

District I1625 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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170**District IV**1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

Form C-101
August 1, 2011

Permit 275924

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

1. Operator Name and Address Tamaroa Operating, LLC PO Box 866937 Plano, TX 750866937		2. OGRID Number 328666
4. Property Code 326769		3. API Number 30-005-64349
5. Property Name CATALINA		6. Well No. 002H

7. Surface Location

UL - Lot P	Section 24	Township 07S	Range 28E	Lot Idn	Feet From 50	N/S Line S	Feet From 1310	E/W Line E	County Chaves
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8. Proposed Bottom Hole Location

UL - Lot A	Section 24	Township 07S	Range 28E	Lot Idn A	Feet From 100	N/S Line N	Feet From 1310	E/W Line E	County Chaves
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9. Pool Information

ELKINS,SAN ANDRES	21730
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 4005
16. Multiple N	17. Proposed Depth 7401	18. Formation San Andres	19. Contractor	20. Spud Date 12/31/2019
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ 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	17.5	13.375	48	450	400	0
Int1	12.25	8.625	24	1750	950	0
Prod	7.875	5.5	17	7401	1110	0

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	3000	1200	Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.	OIL CONSERVATION DIVISION	
Signature:		
Printed Name: Electronically filed by William C Bahlburg	Approved By: Raymond Podany	
Title: Manager	Title: Geologist	
Email Address: bill@tamaroadev.com	Approved Date: 12/24/2019	Expiration Date: 12/24/2021
Date: 12/16/2019	Phone: 972-867-2575	Conditions of Approval Attached

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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

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

□AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number		Pool Code	Pool Name	
Property Code	Property Name CATALINA			Well Number 2H
OGRID No.	Operator Name TAMAROA OPERATING, LLC			Elevation 4005'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	24	7-S	28-E		50	SOUTH	1310	EAST	CHAVES

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
A	24	7-S	28-E		100	NORTH	1310	EAST	CHAVES

Dedicated 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

LAST TAKE POINT NAD 83 NME Y= 982168.1 N X= 631496.3 E LAT.=33.699477° N LONG.=104.036890° W	LAST TAKE POINT NAD 27 NME Y= 982103.8 N X= 590318.8 E LAT.=33.699385° N LONG.=104.036371° W	
CORNER COORDINATES TABLE NAD 27 NME A - Y= 976922.4 N, X= 590320.2 E B - Y= 976927.7 N, X= 591641.7 E C - Y= 982203.8 N, X= 590302.2 E D - Y= 982206.3 N, X= 591628.2 E	GRID AZ.=359°51'12" HORIZ. DIST.=5132.7'	
CORNER COORDINATES TABLE NAD 83 NME A - Y= 976986.7 N, X= 631497.7 E B - Y= 976992.0 N, X= 632819.2 E C - Y= 982268.0 N, X= 631479.7 E D - Y= 982270.6 N, X= 632805.6 E		
FIRST TAKE POINT NAD 83 NME Y= 977586.6 N X= 631508.0 E LAT.=33.686886° N LONG.=104.036895° W	FIRST TAKE POINT NAD 27 NME Y= 977522.3 N X= 590330.5 E LAT.=33.686794° N LONG.=104.036376° W	
GEODETIC COORDINATES NAD 83 NME SURFACE LOCATION Y= 977036.8 N X= 631509.4 E LAT.=33.685375° N LONG.=104.036895° W	GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y= 97672.5 N X= 590331.9 E LAT.=33.685283° N LONG.=104.036376° W	

OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature

Date

Printed Name _____

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.

OCTOBER 21, 2019
3239
Date of Survey
Signature & Seal of Professional Surveyor:

0

Ronald Eide 12/12/2019

Certificate Number	Gary G. Eidson	12641
	Ronald J. Eidson	3239

LSL JWSC W.O.: 19.11.1285

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
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Santa Fe, NM 87505

GAS CAPTURE PLAN

Date: 12/24/2019

☒ Original

Operator & OGRID No.: [328666] Tamaroa Operating, LLC

☐ Amended - Reason for
Amendment: _____

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

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

Well(s)/Production Facility – Name of facility

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

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
CATALINA #002H	30-005-64349	P-24-07S-28E	0050S 1310E	100	Flared	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to TARGA MIDSTREAM SERVICES LLC and will be connected to TARGA MIDSTREAM SERVICES LLC Low Pressure gathering system located in Chaves County, New Mexico. It will require 4853' of pipeline to connect the facility to Low Pressure gathering system. Tamaroa Operating, LLC provides (periodically) to TARGA MIDSTREAM SERVICES LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Tamaroa Operating, LLC and TARGA MIDSTREAM SERVICES LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at TARGA MIDSTREAM SERVICES LLC Processing Plant located in Sec. 24, Twn. 07S, Rng. 28E, Chaves County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

