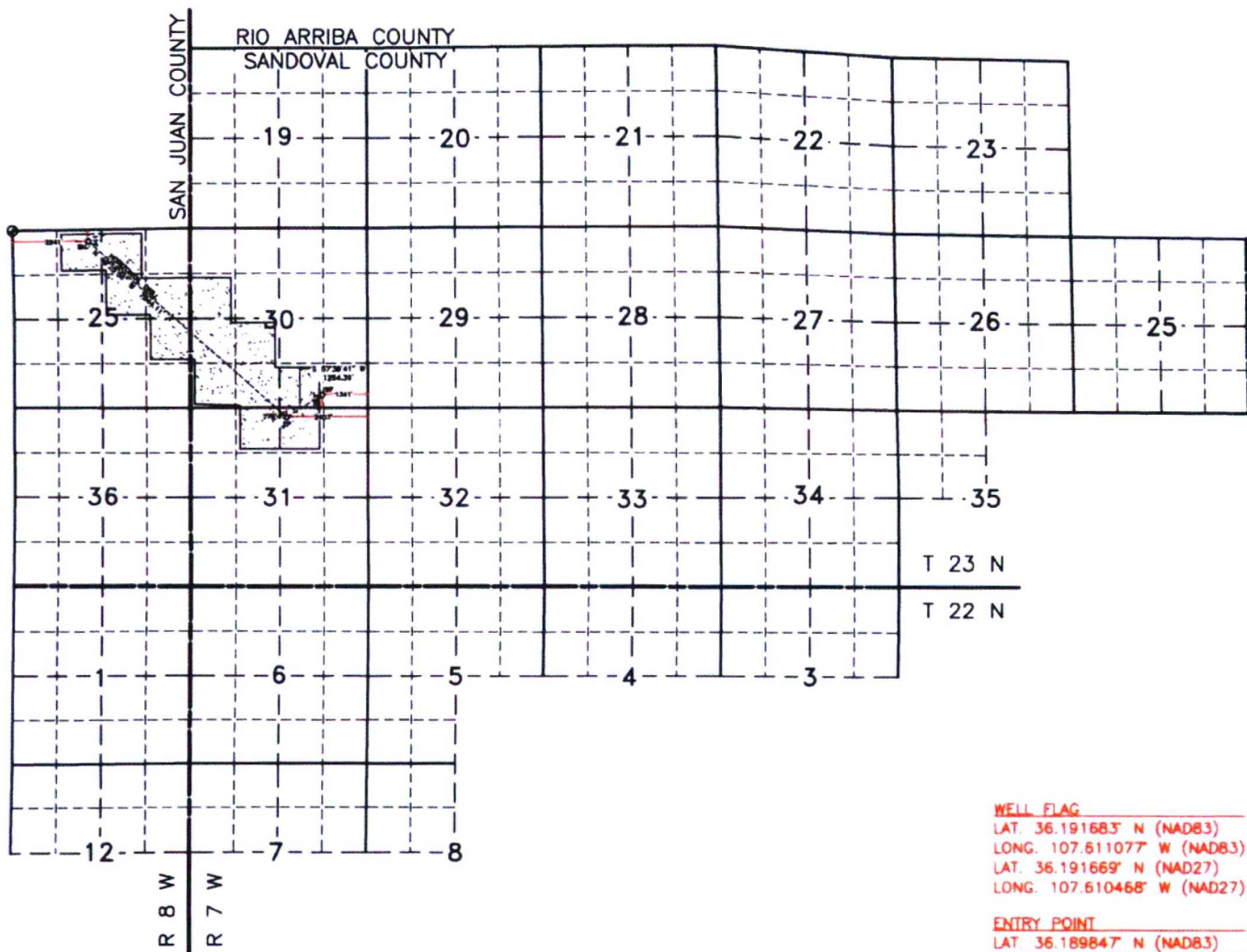
NW CORNER SEC. 25
LAT. 36.205042° N (NAD83)
LONG. 107.642140° W (NAD83)
LAT. 36.205028° N (NAD27)
LONG. 107.641530° W (NAD27)

E/4 CORNER SEC. 30
LAT. 36.197877° N (NAD83)
LONG. 107.606539° W (NAD83)
LAT. 36.197863° N (NAD27)
LONG. 107.605931° W (NAD27)

SE CORNER SEC. 30
LAT. 36.190593° N (NAD83)
LONG. 107.606530° W (NAD83)
LAT. 36.190579° N (NAD27)
LONG. 107.605922° W (NAD27)

S/4 CORNER SEC. 30
LAT. 36.190612° N (NAD83)
LONG. 107.615400° W (NAD83)
LAT. 36.190598° N (NAD27)
LONG. 107.614791° W (NAD27)

SW CORNER SEC. 32
LAT. 36.175974° N (NAD83)
LONG. 107.606516° W (NAD83)
LAT. 36.175960° N (NAD27)
LONG. 107.605908° W (NAD27)

**WELL FLAG**

LAT. 36.191683° N (NAD83)
LONG. 107.611077° W (NAD83)
LAT. 36.191669° N (NAD27)
LONG. 107.610468° W (NAD27)

ENTRY POINT

LAT. 36.189847° N (NAD83)
LONG. 107.614674° W (NAD83)
LAT. 36.189833° N (NAD27)
LONG. 107.614065° W (NAD27)

BOTTOM HOLE

LAT. 36.204179° N (NAD83)
LONG. 107.634527° W (NAD83)
LAT. 36.204165° N (NAD27)
LONG. 107.633917° W (NAD27)

PENETRATED SPACING UNIT:
SEC 31: NW/NE & NE/NW (80 AC.); SEC 30:
SW/SE, SW/4, SW/NW (241.94 AC.)
SEC 25:
NE/SE, NW/NE, SW/NE, SE/NE, NE/NW (200 AC.)
= 521.94 ACRES
TOTAL 14,282.78 ACRES: T23N R7W SEC. 19-23, 25, 28-34 (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

DRILLING PLAN **North Alamito Unit 238H** **Sandoval County, New Mexico**

Surface Location
 1341-ft FEL & 393-ft FSL
 Sec 30 T23N R7W
 Graded Elevation 7028' MSL
 RKB Elevation 7042' (14' KB)

SHL Geographical Coordinates (NAD-83)

Latitude 36.1916830° N
 Longitude 107.6110770° W

Kick Off Point for Horizontal Build Curve
 4696-ft MD
 3385-ft TVD

Local Coordinates (from-SHL)

953-ft South
 465-ft West

Heel Location (Pay zone entry)

2403-ft FEL & 278-ft FNL
 Sec 31 T23N R7W

Heel Geographical Coordinates (NAD-83)

Latitude 36.18984651° N
 Longitude 107.61467415° W

Bottom Hole Location (TD)

2241-ft FWL & 341-ft FNL
 Sec 25 T23N R8W

BHL Geographical Coordinates (NAD-83)

Latitude 36.20417869° N
 Longitude 107.6345268° W

Well objectives

This well is planned as a 7840-ft lateral in the Gallup C sand.

