

District I

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

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos 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 258449

NMOC

OCT 13 2018

DISTRICT III

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

1. Operator Name and Address HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002		2. OGRID Number 372171
4. Property Code 318434		3. API Number 30.045-35898
5. Property Name SAN JUAN 32 7 UNIT		6. Well No. 202H

7. Surface Location

UL - Lot G	Section 18	Township 32N	Range 07W	Lot Idn	Feet From 2320	N/S Line N	Feet From 1859	E/W Line E	County San Juan
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8. Proposed Bottom Hole Location

UL - Lot J	Section 7	Township 32N	Range 07W	Lot Idn	Feet From 1413	N/S Line S	Feet From 2531	E/W Line E	County San Juan
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9. Pool Information

BASIN FRUITLAND COAL (GAS)	71629
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Additional Well Information

11. Work Type New Well	12. Well Type GAS	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 6181
16. Multiple N	17. Proposed Depth 6162' MD 2846' TVD	18. Formation Fruitland Coal	19. Contractor TBD	20. Spud Date
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	12.25	9.625	32.3	500	265	0
Int1	8.75	7	23	3683	393	0
Liner1	6.25	4.5	11.6	6162	0	

Casing/Cement Program: Additional Comments

Setting depths are in TMDs and the TVDs are indicated on the drilling program. Surface Owners are BLM and BOR. Per BLM, this is submitted as a State APD.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	3000	3000	Schaffer

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☐ , if applicable.		OIL CONSERVATION DIVISION	
Signature: <i>Priscilla Shorty</i>		<i>Chad Kern</i>	
Printed Name: Priscilla Shorty		Approved By:	
Title: Operations / Regulatory Technician - Sr.		Title:	
Email Address: pshorty@hilcorp.com		Approved Date: 10-22-18	
Date: 10/12/2018		Expiration Date: 10-22-2020	
Phone: 505-324-5188		Conditions of Approval Attached	

SEE ATTACHED NMOC
CONDITIONS OF APPROVAL

37

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Phone: (505) 476-3460 Fax: (505) 476-3462

STATE OF NEW MEXICO
Energy, Minerals & Natural Resources Department

Revised August 1, 2011

Submit one copy to
Appropriate District Office

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35898		*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 318434	*Property Name SAN JUAN 32-7 UNIT		*Well Number 202H
*GRID No. 372171	*Operator Name HILCORP ENERGY COMPANY		*Elevation 6181'

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
G	18	32N	7W		2320	NORTH	1859	EAST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	7	32N	7W		1413	SOUTH	2531	EAST	SAN JUAN

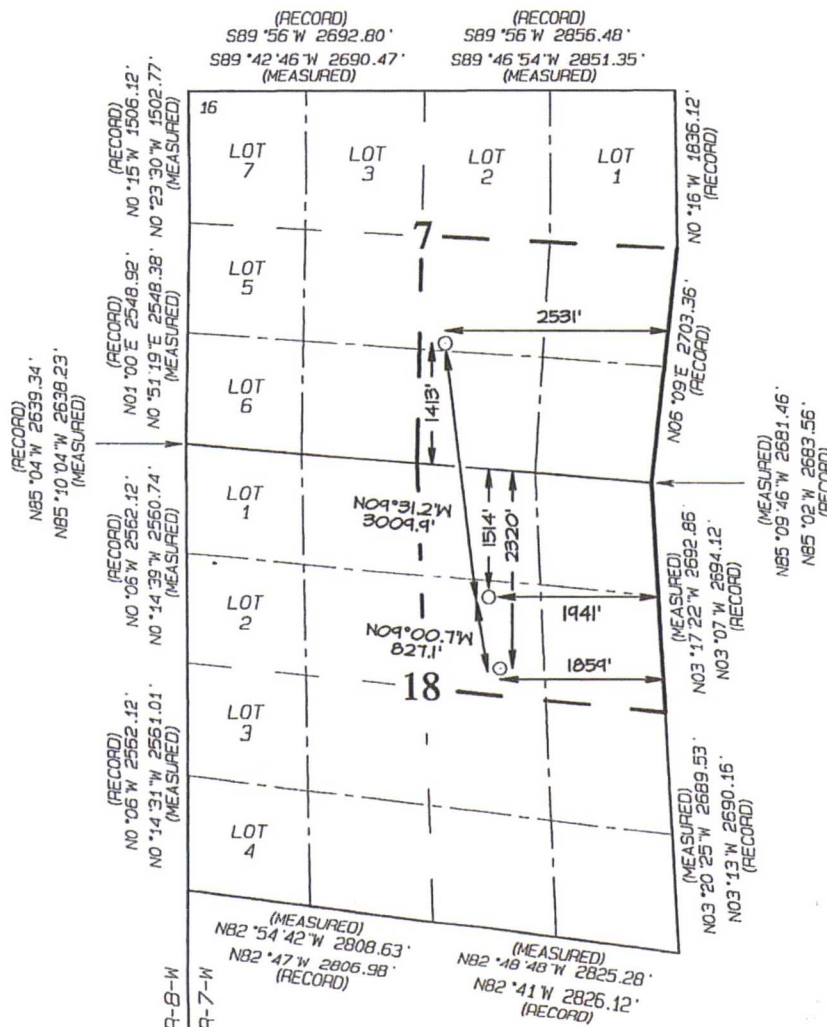
¹² Dedicated Acres 320.00	SE/4 - Section 7 NE/4 - Section 18	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED
TO THIS COMPLETION UNTIL ALL
INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN
APPROVED BY THE DIVISION

BOTTOM-HOLE LOCATION
1413' FSL 2531' FEL
SEC 7, T32N, R7W
LAT: 36.991993°N
LONG: 107.607546°W
DATUM: NAD1927
LAT: 36.991997°N
LONG: 107.608157°W
DATUM: NAD1983

FIRST TAKE POINT
1514' FNL 1941' FEL
SEC 18, T32N, R7W
LAT: 36.983836°N
LONG: 107.605866°W
DATUM: NAD1927
LAT: 36.983840°N
LONG: 107.606477°W
DATUM: NAD1983

SURFACE LOCATION
2320' FNL 1859' FEL
SEC 18, T32N, R7W
LAT: 36.981592°N
LONG: 107.605429°W
DATUM: NAD1927
LAT: 36.981596°N
LONG: 107.606040°W
DATUM: NAD1983



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
Priscilla Shorty
Printed Name
pshorty@hilcorp.com
E-mail Address

¹⁸ SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: SEPTEMBER 21, 2018
Survey Date: SEPTEMBER 7, 2018

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

Surface = Federal

Hilcorp Energy Company

Technical Plan

1. Location

SAN JUAN 32-7 UNIT 202H

SHL: 2320' FNL, 1859' FEL – Sec 18, T32N, R7W

BHL: 1413' FSL, 2531' FEL – Sec 7, T32N, R7W

GL: 6181'

2. Geological Markers

Anticipated formation tops with comments of any possible water, gas, or oil shows are indicated below:

Formation	Depth (TVD)	Remarks
Ojo Alamo	1837'	Wet
Kirtland	1890'	Wet
Fruitland	2606'	Possible Gas/Water
Pictured Cliffs	3044'	Wet

Formation Top Selection: Tops assuming on strike with San Juan 32-7 Un 003 -18; regional fm tops from NMOCD website.

See attached directional plan for anticipated formation tops in measured depth.

3. Pressure Control Equipment

See Attached BOPE & Choke Manifold Schematic for a diagram of pressure control equipment.

- BOPE will be nipped up on top of wellhead after surface casing is set and cemented.
- Pressure control configuration will be designed to meet the minimum 2M standards.
- All equipment will have 3M pressure ratings.
- A rotating head will be rigged up on top of annular as seen in attached diagram.

4. Casing & Cement Program

A) The proposed casing program is outlined below:

Proposed Casing				
Casing	Hole Size	Casing Size	Weight/Grade	Depth
Surface	12-1/4"	9-5/8"	32.3# H-40	0' - 500' (MD)
Intermediate	8-3/4"	7"	23# L-80	0' – 3,682.87' (MD)
Prod Liner (predrilled)	6-1/4"	4-1/2"	11.6# J-55/L-80	3,154' – 6,161.92' (MD)

The intermediate hole section (pilot hole) will be drilled to target depth, then fully cased and cemented with 7" casing.

A whipstock will be run, and window will be cut in the 7" casing above the target coal seam to allow for a lateral to be drilled. Whipstock / casing exit depth is 3,144.1' MD / 2,817.31' TVD.

The lateral will be drilled f/ 3,144.1' to TD at 6,161.92'. The 4-1/2" liner will be run outside the window with top of the liner dropped off at 3,154'.

If the 6-1/4" hole is not drilled to total MD, the production liner setting depth and length will be adjusted accordingly.

The 7" casing shoe and the window / casing exit will be set inside the setback boundary line.

B) The proposed cement program is shown below:

Cement Program						
Interval	Depth (MD)	Sacks	Slurry	Excess	Volume	Planned Cement Top
Surface	500'	265	Lead Cmt: 2% Calcium Chloride, pellet 0.1250 lbm/sk Poly-E-Flake 1.18 ft ³ / sk - 5.24 gal/sk 15.8 ppg	100%	313 ft ³	Surface
Intermediate	3,682.87'	393	Lead Cmt: Varicem Cement 0.3% Super CBL 0.3 % FE-2 5 lbm/sk Kol-Seal 0.125 lbm/sk Poly-E-Flake 2.11 ft ³ / sk - 11.25 gal/sk 12.9 ppg	50%	830 ft ³	Surface
Production		N/A	N/A – Open hole with pre-drilled liner	N/A	N/A	N/A

Actual cement volumes will be determined and may be adjusted onsite based on well conditions. For the intermediate hole, a 2-stage cement job may be performed if hole conditions indicate during operations. Stage tool will be placed appropriately as conditions indicate.