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

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

Alternatives to Reduce Flaring

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

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

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Form APD Comments

Permit 275924

PERMIT COMMENTS

Operator Name and Address: Tamaroa Operating, LLC [328666] PO Box 866937 Plano, TX 750866937	API Number: 30-005-64349
	Well: CATALINA #002H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 275924

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: Tamaroa Operating, LLC [328666] PO Box 866937 Plano, TX 750866937		API Number: 30-005-64349
		Well: CATALINA #002H
OCD Reviewer	Condition	
rpodany	Will require a directional survey with the C-104	
rpodany	Cement is required to circulate on both surface and intermediate1 strings of casing	



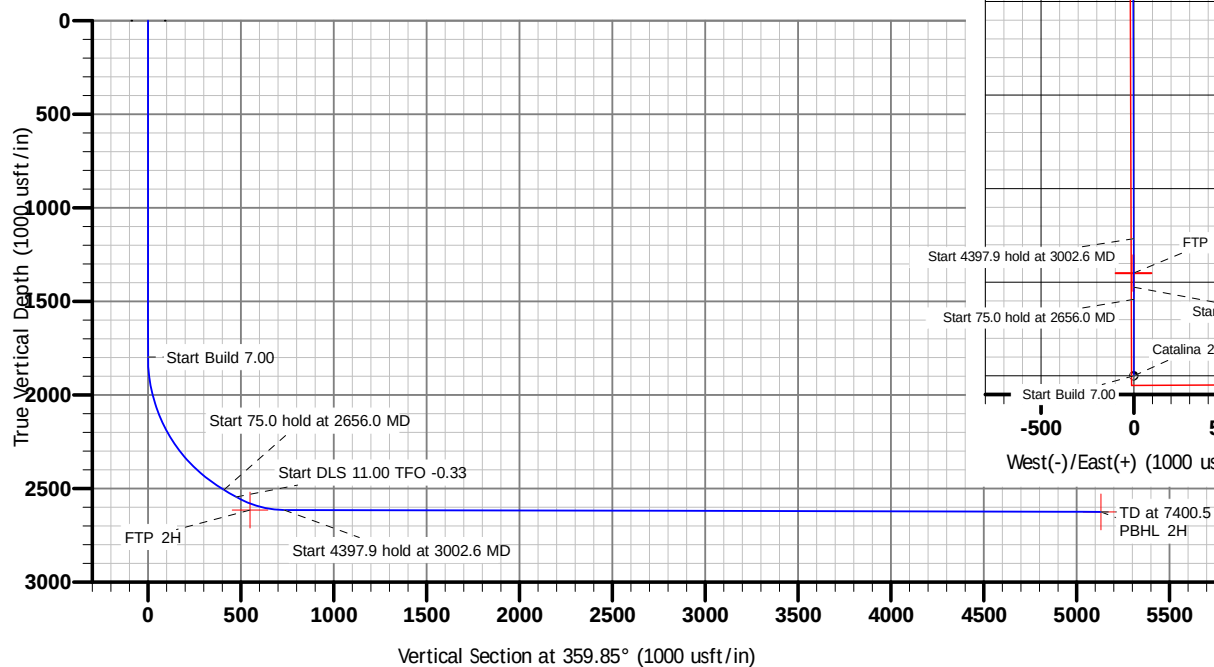
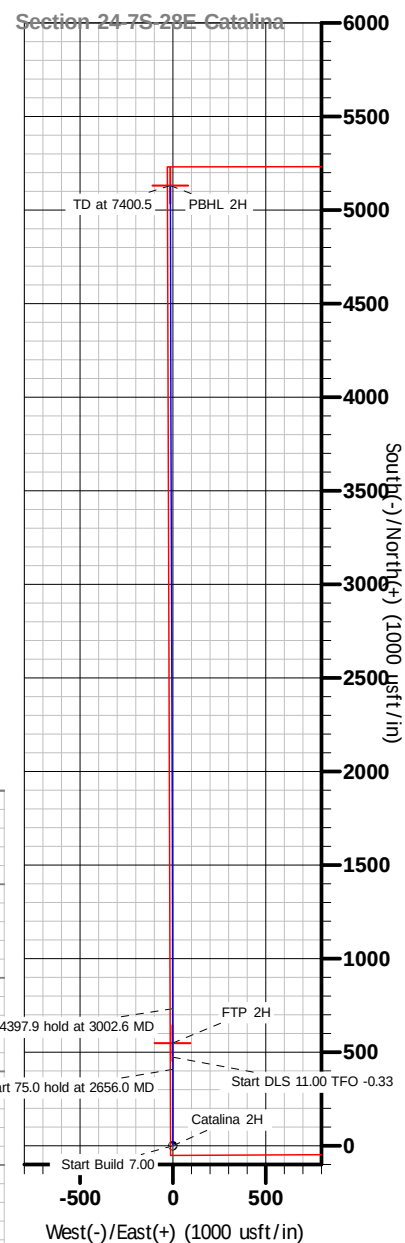
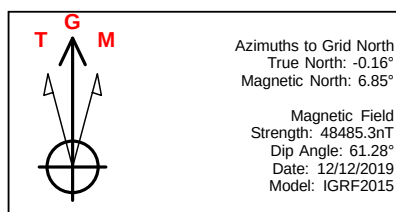
COMPANY: Tamaroa Operating, LLC.
WELL: Catalina 2H
COUNTY: Chaves County, NM (NAD 83)
DATUM: North American Datum 1983