Bottom Hole temperature and pressure

The temperature in the Gallup C horizontal objective is 140°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	1050	1046	Sd	W	8.3	8.4 - 8.8
Kirtland	1084	1080	Sh	-	8.3	8.4 - 8.8
Fruitland	1298	1288	C	G	8.3	9.0 - 9.5
Pictured Cliffs	1589	1567	Sd	W	8.3	9.0 - 9.5
Lewis	1743	1715	Sh	-		9.0 - 9.5
Chacra	2390	2336	Sd	-	8.3	9.0 - 9.5
Menefee	3125	3042	Sd, C	G	8.3	9.0 - 9.5
Point Lookout	4052	3932	Sd	-	8.3	9.0 - 9.5
Mancos	4239	4112	Sh	-		9.0 - 9.5
Mancos Silt	4640	4497	Slt	O/G	6.6	9.0 - 9.5
Gallup A	5109	4929	Slt	O/G	6.6	9.0 - 9.5
Gallup B	5145	4958	Sd	O/G	6.6	8.8 - 9.0
Gallup C	5291	5061	Sd	O/G	6.6	8.8 - 9.0
Target	5744	5210	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	5734	surf	5210	surface
4-1/2"	6-1/8"	11.6	P-110	BTC	5534	13589	5177	5210	5534

Note: all casing will be new

Casing Design Load Cases

		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		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; FI=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
Volume (cu. ft.)	185
Excess %	50

7" Intermediate Casing

	Lead	Tail
Halliburton Name	HALCEM	VARICEM
Type	Poz/G	Poz/G
Additives	Ex, L, SA	Ex, FI, SA, L, THX
Planned top	Surface	3739-ft
Density (ppg)	12.30	13.50
Yield (cf/sx)	1.95	1.30
Mix water (gal/sx)	10.14	5.64
Volume (sx)	473	398

Volume (bbls)	165	92
Volume (cu.ft.)	925	519
Excess %	70	70

<u>4-1/2" Production Liner</u>	<u>Lead</u>
Halliburton Name	EXTENDACEM
Type	Poz/G
Additives	B, De, Di, FI, Re, V
Planned top	5534-ft
Density (ppg)	13.3
Yield (cf/sx)	1.36
Mix water (gal/sx)	5.94
Volume (sx)	826
Volume (bbls)	200
Volume (cu.ft)	1123
Excess %	30

Wellhead & Pressure Control

The well head will be an 11" 5M multi-bowl system. A 3M 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 – 5734	9.0 – 9.5	38 – 45	8 – 14	<20
Production	Low solids, non-dispersed	5734 – 13589	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.



Pad name : O30 2307
Well name : NAU 238H

SHL Latitude : 36.19168300
SHL Longitude : -107.61107700

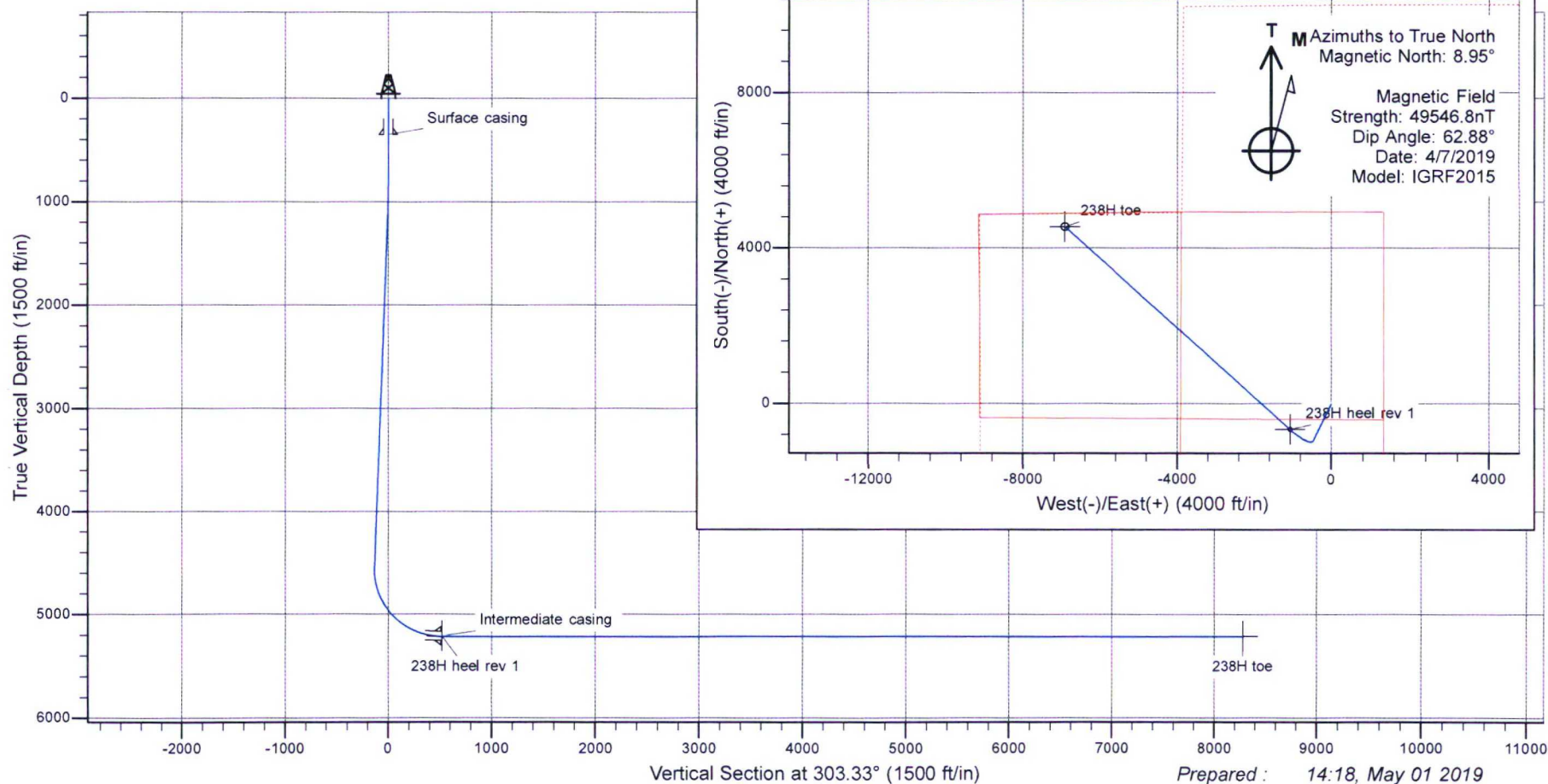
US State Plane 1983
North American Datum 1983
New Mexico Western Zone

TRAJECTORY DETAILS Pad elevation : 7028 RKB @ 7042ft (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	
500	0.00	0.00	500	0	0	0.00	0.00	0	
1311	16.23	205.99	1301	-103	-50	2.00	205.99	-15	
4696	16.23	205.99	4551	-953	-465	0.00	0.00	-135	
5744	90.00	311.70	5210	-669	-1061	9.00	105.11	520	238H heel rev
13589	90.00	311.70	5210	4550	-6918	0.00	0.00	8280	238H toe

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
238H heel rev 1	5210	-669	-1061	1888474	2787613	36.18984651	-107.61467415
238H toe	5210	4550	-6918	1893679	2781744	36.20417869	-107.63452676