C) The proposed centralizer program is shown below:

Centralizer Program	
Interval	Centralizers
Surface	1 per joint on bottom 3 joints
Intermediate	10' above shoe joint with collar clamp On top of 2nd, 4th, 6th, 8th, 10th joints 1 every 4th joint to Ojo Alamo 1 every joint through Ojo Alamo 1 Turbolizer will be placed mid-way into Ojo Alamo 1 every 4th joint from top of Ojo Alamo to surface shoe 1 inside surface casing
Production	N/A

To allow adequate time for cement to achieve a minimum of 500 psi compressive strength, a minimum of 8 hours wait on cement time for each hole section will be observed. The wellhead will not be installed, casing will not be tested, and the prior casing shoe will not be drilled out until adequate wait on cement time is achieved.

5. Drilling Fluids

A) The proposed drilling fluid program is outlined below:

Mud Program			
Interval	Mud Type	Weight (ppg)	Fluid Loss (cc)
Surface	Air / Water Gel System	Air 8.3 - 9.2	NC
Intermediate	LSND / Gel System	8.4 - 9.5	6 - 16
Production	LSND Brine (if needed)*	8.5 - 10	4 - 14

In the production hole, Brine will be utilized only if a weighting agent is needed to raise MW (for either well control or wellbore stability purposes).

LCM may be added to the mud system if hole conditions indicate.

B) Closed loop equipment will be utilized for solids control. Cuttings from surface, intermediate, and production hole will be hauled to an approved disposal site.



Hilcorp Energy Company

San Juan 32-7 Unit 202H

6. Abnormal Pressures & Hazards

- No over-pressured intervals expected.
- Estimated Reservoir Pressure = 1500 psi.
- Maximum anticipated surface pressure = 1,300 psi
- There is some offset Fruitland Coal, Mesa Verde, and Picture Cliffs production within the area which could result in these respective formations being under pressured.
- No hydrogen sulfide gas is expected based on nearby well production.

7. Testing, Logging, Coring

Testing, Logging, Coring Procedure		
Evaluation Method	Start Depth	End depth
Mud Logs	Fruitland Coal Top	TD
MWD Directional Surveys	KOP	TD
LWD GR	7" window	TD
Temp Survey	If needed on intermediate casing	

8. Directional Plan

The planned wellbore directional plan and plot is attached.

The planned directional plan is built off geological targets from offset wells. The production hole will be landed and drilled within target formation horizontally utilizing LWD equipment to help steer the wellbore. On site adjustments will be made to the directional plan as formation and hole indicates.



Company: Hilcorp Energy Company
Field: San Juan Co., NM (NAD27)
Location: Sec.18-T32N-R07W
Well: San Juan 32-7 Unit 202H
Borehole: Lat 1
Plan: Rev0



WELL DETAILS: San Juan 32-7 Unit 202H

+N/-S	+E/-W	North	GL 6181.00	KB @ 6196.00usft	Latitude	Longitude
0.00	0.00	2176647.70	Easting 566567.63		36.981592°N	107.605429°W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	3144.10	65.00	350.99	2817.31	816.81	-129.52	0.00	0.00	826.99
2	3394.16	90.00	350.46	2871.00	1055.83	-168.61	10.00	-1.25	1069.19
3	3411.47	90.52	350.46	2870.93	1072.90	-171.48	3.00	0.00	1086.50
4	6161.92	90.52	350.46	2846.00	3785.20	-627.33	0.00	0.00	3836.83

DESIGN TARGET DETAILS

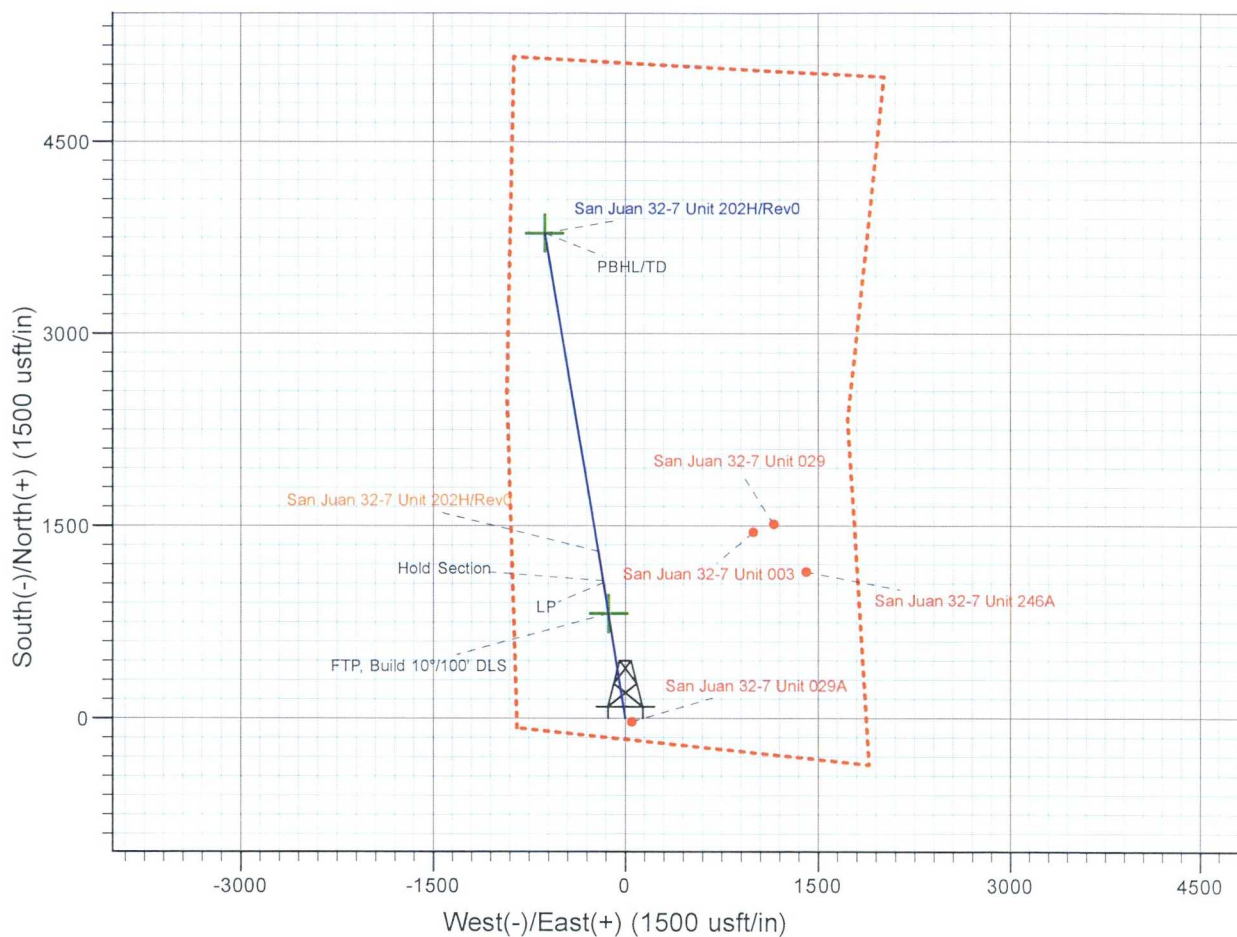
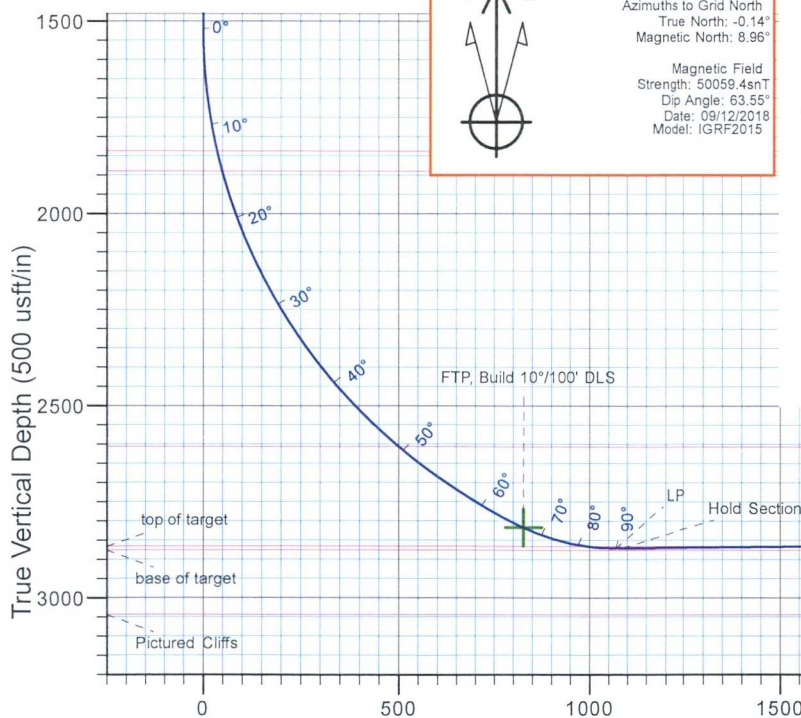
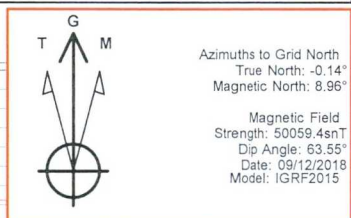
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
SJ 32-7 Unit 202H FTP	2817.31	816.81	-129.52	36.983836°N	107.605866°W
SJ 32-7 Unit 202H Toe	2846.00	3785.20	-627.33	36.991993°N	107.607546°W

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1838.00	1840.69	Ojo Alamo
1891.00	1895.31	Kirtland
2607.00	2754.58	Fruitland
2866.00	3318.37	top of target

ANNOTATIONS

TVD	MD	Annotation
2817.31	3144.10	FTP, Build 10°/100' DLS
2871.00	3394.16	LP
2870.93	3411.47	Hold Section
2846.00	6161.92	PBHL/TD



Vertical Section at 350.59° (500 usft/in)



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.18-T32N-R07W

San Juan 32-7 Unit 202H

Lat 1

Plan: Rev0

Standard Planning Report - Geographic

20 September, 2018





Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6196.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6196.00usft
Site:	Sec.18-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lat 1		
Design:	Rev0		

Project	San Juan Co., NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico West 3003		