RIG:
GRID CORRECTION: To convert a Magnetic Direction to a Grid Direction, Add 6.85°

GEODETIC ZONE: New Mexico Eastern Zone											
4005+15 @ 4020.0usft											
GROUND ELEVATION: 4005.0											
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot				
	0.0	0.0	977036.80	631509.40	33° 41' 7.350 N	104° 2' 12.824 W					
PLAN SECTIONS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	1798.9	0.00	0.00	1798.9	0.0	0.0	0.00	0.00	0.0		
3	2656.0	60.00	0.00	2507.8	409.3	0.0	7.00	0.00	409.3		
4	2731.0	60.00	0.00	2545.3	474.2	0.0	0.00	0.00	474.2		
5	3002.6	89.87	359.83	2615.0	733.5	-0.4	11.00	-0.33	733.5		
6	7400.5	89.87	359.83	2625.0	5131.3	-13.1	0.00	0.00	5131.3	PBHL 2H	

SHL: 50' FSL; 1310' FEL
Section 24-7S-28E
PBHL: 100' FNL; 1310' FEL
Section 24-7S-28E





Stryker Energy Directional Services

Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Catalina 2H
Company:	Tamaroa Operating, LLC.	TVD Reference:	4005+15 @ 4020.0usft
Project:	Chaves County, NM (NAD 83)	MD Reference:	4005+15 @ 4020.0usft
Site:	Section 24-7S-28E Catalina	North Reference:	Grid
Well:	Catalina 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Project	Chaves County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Section 24-7S-28E Catalina		
Site Position:		Northing:	977,036.80 usft
From:	Map	Easting:	631,509.40 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	33° 41' 7.350 N
		Longitude:	104° 2' 12.824 W
		Grid Convergence:	0.16 °

Well	Catalina 2H		
Well Position	+N/-S	0.0 usft	Northing: 977,036.80 usft
	+E/-W	0.0 usft	Easting: 631,509.40 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	15.0 usft
		Latitude:	33° 41' 7.350 N
		Longitude:	104° 2' 12.824 W
		Ground Level:	4,005.0 usft

Wellbore	Original Hole		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/12/19	7.02	61.28	48,485.29410258

Design	Plan #1		
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Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.85

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,798.9	0.00	0.00	1,798.9	0.0	0.0	0.00	0.00	0.00	0.00	
2,656.0	60.00	0.00	2,507.8	409.3	0.0	7.00	7.00	0.00	0.00	
2,731.0	60.00	0.00	2,545.3	474.2	0.0	0.00	0.00	0.00	0.00	
3,002.6	89.87	359.83	2,615.0	733.5	-0.4	11.00	11.00	-0.06	-0.33	
7,400.5	89.87	359.83	2,625.0	5,131.3	-13.1	0.00	0.00	0.00	0.00	PBHL 2H