DJR Operating

North Alamito Unit

O30 2307

NAU 238H

Original drilling

Plan: APD

Standard Planning Report

01 May, 2019

Planning Report

Database: EDM	Local Co-ordinate Reference: Well NAU 238H
Company: DJR Operating	TVD Reference: RKB @ 7042ft (Rig TBD)
Project: North Alamito Unit	MD Reference: RKB @ 7042ft (Rig TBD)
Site: O30 2307	North Reference: True
Well: NAU 238H	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	O30 2307				
Site Position:		Northing:	1,889,181 usft	Latitude:	36.19178200
From:	Lat/Long	Easting:	2,788,721 usft	Longitude:	-107.61091400
Position Uncertainty:	0 ft	Slot Radius:	72.000 in	Grid Convergence:	0.13 °

Well	NAU 238H					
Well Position	+N/-S	-36 ft	Northing:	1,889,145 usft	Latitude:	36.19168300
	+E/-W	-48 ft	Easting:	2,788,673 usft	Longitude:	-107.61107700
Position Uncertainty		0 ft	Wellhead Elevation:		Ground Level:	7028 ft

Wellbore	Original drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/7/2019	8.95	62.88	49,546.83435983

Design	APD			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0	0	0	303.33

Plan Survey Tool Program	Date	5/1/2019		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0	13,589 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	
500	0.00	0.00	500	0	0	0.00	0.00	0.00	0.00	
1311	16.23	205.99	1301	-103	-50	2.00	2.00	0.00	205.99	
4696	16.23	205.99	4551	-953	-465	0.00	0.00	0.00	0.00	
5744	90.00	311.70	5210	-669	-1061	9.00	7.04	10.08	105.11	238H heel rev 1
13,589	90.00	311.70	5210	4550	-6918	0.00	0.00	0.00	0.00	238H toe

Planning Report

Database: EDM
Company: DJR Operating
Project: North Alamito Unit
Site: O30 2307
Well: NAU 238H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: RKB @ 7042ft (Rig TBD)
MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature

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
600	2.00	205.99	600	-2	-1	0	2.00	2.00	0.00
700	4.00	205.99	700	-6	-3	-1	2.00	2.00	0.00
800	6.00	205.99	799	-14	-7	-2	2.00	2.00	0.00
900	8.00	205.99	899	-25	-12	-4	2.00	2.00	0.00
1000	10.00	205.99	997	-39	-19	-6	2.00	2.00	0.00
1049	10.99	205.99	1046	-47	-23	-7	2.00	2.00	0.00
Ojo Alamo									
1084	11.68	205.99	1080	-53	-26	-8	2.00	2.00	0.00
Kirtland									
1100	12.00	205.99	1096	-56	-27	-8	2.00	2.00	0.00
1200	14.00	205.99	1193	-76	-37	-11	2.00	2.00	0.00
1298	15.97	205.99	1288	-99	-48	-14	2.00	2.00	0.00
Fruitland									
1300	16.00	205.99	1290	-100	-49	-14	2.00	2.00	0.00
1311	16.23	205.99	1301	-103	-50	-15	2.00	2.00	0.00
1400	16.23	205.99	1386	-125	-61	-18	0.00	0.00	0.00
1500	16.23	205.99	1482	-150	-73	-21	0.00	0.00	0.00
1589	16.23	205.99	1567	-172	-84	-24	0.00	0.00	0.00
Picture Cliffs									
1600	16.23	205.99	1578	-175	-85	-25	0.00	0.00	0.00
1700	16.23	205.99	1674	-200	-98	-28	0.00	0.00	0.00
1743	16.23	205.99	1715	-211	-103	-30	0.00	0.00	0.00
Lewis									
1800	16.23	205.99	1770	-225	-110	-32	0.00	0.00	0.00
1900	16.23	205.99	1866	-250	-122	-36	0.00	0.00	0.00
2000	16.23	205.99	1962	-276	-134	-39	0.00	0.00	0.00
2100	16.23	205.99	2058	-301	-147	-43	0.00	0.00	0.00
2200	16.23	205.99	2154	-326	-159	-46	0.00	0.00	0.00
2300	16.23	205.99	2250	-351	-171	-50	0.00	0.00	0.00
2390	16.23	205.99	2336	-373	-182	-53	0.00	0.00	0.00
Chacra									
2400	16.23	205.99	2346	-376	-183	-53	0.00	0.00	0.00
2500	16.23	205.99	2442	-401	-196	-57	0.00	0.00	0.00
2600	16.23	205.99	2538	-426	-208	-61	0.00	0.00	0.00
2700	16.23	205.99	2634	-451	-220	-64	0.00	0.00	0.00
2800	16.23	205.99	2730	-477	-232	-68	0.00	0.00	0.00
2900	16.23	205.99	2826	-502	-245	-71	0.00	0.00	0.00
3000	16.23	205.99	2922	-527	-257	-75	0.00	0.00	0.00
3092	16.23	205.99	3010	-550	-268	-78	0.00	0.00	0.00
Cliffhouse									
3100	16.23	205.99	3018	-552	-269	-78	0.00	0.00	0.00
3125	16.23	205.99	3042	-558	-272	-79	0.00	0.00	0.00
Menefee									
3200	16.23	205.99	3114	-577	-281	-82	0.00	0.00	0.00
3300	16.23	205.99	3210	-602	-294	-86	0.00	0.00	0.00

Planning Report

Database: EDM
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Project: North Alamito Unit
Site: O30 2307
Well: NAU 238H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: RKB @ 7042ft (Rig TBD)
MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature

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)
3400	16.23	205.99	3306	-627	-306	-89	0.00	0.00	0.00
3500	16.23	205.99	3402	-652	-318	-93	0.00	0.00	0.00
3600	16.23	205.99	3498	-677	-330	-96	0.00	0.00	0.00
3700	16.23	205.99	3594	-703	-343	-100	0.00	0.00	0.00
3800	16.23	205.99	3690	-728	-355	-103	0.00	0.00	0.00
3900	16.23	205.99	3786	-753	-367	-107	0.00	0.00	0.00
4000	16.23	205.99	3882	-778	-379	-111	0.00	0.00	0.00
4052	16.23	205.99	3932	-791	-386	-112	0.00	0.00	0.00
Point Lookout									
4100	16.23	205.99	3978	-803	-392	-114	0.00	0.00	0.00
4200	16.23	205.99	4074	-828	-404	-118	0.00	0.00	0.00
4239	16.23	205.99	4112	-838	-409	-119	0.00	0.00	0.00
Mancos									
4300	16.23	205.99	4170	-853	-416	-121	0.00	0.00	0.00
4400	16.23	205.99	4266	-878	-428	-125	0.00	0.00	0.00
4500	16.23	205.99	4362	-904	-441	-128	0.00	0.00	0.00
4600	16.23	205.99	4458	-929	-453	-132	0.00	0.00	0.00
4640	16.23	205.99	4497	-939	-458	-133	0.00	0.00	0.00
Mancos Silt									
4696	16.23	205.99	4550	-953	-465	-135	0.00	0.00	0.00
Kick off point									
4700	16.14	207.16	4554	-954	-465	-135	8.38	-2.11	29.11
4750	15.66	223.54	4602	-965	-473	-135	9.00	-0.97	32.76
4800	16.41	239.65	4650	-973	-484	-131	9.00	1.50	32.23
4850	18.25	253.50	4698	-979	-497	-123	9.00	3.67	27.69
4900	20.88	264.43	4745	-982	-514	-111	9.00	5.27	21.87
4950	24.05	272.81	4791	-983	-533	-95	9.00	6.34	16.76
5000	27.58	279.25	4836	-980	-554	-75	9.00	7.05	12.88
5050	31.33	284.30	4880	-975	-578	-53	9.00	7.52	10.09
5100	35.25	288.34	4922	-967	-605	-26	9.00	7.83	8.09
5109	35.96	288.98	4929	-966	-609	-21	9.00	7.98	7.16
Gallup A									
5145	38.90	291.38	4958	-958	-630	0	9.00	8.06	6.58
Gallup B									
5150	39.28	291.66	4962	-957	-633	3	9.00	8.13	6.11
5200	43.38	294.45	4999	-944	-663	36	9.00	8.21	5.58
5250	47.55	296.85	5034	-929	-695	71	9.00	8.33	4.79
5291	51.00	298.59	5061	-914	-723	102	9.00	8.41	4.23
Gallup C									
5300	51.76	298.94	5067	-911	-729	109	9.00	8.45	3.98
5350	56.00	300.80	5096	-891	-764	149	9.00	8.48	3.73
5400	60.27	302.49	5122	-868	-800	192	9.00	8.53	3.37
5450	64.55	304.04	5146	-844	-837	236	9.00	8.57	3.09
5500	68.85	305.48	5165	-818	-875	282	9.00	8.60	2.88
5534	71.78	306.41	5177	-799	-901	314	9.00	8.62	2.74
Top of liner									
5550	73.17	306.84	5182	-790	-913	329	9.00	8.63	2.67
5600	77.49	308.13	5194	-761	-952	377	9.00	8.64	2.60
5650	81.81	309.39	5203	-730	-990	426	9.00	8.65	2.51
5700	86.15	310.62	5209	-698	-1028	476	9.00	8.66	2.46
5734	89.09	311.44	5210	-675	-1054	509	9.00	8.67	2.43
Intermediate casing									
5744	90.00	311.70	5210	-669	-1061	520	9.00	8.67	2.43