Site	Sec.18-T32N-R07W					
Site Position:		Northing:	2,176,499.15 usft	Latitude:	36.981184°N	
From:	Map	Easting:	566,563.90 usft	Longitude:	107.605443°W	
Position Uncertainty:		0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.14

Well	San Juan 32-7 Unit 202H					
Well Position	+N/-S	0.00 usft	Northing:	2,176,647.70 usft	Latitude:	36.981592°N
	+E/-W	0.00 usft	Easting:	566,567.63 usft	Longitude:	107.605429°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,181.00 usft

Wellbore	Lat 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/12/18	9.10	63.55	50,059

Design	Rev0			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	3,144.10
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	1.00	0.00	0.00	350.59

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
3,144.10	65.00	350.99	2,817.31	816.81	-129.52	0.00	0.00	0.00	0.00	
3,394.16	90.00	350.46	2,871.00	1,055.83	-168.61	10.00	10.00	-0.21	-1.25	SJ 32-7 Unit 202H To
3,411.47	90.52	350.46	2,870.93	1,072.90	-171.48	3.00	3.00	0.00	0.00	
6,161.92	90.52	350.46	2,846.00	3,785.20	-627.33	0.00	0.00	0.00	0.00	SJ 32-7 Unit 202H To



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6196.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6196.00usft
Site:	Sec.18-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lat 1		
Design:	Rev0		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,144.10	65.00	350.99	2,817.31	816.81	-129.52	2,177,464.51	566,438.11	36.983837°N	107.605866°W
FTP, Build 10°/100' DLS									
3,200.00	70.59	350.86	2,838.43	867.89	-137.68	2,177,515.59	566,429.95	36.983977°N	107.605894°W
3,300.00	80.59	350.65	2,863.29	963.37	-153.22	2,177,611.07	566,414.41	36.984239°N	107.605946°W
3,394.16	90.00	350.46	2,871.00	1,055.83	-168.61	2,177,703.53	566,399.02	36.984493°N	107.605998°W
LP									
3,400.00	90.18	350.46	2,871.00	1,061.59	-169.57	2,177,709.29	566,398.05	36.984509°N	107.606001°W
3,411.47	90.52	350.46	2,870.93	1,072.90	-171.48	2,177,720.60	566,396.15	36.984540°N	107.606008°W
Hold Section									
3,500.00	90.52	350.46	2,870.12	1,160.20	-186.15	2,177,807.90	566,381.48	36.984780°N	107.606057°W
3,600.00	90.52	350.46	2,869.22	1,258.82	-202.72	2,177,906.52	566,364.91	36.985051°N	107.606113°W
3,700.00	90.52	350.46	2,868.31	1,357.43	-219.30	2,178,005.13	566,348.33	36.985322°N	107.606169°W
3,800.00	90.52	350.46	2,867.40	1,456.04	-235.87	2,178,103.74	566,331.76	36.985593°N	107.606225°W
3,900.00	90.52	350.46	2,866.50	1,554.66	-252.44	2,178,202.35	566,315.19	36.985864°N	107.606281°W
4,000.00	90.52	350.46	2,865.59	1,653.27	-269.02	2,178,300.97	566,298.61	36.986135°N	107.606337°W
4,100.00	90.52	350.46	2,864.69	1,751.88	-285.59	2,178,399.58	566,282.04	36.986406°N	107.606393°W
4,200.00	90.52	350.46	2,863.78	1,850.49	-302.16	2,178,498.19	566,265.46	36.986677°N	107.606449°W
4,300.00	90.52	350.46	2,862.87	1,949.11	-318.74	2,178,596.81	566,248.89	36.986948°N	107.606505°W
4,400.00	90.52	350.46	2,861.97	2,047.72	-335.31	2,178,695.42	566,232.32	36.987219°N	107.606561°W
4,500.00	90.52	350.46	2,861.06	2,146.33	-351.89	2,178,794.03	566,215.74	36.987490°N	107.606617°W
4,600.00	90.52	350.46	2,860.15	2,244.94	-368.46	2,178,892.64	566,199.17	36.987761°N	107.606672°W
4,700.00	90.52	350.46	2,859.25	2,343.56	-385.03	2,178,991.26	566,182.60	36.988032°N	107.606728°W
4,800.00	90.52	350.46	2,858.34	2,442.17	-401.61	2,179,089.87	566,166.02	36.988303°N	107.606784°W
4,900.00	90.52	350.46	2,857.44	2,540.78	-418.18	2,179,188.48	566,149.45	36.988574°N	107.606840°W
5,000.00	90.52	350.46	2,856.53	2,639.40	-434.75	2,179,287.10	566,132.88	36.988845°N	107.606896°W
5,100.00	90.52	350.46	2,855.62	2,738.01	-451.33	2,179,385.71	566,116.30	36.989116°N	107.606952°W
5,200.00	90.52	350.46	2,854.72	2,836.62	-467.90	2,179,484.32	566,099.73	36.989387°N	107.607008°W
5,300.00	90.52	350.46	2,853.81	2,935.23	-484.47	2,179,582.93	566,083.15	36.989658°N	107.607064°W
5,400.00	90.52	350.46	2,852.90	3,033.85	-501.05	2,179,681.55	566,066.58	36.989929°N	107.607120°W
5,500.00	90.52	350.46	2,852.00	3,132.46	-517.62	2,179,780.16	566,050.01	36.990200°N	107.607176°W
5,600.00	90.52	350.46	2,851.09	3,231.07	-534.20	2,179,878.77	566,033.43	36.990471°N	107.607232°W
5,700.00	90.52	350.46	2,850.19	3,329.69	-550.77	2,179,977.39	566,016.86	36.990742°N	107.607288°W
5,800.00	90.52	350.46	2,849.28	3,428.30	-567.34	2,180,076.00	566,000.29	36.991013°N	107.607344°W
5,900.00	90.52	350.46	2,848.37	3,526.91	-583.92	2,180,174.61	565,983.71	36.991284°N	107.607400°W
6,000.00	90.52	350.46	2,847.47	3,625.52	-600.49	2,180,273.22	565,967.14	36.991555°N	107.607456°W
6,100.00	90.52	350.46	2,846.56	3,724.14	-617.06	2,180,371.84	565,950.57	36.991826°N	107.607512°W
6,161.92	90.52	350.46	2,846.00	3,785.20	-627.33	2,180,432.90	565,940.30	36.991993°N	107.607546°W
PBHL/TD									

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SJ 32-7 Unit 202H FTP	0.00	0.00	2,817.31	816.81	-129.52	2,177,464.51	566,438.11	36.983837°N	107.605866°W	
- hit/miss target										
- plan hits target center										
- Point										
SJ 32-7 Unit 202H Toe	0.00	0.00	2,846.00	3,785.20	-627.33	2,180,432.90	565,940.30	36.991993°N	107.607546°W	
- hit/miss target										
- plan hits target center										
- Point										