Stryker Energy Directional Services

Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Catalina 2H
Company:	Tamaroa Operating, LLC.	TVD Reference:	4005+15 @ 4020.0usft
Project:	Chaves County, NM (NAD 83)	MD Reference:	4005+15 @ 4020.0usft
Site:	Section 24-7S-28E Catalina	North Reference:	Grid
Well:	Catalina 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,798.9	0.00	0.00	1,798.9	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.08	0.00	1,800.0	0.0	0.0	0.0	7.00	7.00	0.00
1,900.0	7.08	0.00	1,899.7	6.2	0.0	6.2	7.00	7.00	0.00
2,000.0	14.08	0.00	1,998.0	24.6	0.0	24.6	7.00	7.00	0.00
2,100.0	21.08	0.00	2,093.3	54.8	0.0	54.8	7.00	7.00	0.00
2,200.0	28.08	0.00	2,184.1	96.3	0.0	96.3	7.00	7.00	0.00
2,300.0	35.08	0.00	2,269.3	148.7	0.0	148.7	7.00	7.00	0.00
2,400.0	42.08	0.00	2,347.4	211.0	0.0	211.0	7.00	7.00	0.00
2,500.0	49.08	0.00	2,417.4	282.4	0.0	282.3	7.00	7.00	0.00
2,600.0	56.08	0.00	2,478.1	361.7	0.0	361.7	7.00	7.00	0.00
2,656.0	60.00	0.00	2,507.8	409.3	0.0	409.3	7.00	7.00	0.00
2,700.0	60.00	0.00	2,529.7	447.3	0.0	447.3	0.00	0.00	0.00
2,731.0	60.00	0.00	2,545.3	474.2	0.0	474.2	0.00	0.00	0.00
2,800.0	67.59	359.95	2,575.7	536.0	0.0	536.0	11.00	11.00	-0.07
2,900.0	78.59	359.89	2,604.7	631.6	-0.2	631.6	11.00	11.00	-0.06
3,000.0	89.58	359.84	2,615.0	730.9	-0.4	730.9	11.00	11.00	-0.06
3,002.6	89.87	359.83	2,615.0	733.5	-0.4	733.5	11.00	11.00	-0.06
3,100.0	89.87	359.83	2,615.3	830.9	-0.7	830.9	0.00	0.00	0.00
3,200.0	89.87	359.83	2,615.5	930.9	-1.0	930.9	0.00	0.00	0.00
3,300.0	89.87	359.83	2,615.7	1,030.9	-1.3	1,030.9	0.00	0.00	0.00
3,400.0	89.87	359.83	2,615.9	1,130.9	-1.5	1,130.9	0.00	0.00	0.00
3,500.0	89.87	359.83	2,616.2	1,230.9	-1.8	1,230.9	0.00	0.00	0.00
3,600.0	89.87	359.83	2,616.4	1,330.9	-2.1	1,330.9	0.00	0.00	0.00
3,700.0	89.87	359.83	2,616.6	1,430.9	-2.4	1,430.9	0.00	0.00	0.00
3,800.0	89.87	359.83	2,616.8	1,530.9	-2.7	1,530.9	0.00	0.00	0.00
3,900.0	89.87	359.83	2,617.1	1,630.9	-3.0	1,630.9	0.00	0.00	0.00
4,000.0	89.87	359.83	2,617.3	1,730.9	-3.3	1,730.9	0.00	0.00	0.00
4,100.0	89.87	359.83	2,617.5	1,830.9	-3.6	1,830.9	0.00	0.00	0.00
4,200.0	89.87	359.83	2,617.7	1,930.9	-3.9	1,930.9	0.00	0.00	0.00
4,300.0	89.87	359.83	2,618.0	2,030.9	-4.1	2,030.9	0.00	0.00	0.00
4,400.0	89.87	359.83	2,618.2	2,130.9	-4.4	2,130.9	0.00	0.00	0.00
4,500.0	89.87	359.83	2,618.4	2,230.9	-4.7	2,230.9	0.00	0.00	0.00
4,600.0	89.87	359.83	2,618.7	2,330.9	-5.0	2,330.9	0.00	0.00	0.00
4,700.0	89.87	359.83	2,618.9	2,430.9	-5.3	2,430.9	0.00	0.00	0.00
4,800.0	89.87	359.83	2,619.1	2,530.9	-5.6	2,530.9	0.00	0.00	0.00
4,900.0	89.87	359.83	2,619.3	2,630.9	-5.9	2,630.9	0.00	0.00	0.00