Planning Report

Database: EDM
Company: DJR Operating
Project: North Alamito Unit
Site: O30 2307
Well: NAU 238H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: RKB @ 7042ft (Rig TBD)
MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature

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									
5800	90.00	311.70	5210	-632	-1103	574	0.00	0.00	0.00
5900	90.00	311.70	5210	-565	-1178	673	0.00	0.00	0.00
6000	90.00	311.70	5210	-499	-1252	772	0.00	0.00	0.00
6100	90.00	311.70	5210	-432	-1327	871	0.00	0.00	0.00
6200	90.00	311.70	5210	-365	-1402	970	0.00	0.00	0.00
6300	90.00	311.70	5210	-299	-1476	1069	0.00	0.00	0.00
6400	90.00	311.70	5210	-232	-1551	1168	0.00	0.00	0.00
6500	90.00	311.70	5210	-166	-1626	1267	0.00	0.00	0.00
6600	90.00	311.70	5210	-99	-1700	1366	0.00	0.00	0.00
6700	90.00	311.70	5210	-33	-1775	1465	0.00	0.00	0.00
6800	90.00	311.70	5210	34	-1850	1564	0.00	0.00	0.00
6900	90.00	311.70	5210	100	-1924	1663	0.00	0.00	0.00
7000	90.00	311.70	5210	167	-1999	1762	0.00	0.00	0.00
7100	90.00	311.70	5210	233	-2074	1861	0.00	0.00	0.00
7200	90.00	311.70	5210	300	-2148	1960	0.00	0.00	0.00
7300	90.00	311.70	5210	366	-2223	2059	0.00	0.00	0.00
7400	90.00	311.70	5210	433	-2298	2157	0.00	0.00	0.00
7500	90.00	311.70	5210	499	-2372	2256	0.00	0.00	0.00
7600	90.00	311.70	5210	566	-2447	2355	0.00	0.00	0.00
7700	90.00	311.70	5210	632	-2522	2454	0.00	0.00	0.00
7800	90.00	311.70	5210	699	-2596	2553	0.00	0.00	0.00
7900	90.00	311.70	5210	765	-2671	2652	0.00	0.00	0.00
8000	90.00	311.70	5210	832	-2746	2751	0.00	0.00	0.00
8100	90.00	311.70	5210	898	-2820	2850	0.00	0.00	0.00
8200	90.00	311.70	5210	965	-2895	2949	0.00	0.00	0.00
8300	90.00	311.70	5210	1031	-2970	3048	0.00	0.00	0.00
8400	90.00	311.70	5210	1098	-3044	3147	0.00	0.00	0.00
8500	90.00	311.70	5210	1165	-3119	3246	0.00	0.00	0.00
8600	90.00	311.70	5210	1231	-3194	3345	0.00	0.00	0.00
8700	90.00	311.70	5210	1298	-3268	3444	0.00	0.00	0.00
8800	90.00	311.70	5210	1364	-3343	3543	0.00	0.00	0.00
8900	90.00	311.70	5210	1431	-3418	3641	0.00	0.00	0.00
9000	90.00	311.70	5210	1497	-3492	3740	0.00	0.00	0.00
9100	90.00	311.70	5210	1564	-3567	3839	0.00	0.00	0.00
9200	90.00	311.70	5210	1630	-3642	3938	0.00	0.00	0.00
9300	90.00	311.70	5210	1697	-3716	4037	0.00	0.00	0.00
9400	90.00	311.70	5210	1763	-3791	4136	0.00	0.00	0.00
9500	90.00	311.70	5210	1830	-3865	4235	0.00	0.00	0.00
9600	90.00	311.70	5210	1896	-3940	4334	0.00	0.00	0.00
9700	90.00	311.70	5210	1963	-4015	4433	0.00	0.00	0.00
9800	90.00	311.70	5210	2029	-4089	4532	0.00	0.00	0.00
9900	90.00	311.70	5210	2096	-4164	4631	0.00	0.00	0.00
10,000	90.00	311.70	5210	2162	-4239	4730	0.00	0.00	0.00
10,100	90.00	311.70	5210	2229	-4313	4829	0.00	0.00	0.00
10,200	90.00	311.70	5210	2295	-4388	4928	0.00	0.00	0.00
10,300	90.00	311.70	5210	2362	-4463	5027	0.00	0.00	0.00
10,400	90.00	311.70	5210	2428	-4537	5125	0.00	0.00	0.00
10,500	90.00	311.70	5210	2495	-4612	5224	0.00	0.00	0.00
10,600	90.00	311.70	5210	2561	-4687	5323	0.00	0.00	0.00
10,700	90.00	311.70	5210	2628	-4761	5422	0.00	0.00	0.00
10,800	90.00	311.70	5210	2695	-4836	5521	0.00	0.00	0.00
10,900	90.00	311.70	5210	2761	-4911	5620	0.00	0.00	0.00

Planning Report

Database: EDM
Company: DJR Operating
Project: North Alamo Unit
Site: O30 2307
Well: NAU 238H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: RKB @ 7042ft (Rig TBD)
MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature

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)
11,000	90.00	311.70	5210	2828	-4985	5719	0.00	0.00	0.00
11,100	90.00	311.70	5210	2894	-5060	5818	0.00	0.00	0.00
11,200	90.00	311.70	5210	2961	-5135	5917	0.00	0.00	0.00
11,300	90.00	311.70	5210	3027	-5209	6016	0.00	0.00	0.00
11,400	90.00	311.70	5210	3094	-5284	6115	0.00	0.00	0.00
11,500	90.00	311.70	5210	3160	-5359	6214	0.00	0.00	0.00
11,600	90.00	311.70	5210	3227	-5433	6313	0.00	0.00	0.00
11,700	90.00	311.70	5210	3293	-5508	6412	0.00	0.00	0.00
11,800	90.00	311.70	5210	3360	-5583	6511	0.00	0.00	0.00
11,900	90.00	311.70	5210	3426	-5657	6610	0.00	0.00	0.00
12,000	90.00	311.70	5210	3493	-5732	6708	0.00	0.00	0.00
12,100	90.00	311.70	5210	3559	-5807	6807	0.00	0.00	0.00
12,200	90.00	311.70	5210	3626	-5881	6906	0.00	0.00	0.00
12,300	90.00	311.70	5210	3692	-5956	7005	0.00	0.00	0.00
12,400	90.00	311.70	5210	3759	-6031	7104	0.00	0.00	0.00
12,500	90.00	311.70	5210	3825	-6105	7203	0.00	0.00	0.00
12,600	90.00	311.70	5210	3892	-6180	7302	0.00	0.00	0.00
12,700	90.00	311.70	5210	3958	-6255	7401	0.00	0.00	0.00
12,800	90.00	311.70	5210	4025	-6329	7500	0.00	0.00	0.00
12,900	90.00	311.70	5210	4091	-6404	7599	0.00	0.00	0.00
13,000	90.00	311.70	5210	4158	-6479	7698	0.00	0.00	0.00
13,100	90.00	311.70	5210	4225	-6553	7797	0.00	0.00	0.00
13,200	90.00	311.70	5210	4291	-6628	7896	0.00	0.00	0.00
13,300	90.00	311.70	5210	4358	-6703	7995	0.00	0.00	0.00
13,400	90.00	311.70	5210	4424	-6777	8094	0.00	0.00	0.00
13,500	90.00	311.70	5210	4491	-6852	8192	0.00	0.00	0.00
13,589	90.00	311.70	5210	4550	-6918	8280	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
238H toe - plan hits target center - Circle (radius 100)	0.00	0.00	5210	4550	-6918	1,893,679	2,781,744	36.20417869	-107.63452676
238H heel rev 1 - plan hits target center - Circle (radius 50)	0.00	0.00	5210	-669	-1061	1,888,474	2,787,613	36.18984651	-107.61467416

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
350	350	Surface casing	9.625	12.250
5734	5210	Intermediate casing	7.000	8.750

Planning Report

Database: EDM
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Project: North Alamito Unit
Site: O30 2307
Well: NAU 238H
Wellbore: Original drilling
Design: APD

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MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1049	1046	Ojo Alamo		0.00	
1084	1080	Kirtland		0.00	
1298	1288	Fruitland		0.00	
1589	1567	Picture Cliffs		0.00	
1743	1715	Lewis		0.00	
2390	2336	Chacra		0.00	
3092	3010	Cliffhouse		0.00	
3125	3042	Menefee		0.00	
4052	3932	Point Lookout		0.00	
4239	4112	Mancos		0.00	
4640	4497	Mancos Silt		0.00	
5109	4929	Gallup A		0.00	
5145	4958	Gallup B		0.00	
5291	5061	Gallup C		0.00	
5744	5210	Target		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4696	4550	-953	-465	Kick off point
5534	5177	-799	-901	Top of liner

DJR Operating

North Alamito Unit

O30 2307

NAU 238H

Original drilling

APD

Anticollision Report

01 May, 2019

Anticollision Report

Company:	DJR Operating	Local Co-ordinate Reference:	Well NAU 238H
Project:	North Alamito Unit	TVD Reference:	RKB @ 7042ft (Rig TBD)
Reference Site:	O30 2307	MD Reference:	RKB @ 7042ft (Rig TBD)
Site Error:	0 ft	North Reference:	True
Reference Well:	NAU 238H	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	5/1/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0	13,589	APD (Original drilling)	MWD+IGRF	OWSG MWD + IGRF or WMM	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
O30 2307						
NAU 240H - Original drilling - APD	405	405	60	58	24.110	CC
NAU 240H - Original drilling - APD	500	500	60	57	18.993	ES
NAU 240H - Original drilling - APD	12,300	13,420	1222	846	3.254	SF

Offset Design														Offset Site Error:	0 ft
Survey Program: 0-MWD+IGRF														Offset Well Error:	0 ft
Reference	Offset	Semi Major Axis			Distance									Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0	0	0	0	0	0	53.16	36	48	60						
100	100	100	100	0	0	53.16	36	48	60	60	0.31	194.950			
200	200	200	200	1	1	53.16	36	48	60	59	1.03	58.621			
300	300	300	300	1	1	53.16	36	48	60	58	1.74	34.497			
400	400	400	400	1	1	53.16	36	48	60	58	2.46	24.440			
405	405	405	405	1	1	53.16	36	48	60	58	2.49	24.110	CC		
500	500	500	500	2	2	53.56	36	48	60	57	3.17	18.993	ES		
600	600	599	599	2	2	-150.01	33	51	62	59	3.85	16.211			
700	700	699	698	2	2	-146.47	29	56	68	64	4.53	15.108			
800	799	797	796	3	3	-142.60	21	63	79	73	5.24	15.011			
900	899	895	893	3	3	-138.99	12	73	93	87	5.98	15.569			
1000	997	992	988	3	3	-135.92	1	85	112	105	6.75	16.544			
1100	1096	1087	1082	4	4	-133.41	-13	99	134	127	7.56	17.772			
1200	1193	1181	1173	4	4	-131.38	-28	115	161	153	8.41	19.139			
1300	1290	1273	1262	5	5	-129.73	-45	133	191	182	9.31	20.563			
1311	1301	1284	1272	5	5	-129.56	-48	135	195	186	9.41	20.722			
1400	1386	1364	1349	5	5	-128.58	-64	152	225	214	10.24	21.935			
1500	1482	1454	1433	6	6	-127.22	-85	173	260	248	11.21	23.170			
1600	1578	1544	1517	7	7	-125.71	-107	197	296	284	12.21	24.261			
1700	1674	1636	1604	7	7	-124.41	-130	221	333	320	13.28	25.099			
1800	1770	1729	1690	8	8	-123.36	-153	245	371	356	14.37	25.789			
1900	1866	1821	1776	8	9	-122.51	-177	269	408	392	15.47	26.365			
2000	1962	1914	1863	9	9	-121.80	-200	293	445	429	16.58	26.852			
2100	2058	2007	1949	10	10	-121.20	-223	317	483	465	17.70	27.266			