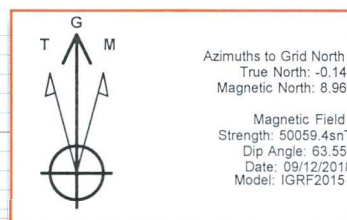
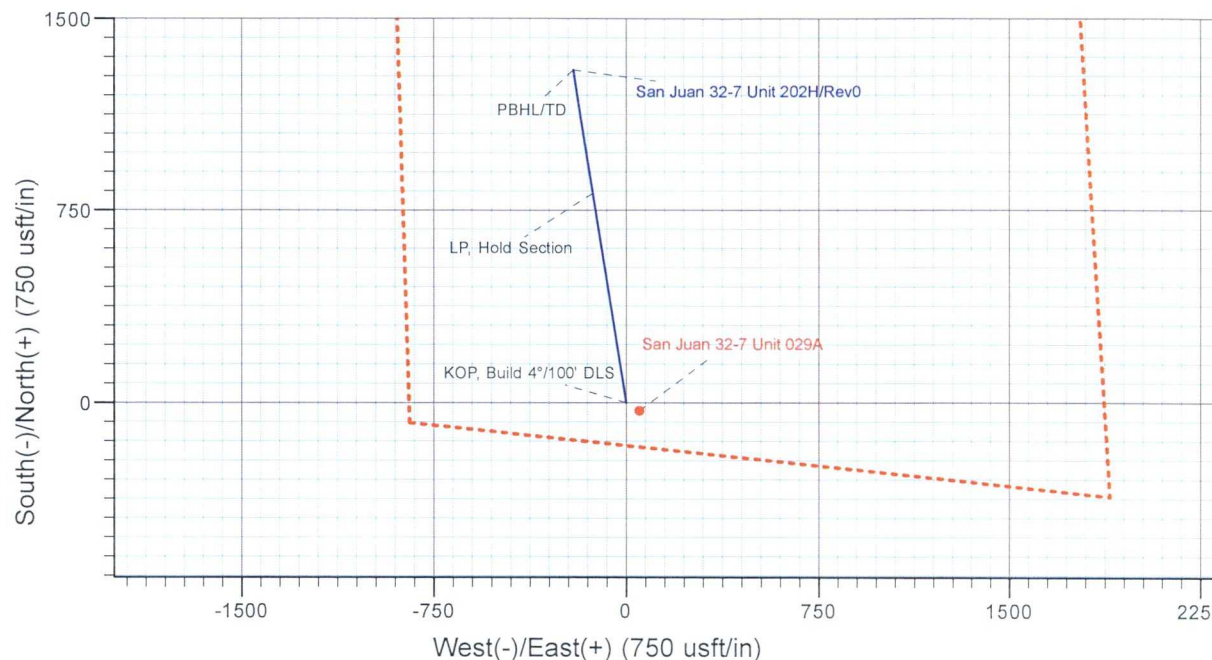
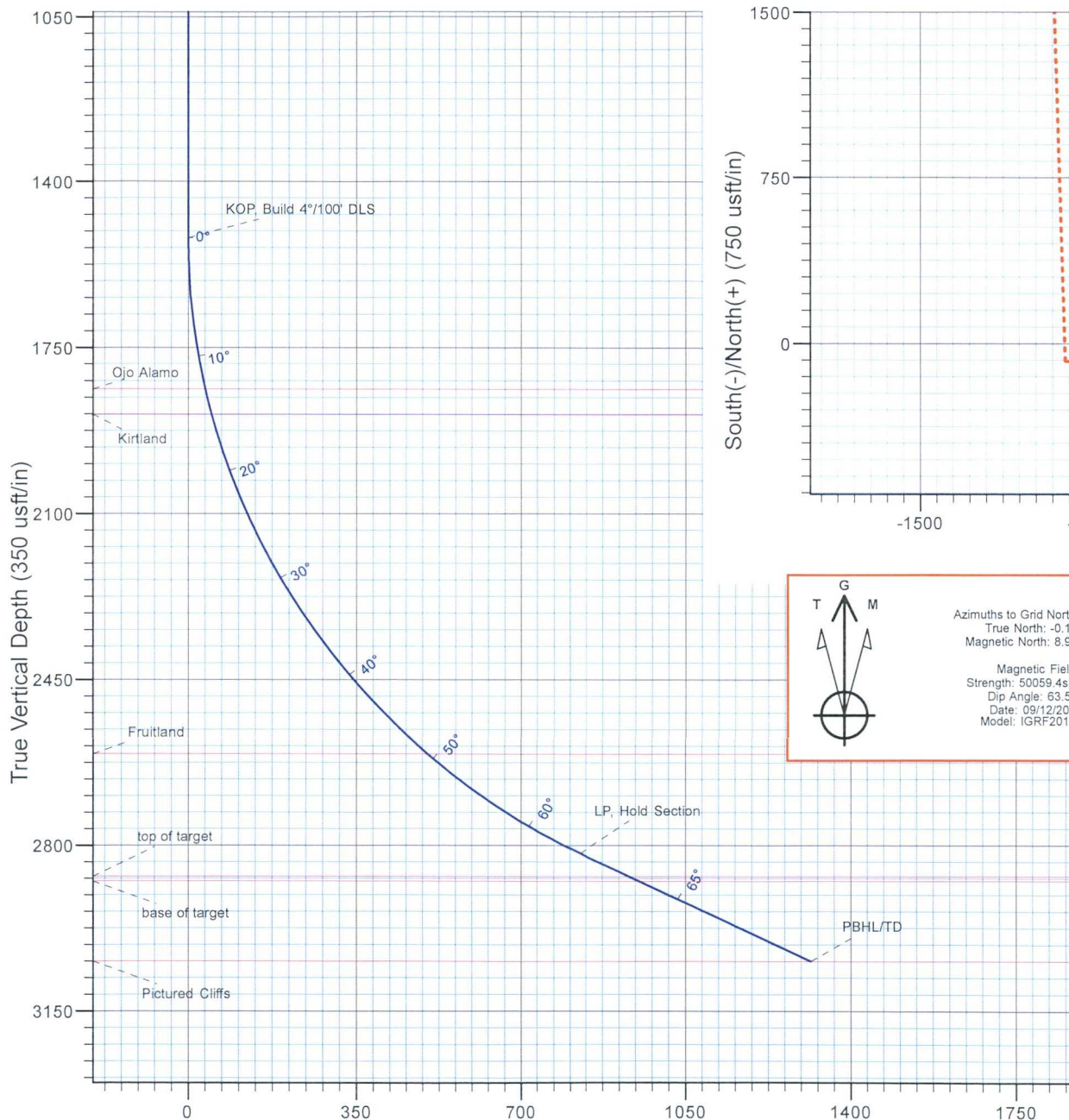
Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6196.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6196.00usft
Site:	Sec.18-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lat 1		
Design:	Rev0		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,840.69	1,838.00	Ojo Alamo		0.00		
1,895.31	1,891.00	Kirtland		0.00		
2,754.58	2,607.00	Fruitland		0.00		
3,318.37	2,866.00	top of target		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
3,144.10	2,817.31	816.81	-129.52	FTP, Build 10°/100' DLS	
3,394.16	2,871.00	1,055.83	-168.61	LP	
3,411.47	2,870.93	1,072.90	-171.48	Hold Section	
6,161.92	2,846.00	3,785.20	-627.33	PBHL/TD	



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.18-T32N-R07W
 Well: San Juan 32-7 Unit 202H
 Borehole: Pilot Hole
 Plan: Rev0



WELL DETAILS: San Juan 32-7 Unit 202H									
		GL 6181.00	KB @ 6196.00usft						
+N/-S	+E/-W	North	East	Latitude	Longitude				
0.00	0.00	2176647.70	566567.63	36.981592°N	107.605429°W				
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1519.13	0.00	0.00	1519.13	0.00	0.00	0.00	0.00	0.00
3	3144.13	65.00	350.99	2817.32	816.83	-129.52	4.00	350.99	827.04
4	3682.87	65.00	350.99	3045.00	1299.07	-205.99	0.00	0.00	1315.30
FORMATION TOP DETAILS					ANNOTATIONS				
TVDPath	MDPath	Formation			TVD	MD	Annotation		
1838.00	1840.69	Ojo Alamo			1519.13	1519.13	KOP, Build 4°/100' DLS		
1891.00	1895.31	Kirtland			2817.32	3144.13	LP, Hold Section		
2607.00	2754.58	Fruitland			3045.00	3682.87	PBHL/TD		
2866.00	3259.32	top of target							
2876.00	3282.98	base of target							
3045.00	3682.87	Pictured Cliffs							



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.18-T32N-R07W

San Juan 32-7 Unit 202H

Pilot Hole

Plan: Rev0

Standard Planning Report - Geographic

20 September, 2018





Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6196.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6196.00usft
Site:	Sec.18-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	Rev0		

Project	San Juan Co., NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico West 3003		

Site		Sec.18-T32N-R07W			
Site Position:		Northing:	2,176,499.15 usft	Latitude:	36.981184°N
From:	Map	Easting:	566,563.90 usft	Longitude:	107.605443°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.14 °

Well	San Juan 32-7 Unit 202H					
Well Position	+N/-S	0.00 usft	Northing:	2,176,647.70 usft	Latitude:	36.981592°N
	+E/-W	0.00 usft	Easting:	566,567.63 usft	Longitude:	107.605429°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,181.00 usft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/12/18	9.10	63.55	50,059

Design	Rev0			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	1.00	0.00	0.00	350.99

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,519.13	0.00	0.00	1,519.13	0.00	0.00	0.00	0.00	0.00	0.00	
3,144.13	65.00	350.99	2,817.32	816.83	-129.52	4.00	4.00	0.00	350.99	
3,682.87	65.00	350.99	3,045.00	1,299.07	-205.99	0.00	0.00	0.00	0.00	



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6196.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6196.00usft
Site:	Sec.18-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	Rev0		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
100.00	0.00	0.00	100.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
200.00	0.00	0.00	200.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
300.00	0.00	0.00	300.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
400.00	0.00	0.00	400.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
500.00	0.00	0.00	500.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
600.00	0.00	0.00	600.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
700.00	0.00	0.00	700.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
800.00	0.00	0.00	800.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
900.00	0.00	0.00	900.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
1,100.00	0.00	0.00	1,100.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
1,200.00	0.00	0.00	1,200.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
1,300.00	0.00	0.00	1,300.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
1,400.00	0.00	0.00	1,400.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
1,500.00	0.00	0.00	1,500.00	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
1,519.13	0.00	0.00	1,519.13	0.00	0.00	2,176,647.70	566,567.63	36.981592°N	107.605429°W
KOP, Build 4°/100' DLS									
1,600.00	3.23	350.99	1,599.96	2.25	-0.36	2,176,649.95	566,567.27	36.981598°N	107.605430°W
1,700.00	7.23	350.99	1,699.52	11.26	-1.79	2,176,658.96	566,565.84	36.981623°N	107.605435°W
1,800.00	11.23	350.99	1,798.20	27.11	-4.30	2,176,674.81	566,563.33	36.981667°N	107.605444°W
1,900.00	15.23	350.99	1,895.53	49.72	-7.88	2,176,697.42	566,559.75	36.981729°N	107.605456°W
2,000.00	19.23	350.99	1,991.02	78.97	-12.52	2,176,726.67	566,555.11	36.981809°N	107.605471°W
2,100.00	23.23	350.99	2,084.21	114.74	-18.19	2,176,762.44	566,549.44	36.981907°N	107.605491°W
2,200.00	27.23	350.99	2,174.65	156.84	-24.87	2,176,804.54	566,542.76	36.982023°N	107.605513°W
2,300.00	31.23	350.99	2,261.89	205.06	-32.52	2,176,852.76	566,535.11	36.982156°N	107.605539°W
2,400.00	35.23	350.99	2,345.52	259.18	-41.10	2,176,906.88	566,526.53	36.982304°N	107.605568°W
2,500.00	39.23	350.99	2,425.12	318.93	-50.57	2,176,966.63	566,517.06	36.982468°N	107.605600°W
2,600.00	43.23	350.99	2,500.31	384.02	-60.89	2,177,031.72	566,506.74	36.982647°N	107.605635°W
2,700.00	47.23	350.99	2,570.71	454.13	-72.01	2,177,101.83	566,495.62	36.982840°N	107.605672°W
2,800.00	51.23	350.99	2,635.99	528.92	-83.87	2,177,176.62	566,483.76	36.983045°N	107.605712°W
2,900.00	55.23	350.99	2,695.84	608.03	-96.41	2,177,255.73	566,471.22	36.983263°N	107.605754°W
3,000.00	59.23	350.99	2,749.94	691.06	-109.58	2,177,338.76	566,458.05	36.983491°N	107.605799°W
3,100.00	63.23	350.99	2,798.06	777.62	-123.30	2,177,425.32	566,444.33	36.983729°N	107.605845°W
3,144.13	65.00	350.99	2,817.32	816.83	-129.52	2,177,464.53	566,438.11	36.983837°N	107.605866°W
LP, Hold Section									
3,200.00	65.00	350.99	2,840.93	866.85	-137.45	2,177,514.54	566,430.18	36.983974°N	107.605893°W
3,300.00	65.00	350.99	2,883.19	956.36	-151.64	2,177,604.06	566,415.99	36.984220°N	107.605941°W
3,400.00	65.00	350.99	2,925.45	1,045.87	-165.84	2,177,693.57	566,401.79	36.984466°N	107.605988°W
3,500.00	65.00	350.99	2,967.72	1,135.38	-180.03	2,177,783.08	566,387.60	36.984712°N	107.606036°W
3,600.00	65.00	350.99	3,009.98	1,224.90	-194.22	2,177,872.59	566,373.41	36.984958°N	107.606084°W
3,682.87	65.00	350.99	3,045.00	1,299.07	-205.99	2,177,946.77	566,361.64	36.985162°N	107.606124°W
PBHL/TD									