Stryker Energy Directional Services

Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Catalina 2H
Company:	Tamaroa Operating, LLC.	TVD Reference:	4005+15 @ 4020.0usft
Project:	Chaves County, NM (NAD 83)	MD Reference:	4005+15 @ 4020.0usft
Site:	Section 24-7S-28E Catalina	North Reference:	Grid
Well:	Catalina 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.0	89.87	359.83	2,619.6	2,730.9	-6.2	2,730.9	0.00	0.00	0.00
5,100.0	89.87	359.83	2,619.8	2,830.9	-6.5	2,830.9	0.00	0.00	0.00
5,200.0	89.87	359.83	2,620.0	2,930.9	-6.7	2,930.9	0.00	0.00	0.00
5,300.0	89.87	359.83	2,620.2	3,030.9	-7.0	3,030.9	0.00	0.00	0.00
5,400.0	89.87	359.83	2,620.5	3,130.9	-7.3	3,130.9	0.00	0.00	0.00
5,500.0	89.87	359.83	2,620.7	3,230.9	-7.6	3,230.9	0.00	0.00	0.00
5,600.0	89.87	359.83	2,620.9	3,330.9	-7.9	3,330.9	0.00	0.00	0.00
5,700.0	89.87	359.83	2,621.1	3,430.9	-8.2	3,430.9	0.00	0.00	0.00
5,800.0	89.87	359.83	2,621.4	3,530.9	-8.5	3,530.9	0.00	0.00	0.00
5,900.0	89.87	359.83	2,621.6	3,630.9	-8.8	3,630.9	0.00	0.00	0.00
6,000.0	89.87	359.83	2,621.8	3,730.9	-9.1	3,730.9	0.00	0.00	0.00
6,100.0	89.87	359.83	2,622.1	3,830.9	-9.3	3,830.9	0.00	0.00	0.00
6,200.0	89.87	359.83	2,622.3	3,930.9	-9.6	3,930.9	0.00	0.00	0.00
6,300.0	89.87	359.83	2,622.5	4,030.8	-9.9	4,030.9	0.00	0.00	0.00
6,400.0	89.87	359.83	2,622.7	4,130.8	-10.2	4,130.9	0.00	0.00	0.00
6,500.0	89.87	359.83	2,623.0	4,230.8	-10.5	4,230.9	0.00	0.00	0.00
6,600.0	89.87	359.83	2,623.2	4,330.8	-10.8	4,330.9	0.00	0.00	0.00
6,700.0	89.87	359.83	2,623.4	4,430.8	-11.1	4,430.9	0.00	0.00	0.00
6,800.0	89.87	359.83	2,623.6	4,530.8	-11.4	4,530.9	0.00	0.00	0.00
6,900.0	89.87	359.83	2,623.9	4,630.8	-11.7	4,630.9	0.00	0.00	0.00
7,000.0	89.87	359.83	2,624.1	4,730.8	-11.9	4,730.9	0.00	0.00	0.00
7,100.0	89.87	359.83	2,624.3	4,830.8	-12.2	4,830.9	0.00	0.00	0.00
7,200.0	89.87	359.83	2,624.5	4,930.8	-12.5	4,930.9	0.00	0.00	0.00
7,300.0	89.87	359.83	2,624.8	5,030.8	-12.8	5,030.9	0.00	0.00	0.00
7,400.0	89.87	359.83	2,625.0	5,130.8	-13.1	5,130.9	0.00	0.00	0.00
7,400.5	89.87	359.83	2,625.0	5,131.3	-13.1	5,131.3	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
FTP 2H	0.00	0.00	2,615.0	549.8	-1.4	977,586.60	631,508.00	33° 41' 12.789 N	104° 2' 12.822 W
- plan misses target center by 31.9usft at 2824.7usft MD (2584.5 TVD, 559.0 N, 0.0 E)									
- Point									
PBHL 2H	0.00	0.00	2,625.0	5,131.3	-13.1	982,168.10	631,496.30	33° 41' 58.117 N	104° 2' 12.804 W
- plan hits target center									
- Point									



Tamaroa Operating, LLC.