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

Anticollision Report

Company: DJR Operating
Project: North Alamito Unit
Reference Site: O30 2307
Site Error: 0 ft
Reference Well: NAU 238H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: RKB @ 7042ft (Rig TBD)
MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design O30 2307 - NAU 240H - Original drilling - APD													Offset Site Error: 0 ft
Survey Program: 0-MWD+IGRF													Offset Well Error: 0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
2200	2154	2099	2035	10	11	-120.68	-246	341	520	501	18.83	27.624	
2300	2250	2192	2122	11	11	-120.24	-269	366	558	538	19.96	27.934	
2400	2346	2285	2208	12	12	-119.85	-293	390	595	574	21.10	28.206	
2500	2442	2377	2294	12	13	-119.50	-316	414	633	611	22.24	28.445	
2600	2538	2470	2381	13	14	-119.20	-339	438	670	647	23.39	28.658	
2700	2634	2562	2467	13	14	-118.93	-362	462	708	683	24.54	28.848	
2800	2730	2655	2553	14	15	-118.68	-386	486	745	720	25.69	29.019	
2900	2826	2748	2640	15	16	-118.46	-409	510	783	756	26.84	29.173	
3000	2922	2840	2726	15	17	-118.26	-432	535	821	793	28.00	29.312	
3100	3018	2933	2812	16	17	-118.07	-455	559	858	829	29.16	29.439	
3200	3114	3025	2899	17	18	-117.90	-479	583	896	866	30.31	29.556	
3300	3210	3118	2985	17	19	-117.75	-502	607	934	902	31.47	29.662	
3400	3306	3211	3072	18	20	-117.61	-525	631	971	939	32.63	29.760	
3500	3402	3303	3158	18	20	-117.47	-548	655	1009	975	33.80	29.850	
3600	3498	3396	3244	19	21	-117.35	-571	679	1046	1012	34.96	29.934	
3700	3594	3489	3331	20	22	-117.24	-595	704	1084	1048	36.12	30.011	
3800	3690	3581	3417	20	22	-117.13	-618	728	1122	1084	37.29	30.084	
3900	3786	3674	3503	21	23	-117.03	-641	752	1159	1121	38.45	30.151	
4000	3882	3766	3590	22	24	-116.94	-664	776	1197	1157	39.62	30.214	
4100	3978	3859	3676	22	25	-116.85	-688	800	1235	1194	40.79	30.272	
4200	4074	3952	3762	23	25	-116.77	-711	824	1272	1230	41.96	30.328	
4300	4170	4044	3849	24	26	-116.69	-734	848	1310	1267	43.12	30.379	
4400	4266	4291	4036	24	34	-167.29	-178	198	1345	1305	40.60	33.140	
4500	4362	4284	4029	25	34	-166.92	-183	204	1298	1256	42.65	30.442	
4600	4458	4276	4022	26	34	-166.54	-188	210	1257	1213	44.70	28.128	
4696	4551	4269	4015	26	34	-166.18	-193	215	1224	1178	46.63	26.257	
4700	4554	4268	4014	26	34	-167.18	-194	215	1223	1177	46.71	26.192	
4750	4602	4267	4013	27	34	178.48	-195	217	1209	1161	47.68	25.355	
4800	4650	4269	4015	27	34	164.03	-193	215	1196	1148	48.63	24.602	
4850	4698	4276	4022	27	34	151.45	-189	210	1186	1137	49.56	23.934	
4900	4745	4286	4029	27	34	141.41	-182	203	1178	1127	50.44	23.351	
4950	4791	4297	4036	28	34	133.57	-173	192	1172	1120	51.27	22.851	
5000	4836	4307	4043	28	34	127.33	-161	179	1167	1115	52.08	22.418	
5050	4880	4319	4050	28	34	122.18	-147	163	1165	1112	52.84	22.053	
5090	4913	4335	4062	28	35	118.65	-134	149	1165	1111	53.41	21.807	
5100	4922	4363	4079	28	35	117.79	-130	145	1165	1111	53.56	21.748	
5150	4962	4392	4099	28	35	113.90	-111	124	1166	1112	54.25	21.492	
5200	4999	4423	4129	28	36	110.40	-91	101	1168	1113	54.94	21.262	
5250	5034	4457	4159	29	36	107.19	-68	75	1172	1116	55.65	21.053	
5300	5067	4494	4192	29	37	104.25	-43	47	1176	1119	56.37	20.858	
5350	5096	4533	4229	29	37	101.57	-17	18	1180	1123	57.15	20.652	
5400	5122	4575	4269	29	38	99.15	11	-13	1185	1127	57.99	20.435	
5450	5146	4619	4319	29	38	97.01	40	-46	1190	1131	58.91	20.196	
5500	5165	4665	4369	29	39	95.16	71	-80	1194	1134	59.93	19.927	
5550	5182	4712	4419	29	40	93.62	102	-115	1198	1137	61.03	19.630	
5600	5194	4760	4469	30	41	92.42	134	-151	1201	1139	62.25	19.298	
5650	5203	4809	4519	30	41	91.56	167	-187	1204	1140	63.56	18.939	
5700	5209	4859	4569	30	42	91.05	200	-224	1205	1140	64.97	18.550	
5744	5210	4903	4619	30	43	90.90	230	-257	1206	1139	66.28	18.191	
5800	5210	4959	4669	31	44	90.90	267	-299	1206	1138	68.01	17.729	
5900	5210	5059	4769	31	46	90.90	333	-373	1206	1135	71.32	16.910	
6000	5210	5159	4869	33	48	90.90	400	-448	1206	1131	74.85	16.116	

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

Anticollision Report

Company: DJR Operating
 Project: North Alamito Unit
 Reference Site: O30 2307
 Site Error: 0 ft
 Reference Well: NAU 238H
 Well Error: 0 ft
 Reference Wellbore: Original drilling
 Reference Design: APD

Local Co-ordinate Reference: Well NAU 238H
 TVD Reference: RKB @ 7042ft (Rig TBD)
 MD Reference: RKB @ 7042ft (Rig TBD)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM
 Offset TVD Reference: Offset Datum