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6196.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6196.00usft
Site:	Sec.18-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	Rev0		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,840.69	1,838.00	Ojo Alamo		0.00		
1,895.31	1,891.00	Kirtland		0.00		
2,754.58	2,607.00	Fruitland		0.00		
3,259.32	2,866.00	top of target		0.00		
3,282.98	2,876.00	base of target		0.00		
3,682.87	3,045.00	Pictured Cliffs		0.00		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,519.13	1,519.13	0.00	0.00	KOP, Build 4°/100' DLS
3,144.13	2,817.32	816.83	-129.52	LP, Hold Section
3,682.87	3,045.00	1,299.07	-205.99	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.18-T32N-R07W

San Juan 32-7 Unit 202H

Pilot Hole

Rev0

Anticollision Report

20 September, 2018





Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Pilot Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Reference	Rev0		
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 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	09/20/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	3,682.87	Rev0 (Pilot Hole)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec.18-T32N-R07W						
San Juan 32-7 Unit 029A - Original Hole - Original Hole	1,520.41	1,504.53	59.83	13.56	1.293	Level 3, CC
San Juan 32-7 Unit 029A - Original Hole - Original Hole	1,600.00	1,584.06	61.30	12.53	1.257	Level 3, ES, SF

Offset Design Sec.18-T32N-R07W - San Juan 32-7 Unit 029A - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 358-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor
0.00	0.00		0.00		0.00	121.35	-31.19	51.19	62.04				
100.00	100.00	83.83	83.83	0.10	1.37	121.92	-31.89	51.19	60.31	58.84	1.47	41.101	
200.00	200.00	184.02	184.02	0.32	3.01	122.14	-32.16	51.19	60.46	57.12	3.33	18.147	
300.00	300.00	284.19	284.19	0.55	4.65	121.87	-31.83	51.19	60.28	55.08	5.20	11.603	
400.00	400.00	384.00	384.00	0.77	6.71	121.35	-31.19	51.19	59.94	52.46	7.48	8.015	
500.00	500.00	484.01	484.00	0.99	9.98	121.35	-31.19	51.19	59.94	48.97	10.98	5.461	
600.00	600.00	584.02	584.00	1.22	13.25	121.35	-31.19	51.19	59.94	45.47	14.47	4.141	
700.00	700.00	684.03	684.00	1.44	16.53	121.35	-31.19	51.19	59.94	41.97	17.97	3.335	
800.00	800.00	784.03	784.00	1.67	19.80	121.35	-31.19	51.19	59.94	38.47	21.47	2.792	
900.00	900.00	884.04	884.00	1.89	23.07	121.35	-31.19	51.19	59.94	34.98	24.97	2.401	
1,000.00	1,000.00	984.05	984.00	2.12	26.34	121.35	-31.19	51.19	59.94	31.48	28.46	2.106	
1,100.00	1,100.00	1,084.06	1,084.00	2.34	29.62	121.35	-31.19	51.19	59.94	27.98	31.96	1.875	
1,200.00	1,200.00	1,184.07	1,184.00	2.57	32.89	121.35	-31.19	51.19	59.94	24.48	35.46	1.690	
1,300.00	1,300.00	1,284.07	1,284.00	2.79	36.16	121.35	-31.19	51.19	59.94	20.98	38.96	1.539	
1,400.00	1,400.00	1,384.15	1,384.07	3.02	39.42	121.34	-31.18	51.19	59.94	17.49	42.44	1.412 Level 3	
1,500.00	1,500.00	1,484.12	1,484.03	3.24	42.38	121.20	-31.00	51.19	59.85	14.22	45.63	1.312 Level 3	
1,519.13	1,519.13	1,503.25	1,503.16	3.29	42.95	121.18	-30.98	51.19	59.84	13.60	46.24	1.294 Level 3	
1,520.41	1,520.41	1,504.53	1,504.44	3.29	42.98	130.19	-30.98	51.19	59.83	13.56	46.27	1.293 Level 3, CC	
1,600.00	1,599.96	1,584.06	1,583.96	3.47	45.34	131.73	-30.92	51.19	61.30	12.53	48.77	1.257 Level 3, ES, SF	
1,700.00	1,699.52	1,683.60	1,683.50	3.70	48.28	137.31	-30.92	51.19	67.72	15.96	51.75	1.308 Level 3	
1,800.00	1,798.20	1,782.25	1,782.14	3.94	51.20	144.80	-31.00	51.19	80.35	25.91	54.43	1.476 Level 3	
1,900.00	1,895.53	1,879.50	1,879.38	4.21	54.08	152.01	-31.16	51.19	100.15	43.47	56.68	1.767	
2,000.00	1,991.02	1,975.14	1,975.02	4.55	56.66	157.84	-31.19	51.19	127.26	69.05	58.21	2.186	
2,100.00	2,084.21	2,068.34	2,068.21	4.98	59.13	162.22	-31.19	51.19	161.58	102.36	59.22	2.728	
2,200.00	2,174.65	2,158.78	2,158.65	5.53	61.52	165.43	-31.19	51.19	202.83	143.07	59.76	3.394	

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



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Pilot Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	
Survey Program: 358-INC_ONLY<10													Offset Well Error:	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,300.00	2,261.89	2,246.03	2,245.89	6.20	63.83	167.77	-31.19	51.19	250.64	190.84	59.80	4.191		
2,400.00	2,345.52	2,329.66	2,329.52	7.00	66.05	169.48	-31.19	51.19	304.68	245.33	59.35	5.133		
2,500.00	2,425.12	2,409.27	2,409.12	7.94	68.16	170.74	-31.19	51.19	364.61	306.21	58.40	6.243		
2,600.00	2,500.31	2,484.46	2,484.31	9.01	70.15	171.66	-31.19	51.19	430.07	373.12	56.96	7.551		
2,700.00	2,570.71	2,554.87	2,554.71	10.20	72.01	172.32	-31.19	51.19	500.71	445.69	55.02	9.101		
2,800.00	2,635.99	2,620.15	2,619.99	11.50	73.74	172.76	-31.19	51.19	576.16	523.54	52.62	10.950		
2,900.00	2,695.84	2,680.00	2,679.84	12.91	75.33	173.02	-31.19	51.19	656.03	606.26	49.78	13.180		
3,000.00	2,749.94	2,734.11	2,733.94	14.42	76.76	173.11	-31.19	51.19	739.93	693.38	46.55	15.897		
3,100.00	2,798.06	2,777.27	2,777.10	16.01	77.97	172.92	-31.23	51.19	827.48	784.48	43.00	19.245		
3,144.13	2,817.32	2,797.27	2,797.10	16.74	78.69	172.82	-31.34	51.19	867.22	825.78	41.45	20.923		
3,200.00	2,840.93	2,821.91	2,821.74	17.68	79.57	173.23	-31.45	51.19	917.89	875.87	42.02	21.843		
3,300.00	2,883.19	2,866.38	2,866.20	19.36	81.17	173.87	-31.55	51.19	1,008.52	965.40	43.11	23.393		
3,400.00	2,925.45	2,911.32	2,911.15	21.06	82.78	174.40	-31.54	51.19	1,099.05	1,054.79	44.26	24.831		
3,500.00	2,967.72	2,956.75	2,956.58	22.77	84.40	174.85	-31.41	51.19	1,189.49	1,144.03	45.46	26.168		
3,600.00	3,009.98	2,998.00	2,997.82	24.48	85.88	175.20	-31.19	51.19	1,279.84	1,233.21	46.63	27.448		
3,682.87	3,045.00	3,015.81	3,015.62	25.91	86.97	175.34	-31.37	51.19	1,355.14	1,307.55	47.59	28.477		

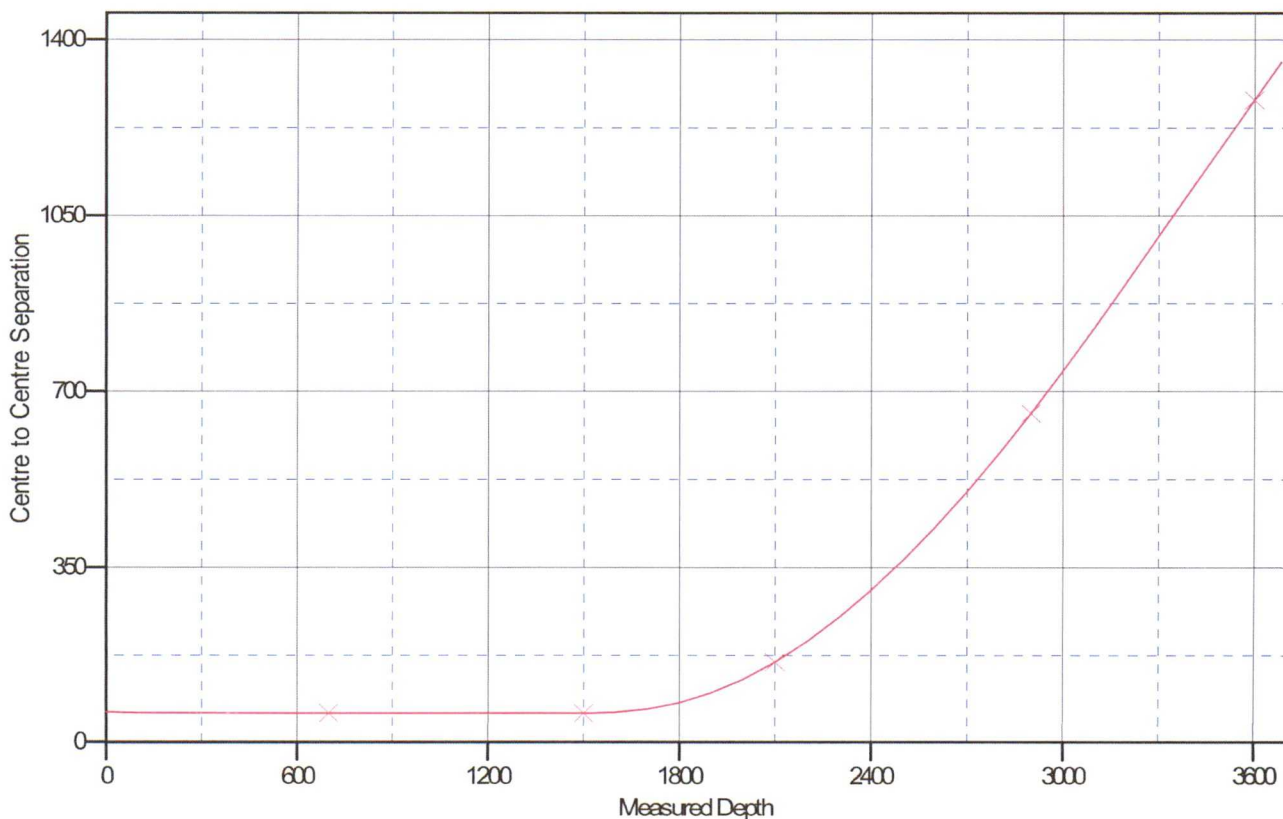
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.18-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 202H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 202H
TVD Reference: KB @ 6196.00usft
MD Reference: KB @ 6196.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 6196.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 202H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°