Chaves County, NM (NAD 83)
Section 24-7S-28E Catalina
Catalina 2H

Original Hole

Plan: Plan #1

Standard Planning Report - Geographic

12 December, 2019





Stryker Energy Directional Services

Planning Report - Geographic



Database:	EDM5000	Local Co-ordinate Reference:	Well Catalina 2H
Company:	Tamaroa Operating, LLC.	TVD Reference:	4005+15 @ 4020.0usft
Project:	Chaves County, NM (NAD 83)	MD Reference:	4005+15 @ 4020.0usft
Site:	Section 24-7S-28E Catalina	North Reference:	Grid
Well:	Catalina 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Project	Chaves County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Section 24-7S-28E Catalina		
Site Position:		Northing:	977,036.80 usft
From:	Map	Easting:	631,509.40 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	33° 41' 7.350 N
		Longitude:	104° 2' 12.824 W
		Grid Convergence:	0.16 °

Well	Catalina 2H		
Well Position	+N/-S	0.0 usft	Northing: 977,036.80 usft
	+E/-W	0.0 usft	Easting: 631,509.40 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	15.0 usft
		Latitude:	33° 41' 7.350 N
		Longitude:	104° 2' 12.824 W
		Ground Level:	4,005.0 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/12/19	7.02	61.28	48,485.29410258

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.85

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,798.9	0.00	0.00	1,798.9	0.0	0.0	0.00	0.00	0.00	0.00	
2,656.0	60.00	0.00	2,507.8	409.3	0.0	7.00	7.00	0.00	0.00	
2,731.0	60.00	0.00	2,545.3	474.2	0.0	0.00	0.00	0.00	0.00	
3,002.6	89.87	359.83	2,615.0	733.5	-0.4	11.00	11.00	-0.06	-0.33	
7,400.5	89.87	359.83	2,625.0	5,131.3	-13.1	0.00	0.00	0.00	0.00	PBHL 2H