Offset Design O30 2307 - NAU 240H - Original drilling - APD													Offset Site Error: 0 ft
Survey Program: 0-MWD+IGRF													Offset Well Error: 0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
6100	5210	7259	5229	34	50	90.90	467	-522	1207	1128	78.57	15.356	
6200	5210	7359	5229	35	52	90.90	534	-597	1207	1124	82.45	14.637	
6300	5210	7459	5229	37	54	90.90	600	-671	1207	1121	86.46	13.960	
6400	5210	7559	5229	38	56	90.90	667	-746	1207	1117	90.58	13.327	
6500	5210	7659	5229	40	58	90.90	734	-820	1207	1113	94.81	12.736	
6600	5210	7759	5229	42	60	90.90	800	-895	1208	1109	99.11	12.185	
6700	5210	7859	5229	44	63	90.90	867	-969	1208	1104	103.49	11.672	
6800	5210	7959	5229	46	65	90.90	934	-1044	1208	1100	107.93	11.193	
6900	5210	8059	5229	48	67	90.90	1000	-1118	1208	1096	112.43	10.748	
7000	5210	8159	5229	50	69	90.90	1067	-1193	1209	1092	116.97	10.333	
7100	5210	8259	5229	53	72	90.90	1134	-1267	1209	1087	121.56	9.945	
7200	5210	8359	5229	55	74	90.90	1201	-1342	1209	1083	126.18	9.582	
7300	5210	8459	5229	57	76	90.90	1267	-1416	1209	1078	130.83	9.243	
7400	5210	8559	5229	59	79	90.90	1334	-1491	1210	1074	135.52	8.925	
7500	5210	8659	5229	62	81	90.90	1401	-1565	1210	1070	140.23	8.627	
7600	5210	8759	5229	64	83	90.90	1467	-1640	1210	1065	144.96	8.347	
7700	5210	8859	5229	66	86	90.90	1534	-1714	1210	1061	149.72	8.083	
7800	5210	8959	5229	68	88	90.90	1601	-1789	1210	1056	154.49	7.835	
7900	5210	9059	5229	71	90	90.90	1667	-1863	1211	1051	159.29	7.601	
8000	5210	9159	5229	73	93	90.90	1734	-1938	1211	1047	164.09	7.379	
8100	5210	9259	5229	76	95	90.90	1801	-2013	1211	1042	168.92	7.170	
8200	5210	9359	5229	78	98	90.90	1867	-2087	1211	1038	173.75	6.972	
8300	5210	9459	5229	80	100	90.90	1934	-2162	1212	1033	178.60	6.784	
8400	5210	9559	5229	83	102	90.90	2001	-2236	1212	1028	183.46	6.605	
8500	5210	9659	5229	85	105	90.90	2068	-2311	1212	1024	188.33	6.436	
8600	5210	9759	5229	88	107	90.90	2134	-2385	1212	1019	193.21	6.275	
8700	5210	9859	5229	90	110	90.90	2201	-2460	1213	1014	198.10	6.121	
8800	5210	9959	5229	92	112	90.90	2268	-2534	1213	1010	203.00	5.974	
8900	5210	10,059	5229	95	114	90.90	2334	-2609	1213	1005	207.91	5.834	
9000	5210	10,159	5229	97	117	90.90	2401	-2683	1213	1000	212.82	5.701	
9100	5210	10,259	5229	100	119	90.90	2468	-2758	1213	996	217.74	5.573	
9200	5210	10,359	5229	102	122	90.90	2534	-2832	1214	991	222.66	5.451	
9300	5210	10,459	5229	105	124	90.90	2601	-2907	1214	986	227.59	5.334	
9400	5210	10,559	5229	107	127	90.90	2668	-2981	1214	982	232.53	5.222	
9500	5210	10,659	5229	110	129	90.90	2734	-3056	1214	977	237.47	5.114	
9600	5210	10,759	5229	112	132	90.90	2801	-3130	1215	972	242.42	5.011	
9700	5210	10,859	5229	114	134	90.90	2868	-3205	1215	968	247.37	4.911	
9800	5210	10,959	5229	117	137	90.90	2935	-3279	1215	963	252.32	4.816	
9900	5210	11,059	5229	119	139	90.90	3001	-3354	1215	958	257.28	4.724	
10,000	5210	11,159	5229	122	142	90.90	3068	-3428	1216	953	262.24	4.635	
10,100	5210	11,259	5229	124	144	90.90	3135	-3503	1216	949	267.21	4.550	
10,200	5210	11,359	5229	127	146	90.90	3201	-3577	1216	944	272.18	4.468	
10,300	5210	11,459	5229	129	149	90.90	3268	-3652	1216	939	277.15	4.388	
10,400	5210	11,559	5229	132	151	90.89	3335	-3726	1217	934	282.13	4.312	
10,500	5210	11,659	5229	134	154	90.89	3401	-3801	1217	930	287.11	4.238	
10,600	5210	11,759	5229	137	156	90.89	3468	-3875	1217	925	292.09	4.166	
10,700	5210	11,859	5229	139	159	90.89	3535	-3950	1217	920	297.07	4.097	
10,800	5210	11,959	5229	142	161	90.89	3602	-4024	1217	915	302.06	4.030	
10,900	5210	12,059	5229	144	164	90.89	3668	-4099	1218	911	307.05	3.966	
11,000	5210	12,159	5229	147	166	90.89	3735	-4173	1218	906	312.04	3.903	
11,100	5210	12,259	5229	149	169	90.89	3802	-4248	1218	901	317.03	3.842	
11,200	5210	12,359	5229	152	171	90.89	3868	-4322	1218	896	322.03	3.783	

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

Anticollision Report

Company: DJR Operating
 Project: North Alamito Unit
 Reference Site: O30 2307
 Site Error: 0 ft
 Reference Well: NAU 238H
 Well Error: 0 ft
 Reference Wellbore: Original drilling
 Reference Design: APD

Local Co-ordinate Reference: Well NAU 238H
 TVD Reference: RKB @ 7042ft (Rig TBD)
 MD Reference: RKB @ 7042ft (Rig TBD)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM
 Offset TVD Reference: Offset Datum

Offset Design O30 2307 - NAU 240H - Original drilling - APD													Offset Site Error: 0 ft
Survey Program: 0-MWD+IGRF													Offset Well Error: 0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
11,300	5210	12,459	5229	154	174	90.89	3935	-4397	1219	892	327.02	3.726	
11,400	5210	12,559	5229	157	176	90.89	4002	-4471	1219	887	332.02	3.671	
11,500	5210	12,659	5229	159	179	90.89	4068	-4546	1219	882	337.02	3.617	
11,600	5210	12,759	5229	162	181	90.89	4135	-4620	1219	877	342.03	3.565	
11,700	5210	12,859	5229	164	184	90.89	4202	-4695	1220	872	347.03	3.514	
11,800	5210	12,959	5229	167	186	90.89	4268	-4769	1220	868	352.04	3.465	
11,900	5210	13,059	5229	169	189	90.89	4335	-4844	1220	863	357.04	3.417	
12,000	5210	13,159	5229	172	191	90.89	4402	-4918	1220	858	362.05	3.370	
12,100	5210	13,259	5229	174	194	90.89	4469	-4993	1220	853	367.06	3.325	
12,200	5210	13,359	5229	177	196	90.89	4535	-5067	1221	849	372.07	3.281	
12,300	5210	13,420	5229	179	198	90.89	4576	-5113	1222	846	375.41	3.254 SF	
12,400	5210	13,420	5229	182	198	90.89	4576	-5113	1229	855	374.35	3.283	
12,500	5210	13,420	5229	184	198	90.89	4576	-5113	1244	873	370.93	3.355	
12,600	5210	13,420	5229	187	198	90.89	4576	-5113	1268	902	365.40	3.469	
12,700	5210	13,420	5229	189	198	90.89	4576	-5113	1298	940	358.07	3.625	
12,800	5210	13,420	5229	192	198	90.89	4576	-5113	1335	986	349.33	3.823	
12,900	5210	13,420	5229	194	198	90.89	4576	-5113	1379	1039	339.55	4.061	
13,000	5210	13,420	5229	197	198	90.89	4576	-5113	1428	1099	329.08	4.340	
13,100	5210	13,420	5229	199	198	90.89	4576	-5113	1482	1164	318.25	4.658	
13,200	5210	13,420	5229	202	198	90.89	4576	-5113	1541	1234	307.29	5.016	
13,300	5210	13,420	5229	204	198	90.89	4576	-5113	1604	1308	296.42	5.413	
13,400	5210	13,420	5229	207	198	90.89	4576	-5113	1671	1385	285.78	5.847	
13,500	5210	13,420	5229	209	198	90.89	4576	-5113	1741	1465	275.47	6.320	
13,589	5210	13,420	5229	211	198	90.89	4576	-5113	1805	1538	266.67	6.769	

Anticollision Report

Company: DJR Operating
Project: North Alamito Unit
Reference Site: O30 2307
Site Error: 0 ft
Reference Well: NAU 238H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: RKB @ 7042ft (Rig TBD)
MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 7042ft (Rig TBD)