Ladder Plot



LEGEND

San Juan 32-7 Unit 029A, Original Hole, Original Hole V0

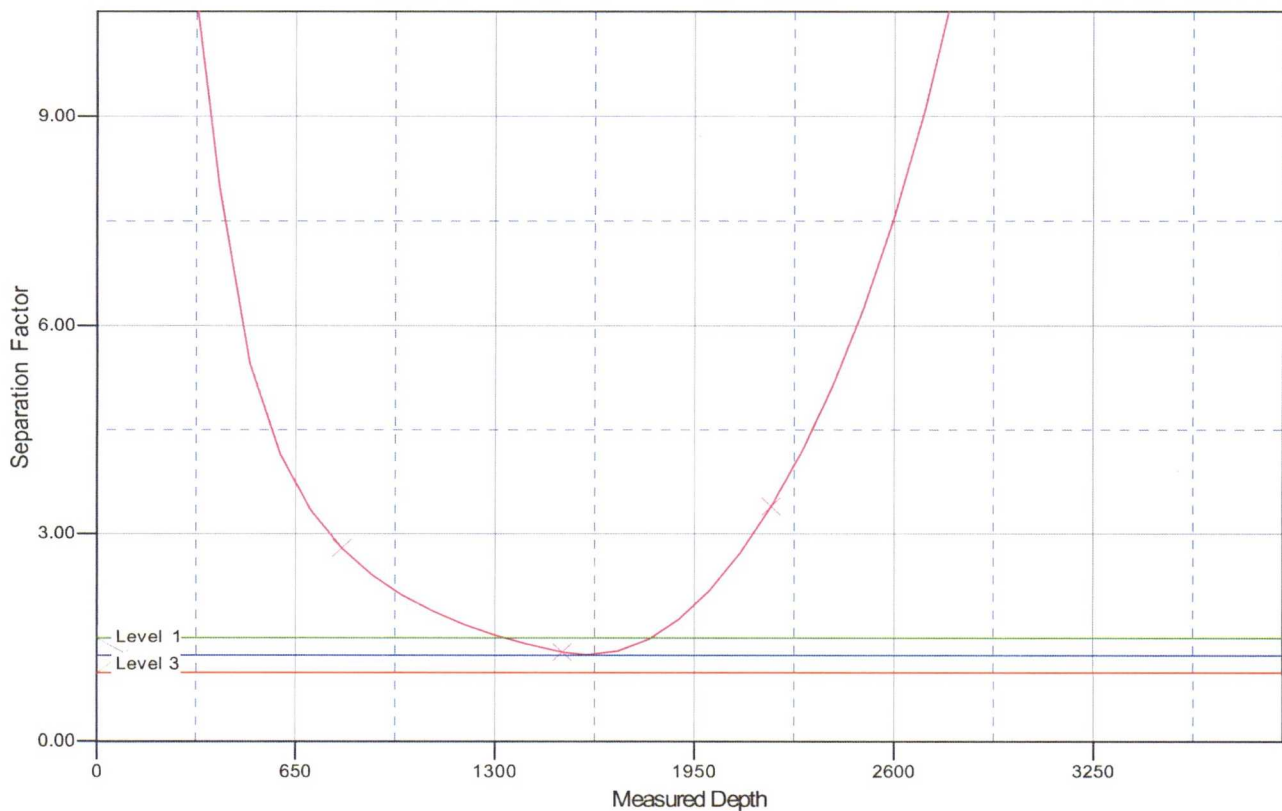


Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Pilot Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 6196.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 202H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°

Separation Factor Plot



LEGEND

San Juan 32-7 Unit 029A, Original Hole, Original Hole V0



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.18-T32N-R07W

San Juan 32-7 Unit 202H

Lat 1

Rev0

Anticollision Report

20 September, 2018





Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Reference	Rev0		
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 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	09/20/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	3,144.10	Rev0 (Pilot Hole)	MWD	MWD - Standard	
3,144.10	6,161.90	Rev0 (Lat 1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance		Separation Factor	Warning
Offset Well - Wellbore - Design	Depth (usft)	Depth (usft)	Between Centres (usft)	Between Ellipses (usft)		
Sec.18-T32N-R07W						
San Juan 32-7 Unit 003 - Original Hole - Original Hole	3,587.52	2,926.33	1,209.60	1,176.85	36.933	CC
San Juan 32-7 Unit 003 - Original Hole - Original Hole	3,600.00	2,926.22	1,209.66	1,176.72	36.722	ES
San Juan 32-7 Unit 003 - Original Hole - Original Hole	4,400.00	2,918.97	1,457.12	1,410.47	31.234	SF
San Juan 32-7 Unit 029 - Original Hole - Original Hole	3,622.34	2,925.01	1,378.19	1,344.90	41.400	CC, ES
San Juan 32-7 Unit 029 - Original Hole - Original Hole	4,700.00	2,915.25	1,749.47	1,697.32	33.541	SF
San Juan 32-7 Unit 029A - Original Hole - Original Hole	1,520.41	1,504.53	59.83	13.56	1.293	Level 3, CC
San Juan 32-7 Unit 029A - Original Hole - Original Hole	1,600.00	1,584.06	61.30	12.53	1.257	Level 3, ES, SF
San Juan 32-7 Unit 202H - Pilot Hole - Rev0	3,144.10	3,144.10	0.00	0.00	0.000	Level 1, CC, SF
San Juan 32-7 Unit 202H - Pilot Hole - Rev0	3,150.00	3,150.00	0.03	-0.14	0.183	Level 1, ES
San Juan 32-7 Unit 246A - Original Hole - Original Hole	3,222.00	2,902.46	1,565.88	1,476.55	17.528	CC
San Juan 32-7 Unit 246A - Original Hole - Original Hole	3,250.00	2,910.09	1,566.13	1,476.28	17.430	ES
San Juan 32-7 Unit 246A - Original Hole - Original Hole	3,600.00	2,926.34	1,612.01	1,516.82	16.935	SF

Sec.18-T32N-R07W - San Juan 32-7 Unit 003 - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 5002-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
							+N/-S (usft)	+E/-W (usft)					
0.00	0.00	57.00	57.00	0.00	0.20	34.44	1,446.99	992.21	1,754.50				
100.00	100.00	157.00	157.00	0.10	0.54	34.44	1,446.99	992.21	1,754.50	1,753.86	0.64	2,744.493	
200.00	200.00	257.00	257.00	0.32	0.89	34.44	1,446.99	992.21	1,754.50	1,753.29	1.21	1,449.689	
300.00	300.00	357.00	357.00	0.55	1.24	34.44	1,446.99	992.21	1,754.50	1,752.72	1.78	984.989	
400.00	400.00	457.00	457.00	0.77	1.58	34.44	1,446.99	992.21	1,754.50	1,752.15	2.35	745.892	
500.00	500.00	557.00	557.00	0.99	1.93	34.44	1,446.99	992.21	1,754.50	1,751.58	2.92	600.199	
600.00	600.00	657.00	657.00	1.22	2.27	34.44	1,446.99	992.21	1,754.50	1,751.01	3.49	502.121	
700.00	700.00	757.00	757.00	1.44	2.62	34.44	1,446.99	992.21	1,754.50	1,750.43	4.07	431.595	
800.00	800.00	857.00	857.00	1.67	2.97	34.44	1,446.99	992.21	1,754.50	1,749.86	4.64	378.440	
900.00	900.00	957.00	957.00	1.89	3.31	34.44	1,446.99	992.21	1,754.50	1,749.29	5.21	336.943	
1,000.00	1,000.00	1,057.00	1,057.00	2.12	3.66	34.44	1,446.99	992.21	1,754.50	1,748.72	5.78	303.647	
1,100.00	1,100.00	1,157.00	1,157.00	2.34	4.01	34.44	1,446.99	992.21	1,754.50	1,748.15	6.35	276.340	
1,200.00	1,200.00	1,257.00	1,257.00	2.57	4.35	34.44	1,446.99	992.21	1,754.50	1,747.58	6.92	253.539	
1,300.00	1,300.00	1,357.00	1,357.00	2.79	4.70	34.44	1,446.99	992.21	1,754.50	1,747.01	7.49	234.213	
1,400.00	1,400.00	1,457.00	1,457.00	3.02	5.04	34.44	1,446.99	992.21	1,754.50	1,746.44	8.06	217.626	