Stryker Energy Directional Services

Planning Report - Geographic



Database:	EDM5000	Local Co-ordinate Reference:	Well Catalina 2H
Company:	Tamaroa Operating, LLC.	TVD Reference:	4005+15 @ 4020.0usft
Project:	Chaves County, NM (NAD 83)	MD Reference:	4005+15 @ 4020.0usft
Site:	Section 24-7S-28E Catalina	North Reference:	Grid
Well:	Catalina 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
100.0	0.00	0.00	100.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
200.0	0.00	0.00	200.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
300.0	0.00	0.00	300.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
400.0	0.00	0.00	400.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
500.0	0.00	0.00	500.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
600.0	0.00	0.00	600.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
700.0	0.00	0.00	700.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
800.0	0.00	0.00	800.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
900.0	0.00	0.00	900.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,200.0	0.00	0.00	1,200.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,798.9	0.00	0.00	1,798.9	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,800.0	0.08	0.00	1,800.0	0.0	0.0	977,036.80	631,509.40	33° 41' 7.350 N	104° 2' 12.824 W
1,900.0	7.08	0.00	1,899.7	6.2	0.0	977,043.04	631,509.40	33° 41' 7.411 N	104° 2' 12.824 W
2,000.0	14.08	0.00	1,998.0	24.6	0.0	977,061.38	631,509.40	33° 41' 7.593 N	104° 2' 12.823 W
2,100.0	21.08	0.00	2,093.3	54.8	0.0	977,091.56	631,509.40	33° 41' 7.892 N	104° 2' 12.822 W
2,200.0	28.08	0.00	2,184.1	96.3	0.0	977,133.13	631,509.40	33° 41' 8.303 N	104° 2' 12.820 W
2,300.0	35.08	0.00	2,269.3	148.7	0.0	977,185.46	631,509.40	33° 41' 8.821 N	104° 2' 12.819 W
2,400.0	42.08	0.00	2,347.4	211.0	0.0	977,247.78	631,509.40	33° 41' 9.437 N	104° 2' 12.817 W
2,500.0	49.08	0.00	2,417.4	282.4	0.0	977,319.15	631,509.40	33° 41' 10.143 N	104° 2' 12.814 W
2,600.0	56.08	0.00	2,478.1	361.7	0.0	977,398.52	631,509.40	33° 41' 10.929 N	104° 2' 12.811 W
2,656.0	60.00	0.00	2,507.8	409.3	0.0	977,446.06	631,509.40	33° 41' 11.399 N	104° 2' 12.810 W
2,700.0	60.00	0.00	2,529.7	447.3	0.0	977,484.13	631,509.40	33° 41' 11.775 N	104° 2' 12.809 W
2,731.0	60.00	0.00	2,545.3	474.2	0.0	977,511.01	631,509.40	33° 41' 12.041 N	104° 2' 12.808 W
2,800.0	67.59	359.95	2,575.7	536.0	0.0	977,572.83	631,509.38	33° 41' 12.653 N	104° 2' 12.806 W
2,900.0	78.59	359.89	2,604.7	631.6	-0.2	977,668.36	631,509.25	33° 41' 13.598 N	104° 2' 12.804 W
3,000.0	89.58	359.84	2,615.0	730.9	-0.4	977,767.67	631,509.01	33° 41' 14.581 N	104° 2' 12.804 W
3,002.6	89.87	359.83	2,615.0	733.5	-0.4	977,770.27	631,509.00	33° 41' 14.606 N	104° 2' 12.804 W
3,100.0	89.87	359.83	2,615.3	830.9	-0.7	977,867.67	631,508.72	33° 41' 15.570 N	104° 2' 12.804 W
3,200.0	89.87	359.83	2,615.5	930.9	-1.0	977,967.67	631,508.43	33° 41' 16.560 N	104° 2' 12.804 W
3,300.0	89.87	359.83	2,615.7	1,030.9	-1.3	978,067.67	631,508.14	33° 41' 17.549 N	104° 2' 12.804 W
3,400.0	89.87	359.83	2,615.9	1,130.9	-1.5	978,167.67	631,507.86	33° 41' 18.538 N	104° 2' 12.804 W
3,500.0	89.87	359.83	2,616.2	1,230.9	-1.8	978,267.67	631,507.57	33° 41' 19.528 N	104° 2' 12.804 W
3,600.0	89.87	359.83	2,616.4	1,330.9	-2.1	978,367.67	631,507.28	33° 41' 20.517 N	104° 2' 12.804 W
3,700.0	89.87	359.83	2,616.6	1,430.9	-2.4	978,467.67	631,506.99	33° 41' 21.506 N	104° 2' 12.804 W
3,800.0	89.87	359.83	2,616.8	1,530.9	-2.7	978,567.67	631,506.70	33° 41' 22.496 N	104° 2' 12.804 W
3,900.0	89.87	359.83	2,617.1	1,630.9	-3.0	978,667.67	631,506.41	33° 41' 23.485 N	104° 2' 12.804 W
4,000.0	89.87	359.83	2,617.3	1,730.9	-3.3	978,767.67	631,506.12	33° 41' 24.474 N	104° 2' 12.804 W
4,100.0	89.87	359.83	2,617.5	1,830.9	-3.6	978,867.67	631,505.83	33° 41' 25.464 N	104° 2' 12.804 W
4,200.0	89.87	359.83	2,617.7	1,930.9	-3.9	978,967.67	631,505.55	33° 41' 26.453 N	104° 2' 12.804 W
4,300.0	89.87	359.83	2,618.0	2,030.9	-4.1	979,067.67	631,505.26	33° 41' 27.442 N	104° 2' 12.804 W
4,400.0	89.87	359.83	2,618.2	2,130.9	-4.4	979,167.66	631,504.97	33° 41' 28.432 N	104° 2' 12.804 W
4,500.0	89.87	359.83	2,618.4	2,230.9	-4.7	979,267.66	631,504.68	33° 41' 29.421 N	104° 2' 12.804 W
4,600.0	89.87	359.83	2,618.7	2,330.9	-5.0	979,367.66	631,504.39	33° 41' 30.411 N	104° 2' 12.804 W
4,700.0	89.87	359.83	2,618.9	2,430.9	-5.3	979,467.66	631,504.10	33° 41' 31.400 N	104° 2' 12.804 W
4,800.0	89.87	359.83	2,619.1	2,530.9	-5.6	979,567.66	631,503.81	33° 41' 32.389 N	104° 2' 12.804 W
4,900.0	89.87	359.83	2,619.3	2,630.9	-5.9	979,667.66	631,503.52	33° 41' 33.379 N	104° 2' 12.804 W
5,000.0	89.87	359.83	2,619.6	2,730.9	-6.2	979,767.66	631,503.24	33° 41' 34.368 N	104° 2' 12.804 W