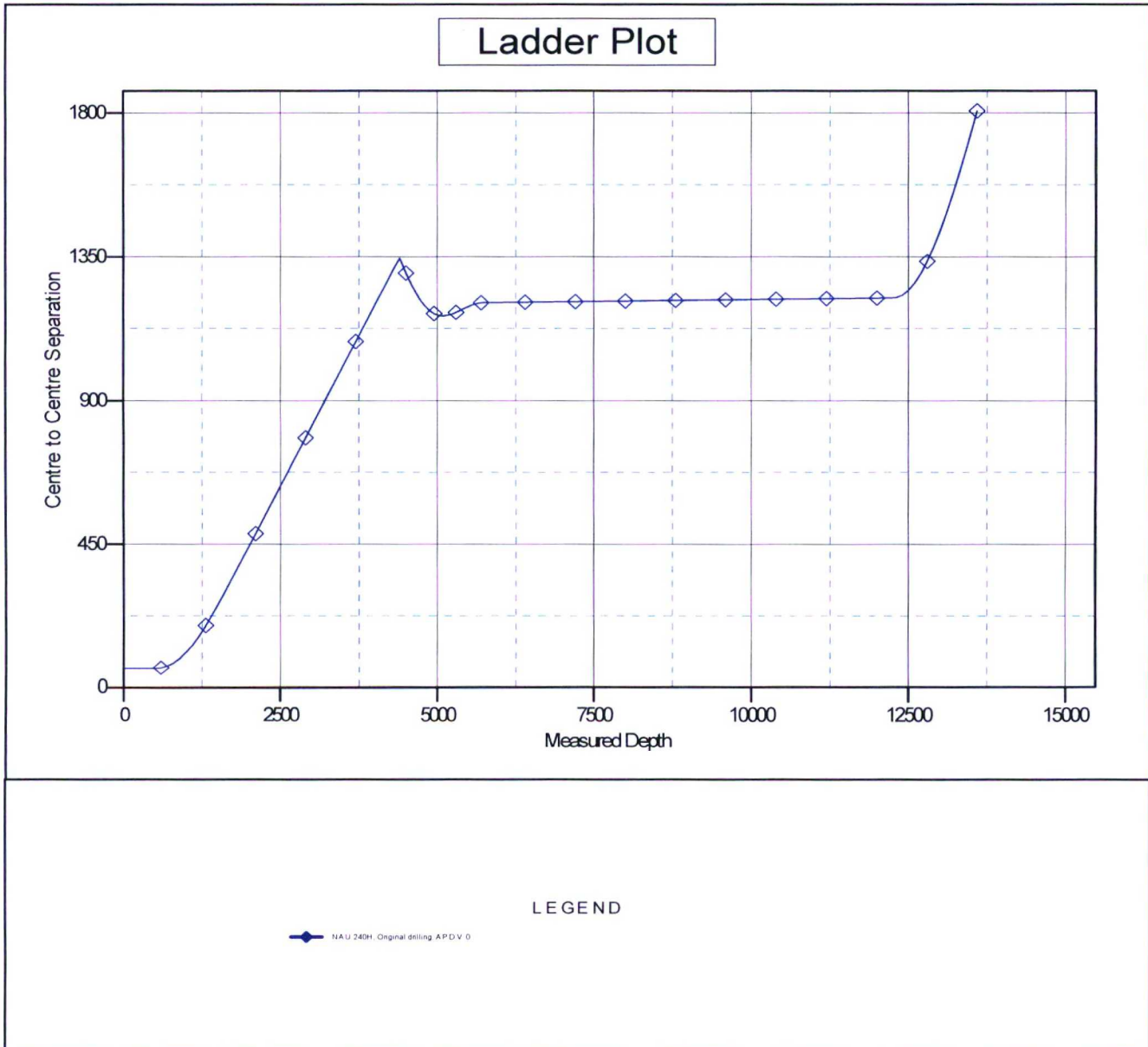
Offset Depths are relative to Offset Datum

Central Meridian is -107.83333333

Coordinates are relative to: NAU 238H

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.13°



Anticollision Report

Company: DJR Operating
Project: North Alamito Unit
Reference Site: O30 2307
Site Error: 0 ft
Reference Well: NAU 238H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: RKB @ 7042ft (Rig TBD)
MD Reference: RKB @ 7042ft (Rig TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 7042ft (Rig TBD)

Offset Depths are relative to Offset Datum

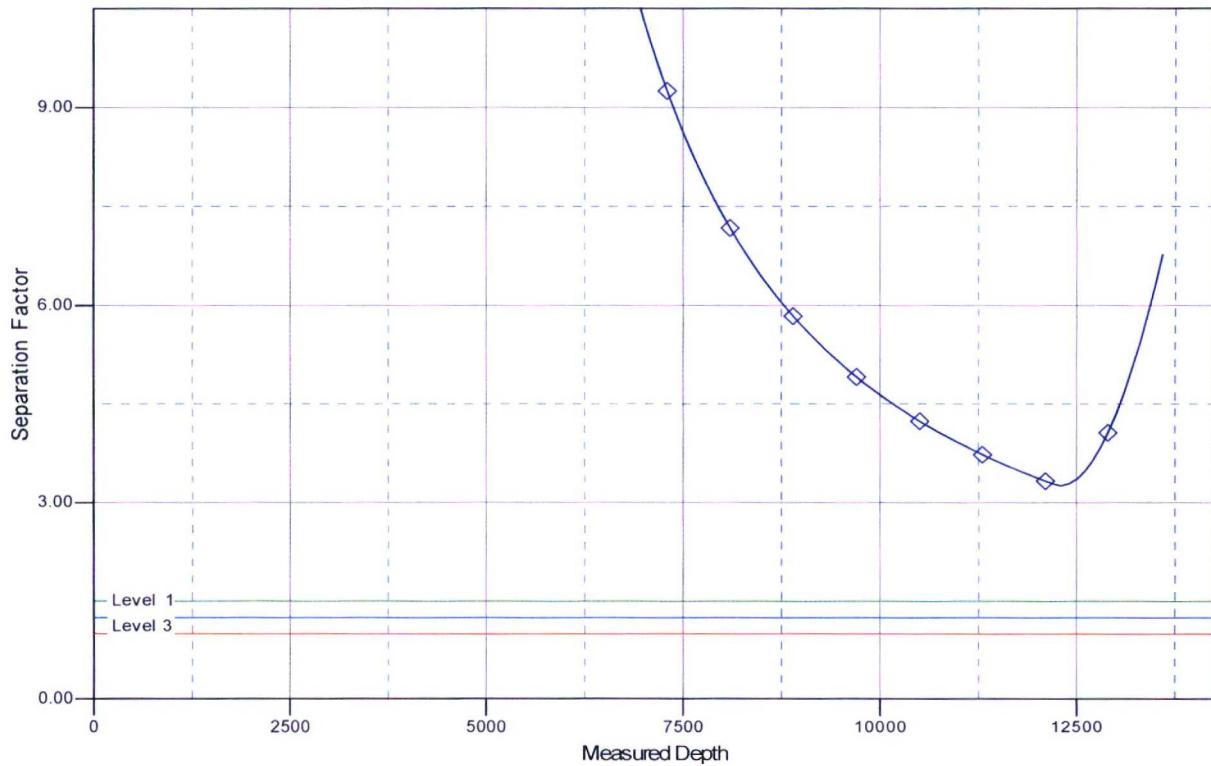
Central Meridian is -107.83333333

Coordinates are relative to: NAU 238H

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.13°

Separation Factor Plot



LEGEND

◆ NAU 240H, Original drilling, APD V 0