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



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Anticollision Report



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Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 5002-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
1,500.00	1,500.00	1,557.00	1,557.00	3.24	5.39	34.44	1,446.99	992.21	1,754.50	1,745.87	8.63	203.232	
1,519.13	1,519.13	1,576.13	1,576.13	3.29	5.46	34.44	1,446.99	992.21	1,754.50	1,745.76	8.74	200.693	
1,600.00	1,599.96	1,656.96	1,656.96	3.47	5.74	43.55	1,446.99	992.21	1,752.84	1,743.60	9.24	189.656	
1,700.00	1,699.52	1,756.52	1,756.52	3.70	6.08	43.93	1,446.99	992.21	1,746.24	1,736.39	9.85	177.370	
1,800.00	1,798.20	1,855.20	1,855.20	3.94	6.42	44.63	1,446.99	992.21	1,734.68	1,724.24	10.43	166.242	
1,900.00	1,895.53	1,952.53	1,952.53	4.21	6.76	45.63	1,446.99	992.21	1,718.30	1,707.28	11.02	155.893	
2,000.00	1,991.02	2,048.02	2,048.02	4.55	7.09	46.95	1,446.99	992.21	1,697.34	1,685.71	11.63	145.971	
2,100.00	2,084.21	2,141.21	2,141.21	4.98	7.41	48.60	1,446.99	992.21	1,672.07	1,659.79	12.28	136.179	
2,200.00	2,174.65	2,231.65	2,231.65	5.53	7.73	50.59	1,446.99	992.21	1,642.85	1,629.84	13.01	126.312	
2,300.00	2,261.89	2,318.89	2,318.89	6.20	8.03	52.93	1,446.99	992.21	1,610.11	1,596.26	13.85	116.291	
2,400.00	2,345.52	2,402.52	2,402.52	7.00	8.32	55.60	1,446.99	992.21	1,574.36	1,559.53	14.83	106.180	
2,500.00	2,425.12	2,482.12	2,482.12	7.94	8.59	58.60	1,446.99	992.21	1,536.20	1,520.23	15.97	96.169	
2,600.00	2,500.31	2,557.31	2,557.31	9.01	8.85	61.88	1,446.99	992.21	1,496.31	1,479.01	17.30	86.514	
2,700.00	2,570.71	2,627.71	2,627.71	10.20	9.10	65.39	1,446.99	992.21	1,455.45	1,436.66	18.79	77.475	
2,800.00	2,635.99	2,692.99	2,692.99	11.50	9.32	69.04	1,446.99	992.21	1,414.50	1,394.07	20.42	69.255	
2,900.00	2,695.84	2,752.84	2,752.84	12.91	9.53	72.72	1,446.99	992.21	1,374.40	1,352.22	22.18	61.971	
3,000.00	2,749.94	2,806.94	2,806.94	14.42	9.72	76.32	1,446.99	992.21	1,336.18	1,312.17	24.01	55.656	
3,100.00	2,798.06	2,855.06	2,855.06	16.01	9.88	79.71	1,446.99	992.21	1,300.93	1,275.06	25.88	50.272	
3,144.10	2,817.31	2,874.31	2,874.31	16.74	9.95	81.11	1,446.99	992.21	1,286.63	1,259.92	26.71	48.174	
3,150.00	2,819.77	2,876.77	2,876.77	16.82	9.96	81.41	1,446.99	992.21	1,284.78	1,257.97	26.80	47.936	
3,200.00	2,838.43	2,895.43	2,895.43	17.34	10.02	83.84	1,446.99	992.21	1,269.65	1,242.22	27.43	46.289	
3,250.00	2,852.97	2,909.97	2,909.97	17.91	10.07	85.97	1,446.99	992.21	1,255.74	1,227.68	28.06	44.758	
3,300.00	2,863.29	2,920.29	2,920.29	18.52	10.11	87.74	1,446.99	992.21	1,243.35	1,214.66	28.69	43.340	
3,350.00	2,869.30	2,926.30	2,926.30	19.17	10.13	89.13	1,446.99	992.21	1,232.72	1,203.39	29.33	42.028	
3,394.16	2,871.00	2,928.00	2,928.00	19.77	10.14	90.00	1,446.99	992.21	1,224.95	1,195.04	29.91	40.954	
3,400.00	2,871.00	2,928.00	2,928.00	19.85	10.14	90.03	1,446.99	992.21	1,224.04	1,194.05	29.99	40.813	
3,411.47	2,870.93	2,927.93	2,927.93	20.02	10.14	90.08	1,446.99	992.21	1,222.34	1,192.19	30.15	40.540	
3,500.00	2,870.12	2,927.12	2,927.12	21.29	10.13	90.04	1,446.99	992.21	1,212.76	1,181.33	31.43	38.590	
3,587.52	2,869.33	2,926.33	2,926.33	22.62	10.13	90.00	1,446.99	992.21	1,209.60	1,176.85	32.75	36.933 CC	
3,600.00	2,869.22	2,926.22	2,926.22	22.81	10.13	89.99	1,446.99	992.21	1,209.66	1,176.72	32.94	36.722 ES	
3,700.00	2,868.31	2,925.31	2,925.31	24.39	10.13	89.95	1,446.99	992.21	1,214.82	1,180.29	34.52	35.191	
3,800.00	2,867.40	2,924.40	2,924.40	26.03	10.12	89.91	1,446.99	992.21	1,228.12	1,191.96	36.15	33.969	
3,900.00	2,866.50	2,923.50	2,923.50	27.70	10.12	89.87	1,446.99	992.21	1,249.30	1,211.47	37.83	33.023	
4,000.00	2,865.59	2,922.59	2,922.59	29.42	10.12	89.82	1,446.99	992.21	1,277.99	1,238.44	39.54	32.318	
4,100.00	2,864.69	2,921.69	2,921.69	31.16	10.12	89.78	1,446.99	992.21	1,313.67	1,272.39	41.29	31.818	
4,200.00	2,863.78	2,920.78	2,920.78	32.93	10.11	89.74	1,446.99	992.21	1,355.81	1,312.76	43.05	31.490	
4,300.00	2,862.87	2,919.87	2,919.87	34.73	10.11	89.69	1,446.99	992.21	1,403.82	1,358.98	44.84	31.304	
4,400.00	2,861.97	2,918.97	2,918.97	36.54	10.11	89.65	1,446.99	992.21	1,457.12	1,410.47	46.65	31.234 SF	
4,500.00	2,861.06	2,918.06	2,918.06	38.36	10.10	89.61	1,446.99	992.21	1,515.15	1,466.67	48.48	31.256	
4,600.00	2,860.15	2,917.15	2,917.15	40.20	10.10	89.57	1,446.99	992.21	1,577.39	1,527.08	50.31	31.351	
4,700.00	2,859.25	2,916.25	2,916.25	42.05	10.10	89.52	1,446.99	992.21	1,643.36	1,591.20	52.16	31.505	
4,800.00	2,858.34	2,915.34	2,915.34	43.91	10.09	89.48	1,446.99	992.21	1,712.63	1,658.61	54.02	31.703	
4,900.00	2,857.44	2,914.44	2,914.44	45.78	10.09	89.44	1,446.99	992.21	1,784.82	1,728.93	55.89	31.935	
5,000.00	2,856.53	2,913.53	2,913.53	47.66	10.09	89.39	1,446.99	992.21	1,859.59	1,801.82	57.77	32.192	
5,100.00	2,855.62	2,912.62	2,912.62	49.55	10.08	89.35	1,446.99	992.21	1,936.63	1,876.98	59.65	32.467	
5,200.00	2,854.72	2,911.72	2,911.72	51.44	10.08	89.31	1,446.99	992.21	2,015.69	1,954.15	61.54	32.755	
5,300.00	2,853.81	2,910.81	2,910.81	53.33	10.08	89.26	1,446.99	992.21	2,096.54	2,033.11	63.43	33.051	
5,400.00	2,852.90	2,909.90	2,909.90	55.24	10.07	89.22	1,446.99	992.21	2,178.98	2,113.64	65.33	33.352	
5,500.00	2,852.00	2,909.00	2,909.00	57.14	10.07	89.18	1,446.99	992.21	2,262.83	2,195.59	67.24	33.654	
5,600.00	2,851.09	2,908.09	2,908.09	59.05	10.07	89.14	1,446.99	992.21	2,347.95	2,278.80	69.15	33.956	
5,700.00	2,850.19	2,907.19	2,907.19	60.97	10.07	89.09	1,446.99	992.21	2,434.20	2,363.14	71.06	34.256	
5,800.00	2,849.28	2,906.28	2,906.28	62.89	10.06	89.05	1,446.99	992.21	2,521.47	2,448.49	72.97	34.553	

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



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 5002-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,900.00	2,848.37	2,905.37	2,905.37	64.81	10.06	89.01	1,446.99	992.21	2,609.65	2,534.75	74.89	34.845	
6,000.00	2,847.47	2,904.47	2,904.47	66.73	10.06	88.96	1,446.99	992.21	2,698.65	2,621.84	76.81	35.132	
6,100.00	2,846.56	2,903.56	2,903.56	68.66	10.05	88.92	1,446.99	992.21	2,788.40	2,709.66	78.74	35.414	
6,161.92	2,846.00	2,903.00	2,903.00	69.85	10.05	88.90	1,446.99	992.21	2,844.32	2,764.39	79.93	35.585	