Stryker Energy Directional Services

Planning Report - Geographic



Database:	EDM5000	Local Co-ordinate Reference:	Well Catalina 2H
Company:	Tamaroa Operating, LLC.	TVD Reference:	4005+15 @ 4020.0usft
Project:	Chaves County, NM (NAD 83)	MD Reference:	4005+15 @ 4020.0usft
Site:	Section 24-7S-28E Catalina	North Reference:	Grid
Well:	Catalina 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,100.0	89.87	359.83	2,619.8	2,830.9	-6.5	979,867.66	631,502.95	33° 41' 35.357 N	104° 2' 12.804 W
5,200.0	89.87	359.83	2,620.0	2,930.9	-6.7	979,967.66	631,502.66	33° 41' 36.347 N	104° 2' 12.804 W
5,300.0	89.87	359.83	2,620.2	3,030.9	-7.0	980,067.66	631,502.37	33° 41' 37.336 N	104° 2' 12.804 W
5,400.0	89.87	359.83	2,620.5	3,130.9	-7.3	980,167.66	631,502.08	33° 41' 38.325 N	104° 2' 12.804 W
5,500.0	89.87	359.83	2,620.7	3,230.9	-7.6	980,267.66	631,501.79	33° 41' 39.315 N	104° 2' 12.804 W
5,600.0	89.87	359.83	2,620.9	3,330.9	-7.9	980,367.66	631,501.50	33° 41' 40.304 N	104° 2' 12.804 W
5,700.0	89.87	359.83	2,621.1	3,430.9	-8.2	980,467.66	631,501.21	33° 41' 41.294 N	104° 2' 12.804 W
5,800.0	89.87	359.83	2,621.4	3,530.9	-8.5	980,567.66	631,500.93	33° 41' 42.283 N	104° 2' 12.804 W
5,900.0	89.87	359.83	2,621.6	3,630.9	-8.8	980,667.65	631,500.64	33° 41' 43.272 N	104° 2' 12.804 W
6,000.0	89.87	359.83	2,621.8	3,730.9	-9.1	980,767.65	631,500.35	33° 41' 44.262 N	104° 2' 12.804 W
6,100.0	89.87	359.83	2,622.1	3,830.9	-9.3	980,867.65	631,500.06	33° 41' 45.251 N	104° 2' 12.804 W
6,200.0	89.87	359.83	2,622.3	3,930.9	-9.6	980,967.65	631,499.77	33° 41' 46.240 N	104° 2' 12.804 W
6,300.0	89.87	359.83	2,622.5	4,030.8	-9.9	981,067.65	631,499.48	33° 41' 47.230 N	104° 2' 12.804 W
6,400.0	89.87	359.83	2,622.7	4,130.8	-10.2	981,167.65	631,499.19	33° 41' 48.219 N	104° 2' 12.804 W
6,500.0	89.87	359.83	2,623.0	4,230.8	-10.5	981,267.65	631,498.90	33° 41' 49.208 N	104° 2' 12.804 W
6,600.0	89.87	359.83	2,623.2	4,330.8	-10.8	981,367.65	631,498.62	33° 41' 50.198 N	104° 2' 12.804 W
6,700.0	89.87	359.83	2,623.4	4,430.8	-11.1	981,467.65	631,498.33	33° 41' 51.187 N	104° 2' 12.804 W
6,800.0	89.87	359.83	2,623.6	4,530.8	-11.4	981,567.65	631,498.04	33° 41' 52.177 N	104° 2' 12.804 W
6,900.0	89.87	359.83	2,623.9	4,630.8	-11.7	981,667.65	631,497.75	33° 41' 53.166 N	104° 2' 12.804 W
7,000.0	89.87	359.83	2,624.1	4,730.8	-11.9	981,767.65	631,497.46	33° 41' 54.155 N	104° 2' 12.804 W
7,100.0	89.87	359.83	2,624.3	4,830.8	-12.2	981,867.65	631,497.17	33° 41' 55.145 N	104° 2' 12.804 W
7,200.0	89.87	359.83	2,624.5	4,930.8	-12.5	981,967.65	631,496.88	33° 41' 56.134 N	104° 2' 12.804 W
7,300.0	89.87	359.83	2,624.8	5,030.8	-12.8	982,067.65	631,496.59	33° 41' 57.123 N	104° 2' 12.804 W
7,400.0	89.87	359.83	2,625.0	5,130.8	-13.1	982,167.64	631,496.31	33° 41' 58.113 N	104° 2' 12.804 W
7,400.5	89.87	359.83	2,625.0	5,131.3	-13.1	982,168.10	631,496.30	33° 41' 58.117 N	104° 2' 12.804 W

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP 2H - hit/miss target - Shape	0.00	0.00	2,615.0	549.8	-1.4	977,586.60	631,508.00	33° 41' 12.789 N	104° 2' 12.822 W
- plan misses target center by 31.9usft at 2824.7usft MD (2584.5 TVD, 559.0 N, 0.0 E)									
- Point									
PBHL 2H - plan hits target center - Point	0.00	0.00	2,625.0	5,131.3	-13.1	982,168.10	631,496.30	33° 41' 58.117 N	104° 2' 12.804 W