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 5735-INC_ONLY<10													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	56.00	56.00	0.00	0.19	37.37	1,509.27	1,152.70	1,899.11					
100.00	100.00	156.00	156.00	0.10	0.54	37.37	1,509.27	1,152.70	1,899.11	1,898.48	0.64	2,986.875		
200.00	200.00	256.00	256.00	0.32	0.89	37.37	1,509.27	1,152.70	1,899.11	1,897.90	1.21	1,573.677		
300.00	300.00	356.00	356.00	0.55	1.23	37.37	1,509.27	1,152.70	1,899.11	1,897.33	1.78	1,068.250		
400.00	400.00	456.00	456.00	0.77	1.58	37.37	1,509.27	1,152.70	1,899.11	1,896.76	2.35	808.560		
500.00	500.00	556.00	556.00	0.99	1.93	37.37	1,509.27	1,152.70	1,899.11	1,896.19	2.92	650.439		
600.00	600.00	656.00	656.00	1.22	2.27	37.37	1,509.27	1,152.70	1,899.11	1,895.62	3.49	544.046		
700.00	700.00	756.00	756.00	1.44	2.62	37.37	1,509.27	1,152.70	1,899.11	1,895.05	4.06	467.566		
800.00	800.00	856.00	856.00	1.67	2.96	37.37	1,509.27	1,152.70	1,899.11	1,894.48	4.63	409.938		
900.00	900.00	956.00	956.00	1.89	3.31	37.37	1,509.27	1,152.70	1,899.11	1,893.91	5.20	364.957		
1,000.00	1,000.00	1,056.00	1,056.00	2.12	3.66	37.37	1,509.27	1,152.70	1,899.11	1,893.34	5.77	328.871		
1,100.00	1,100.00	1,156.00	1,156.00	2.34	4.00	37.37	1,509.27	1,152.70	1,899.11	1,892.77	6.35	299.279		
1,200.00	1,200.00	1,256.00	1,256.00	2.57	4.35	37.37	1,509.27	1,152.70	1,899.11	1,892.19	6.92	274.573		
1,300.00	1,300.00	1,356.00	1,356.00	2.79	4.69	37.37	1,509.27	1,152.70	1,899.11	1,891.62	7.49	253.635		
1,400.00	1,400.00	1,456.00	1,456.00	3.02	5.04	37.37	1,509.27	1,152.70	1,899.11	1,891.05	8.06	235.664		
1,500.00	1,500.00	1,556.00	1,556.00	3.24	5.39	37.37	1,509.27	1,152.70	1,899.11	1,890.48	8.63	220.071		
1,519.13	1,519.13	1,575.13	1,575.13	3.29	5.45	37.37	1,509.27	1,152.70	1,899.11	1,890.37	8.74	217.320		
1,600.00	1,599.96	1,655.96	1,655.96	3.47	5.73	46.48	1,509.27	1,152.70	1,897.54	1,888.29	9.24	205.286		
1,700.00	1,699.52	1,755.52	1,755.52	3.70	6.08	46.86	1,509.27	1,152.70	1,891.26	1,881.41	9.85	191.919		
1,800.00	1,798.20	1,854.20	1,854.20	3.94	6.42	47.54	1,509.27	1,152.70	1,880.28	1,869.82	10.46	179.837		
1,900.00	1,895.53	1,951.53	1,951.53	4.21	6.76	48.52	1,509.27	1,152.70	1,864.74	1,853.68	11.06	168.618		
2,000.00	1,991.02	2,047.02	2,047.02	4.55	7.09	49.81	1,509.27	1,152.70	1,844.86	1,833.17	11.69	157.880		
2,100.00	2,084.21	2,140.21	2,140.21	4.98	7.41	51.41	1,509.27	1,152.70	1,820.91	1,808.55	12.36	147.310		
2,200.00	2,174.65	2,230.65	2,230.65	5.53	7.72	53.33	1,509.27	1,152.70	1,793.25	1,780.13	13.12	136.705		
2,300.00	2,261.89	2,317.89	2,317.89	6.20	8.03	55.56	1,509.27	1,152.70	1,762.30	1,748.31	13.99	126.002		
2,400.00	2,345.52	2,401.52	2,401.52	7.00	8.31	58.10	1,509.27	1,152.70	1,728.55	1,713.55	14.99	115.286		
2,500.00	2,425.12	2,481.12	2,481.12	7.94	8.59	60.92	1,509.27	1,152.70	1,692.56	1,676.41	16.16	104.756		
2,600.00	2,500.31	2,556.31	2,556.31	9.01	8.85	63.98	1,509.27	1,152.70	1,654.99	1,637.51	17.48	94.663		
2,700.00	2,570.71	2,626.71	2,626.71	10.20	9.09	67.22	1,509.27	1,152.70	1,616.55	1,597.59	18.96	85.245		
2,800.00	2,635.99	2,691.99	2,691.99	11.50	9.32	70.57	1,509.27	1,152.70	1,578.03	1,557.45	20.58	76.681		
2,900.00	2,695.84	2,751.84	2,751.84	12.91	9.53	73.93	1,509.27	1,152.70	1,540.30	1,518.00	22.30	69.069		
3,000.00	2,749.94	2,805.94	2,805.94	14.42	9.71	77.20	1,509.27	1,152.70	1,504.27	1,480.17	24.10	62.428		
3,100.00	2,798.06	2,854.06	2,854.06	16.01	9.88	80.28	1,509.27	1,152.70	1,470.88	1,444.95	25.93	56.715		
3,144.10	2,817.31	2,873.31	2,873.31	16.74	9.95	81.55	1,509.27	1,152.70	1,457.25	1,430.50	26.75	54.470		
3,150.00	2,819.77	2,875.77	2,875.77	16.82	9.96	81.83	1,509.27	1,152.70	1,455.49	1,428.64	26.85	54.218		
3,200.00	2,838.43	2,894.43	2,894.43	17.34	10.02	84.09	1,509.27	1,152.70	1,440.99	1,413.53	27.46	52.485		
3,250.00	2,852.97	2,908.97	2,908.97	17.91	10.07	86.09	1,509.27	1,152.70	1,427.55	1,399.48	28.07	50.854		
3,300.00	2,863.29	2,919.29	2,919.29	18.52	10.11	87.78	1,509.27	1,152.70	1,415.43	1,386.74	28.70	49.326		
3,350.00	2,869.30	2,925.30	2,925.30	19.17	10.13	89.12	1,509.27	1,152.70	1,404.86	1,375.53	29.33	47.896		
3,394.16	2,871.00	2,927.00	2,927.00	19.77	10.13	90.00	1,509.27	1,152.70	1,396.95	1,367.04	29.91	46.709		
3,400.00	2,871.00	2,927.00	2,927.00	19.85	10.13	90.03	1,509.27	1,152.70	1,396.01	1,366.02	29.99	46.552		
3,411.47	2,870.93	2,926.93	2,926.93	20.02	10.13	90.08	1,509.27	1,152.70	1,394.23	1,364.08	30.15	46.245		
3,500.00	2,870.12	2,926.12	2,926.12	21.29	10.13	90.05	1,509.27	1,152.70	1,383.61	1,352.18	31.42	44.032		
3,600.00	2,869.22	2,925.22	2,925.22	22.81	10.13	90.01	1,509.27	1,152.70	1,378.37	1,345.43	32.94	41.849		
3,622.34	2,869.01	2,925.01	2,925.01	23.16	10.13	90.00	1,509.27	1,152.70	1,378.19	1,344.90	33.29	41.400 CC, ES		
3,700.00	2,868.31	2,924.31	2,924.31	24.39	10.12	89.97	1,509.27	1,152.70	1,380.37	1,345.86	34.52	39.991		
3,800.00	2,867.40	2,923.40	2,923.40	26.03	10.12	89.93	1,509.27	1,152.70	1,389.59	1,353.44	36.15	38.439		
3,900.00	2,866.50	2,922.50	2,922.50	27.70	10.12	89.90	1,509.27	1,152.70	1,405.88	1,368.05	37.83	37.166		
4,000.00	2,865.59	2,921.59	2,921.59	29.42	10.12	89.86	1,509.27	1,152.70	1,428.99	1,389.45	39.54	36.141		
4,100.00	2,864.69	2,920.69	2,920.69	31.16	10.11	89.82	1,509.27	1,152.70	1,458.61	1,417.33	41.28	35.332		
4,200.00	2,863.78	2,919.78	2,919.78	32.93	10.11	89.78	1,509.27	1,152.70	1,494.35	1,451.29	43.05	34.711		
4,300.00	2,862.87	2,918.87	2,918.87	34.73	10.11	89.74	1,509.27	1,152.70	1,535.77	1,490.93	44.84	34.249		

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



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design Sec.18-T32N-R07W - San Juan 32-7 Unit 029 - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 5735-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,400.00	2,861.97	2,917.97	2,917.97	36.54	10.10	89.71	1,509.27	1,152.70	1,582.44	1,535.79	46.65	33.922	
4,500.00	2,861.06	2,917.06	2,917.06	38.36	10.10	89.67	1,509.27	1,152.70	1,633.90	1,585.43	48.47	33.708	
4,600.00	2,860.15	2,916.15	2,916.15	40.20	10.10	89.63	1,509.27	1,152.70	1,689.72	1,639.41	50.31	33.586	
4,700.00	2,859.25	2,915.25	2,915.25	42.05	10.09	89.59	1,509.27	1,152.70	1,749.47	1,697.32	52.16	33.541 SF	
4,800.00	2,858.34	2,914.34	2,914.34	43.91	10.09	89.56	1,509.27	1,152.70	1,812.78	1,758.76	54.02	33.559	
4,900.00	2,857.44	2,913.44	2,913.44	45.78	10.09	89.52	1,509.27	1,152.70	1,879.28	1,823.39	55.89	33.627	
5,000.00	2,856.53	2,912.53	2,912.53	47.66	10.08	89.48	1,509.27	1,152.70	1,948.64	1,890.88	57.76	33.735	
5,100.00	2,855.62	2,911.62	2,911.62	49.55	10.08	89.44	1,509.27	1,152.70	2,020.57	1,960.92	59.65	33.876	
5,200.00	2,854.72	2,910.72	2,910.72	51.44	10.08	89.41	1,509.27	1,152.70	2,094.81	2,033.27	61.54	34.042	
5,300.00	2,853.81	2,909.81	2,909.81	53.33	10.07	89.37	1,509.27	1,152.70	2,171.11	2,107.68	63.43	34.228	
5,400.00	2,852.90	2,908.90	2,908.90	55.24	10.07	89.33	1,509.27	1,152.70	2,249.27	2,183.94	65.33	34.429	
5,500.00	2,852.00	2,908.00	2,908.00	57.14	10.07	89.29	1,509.27	1,152.70	2,329.10	2,261.87	67.24	34.641	
5,600.00	2,851.09	2,907.09	2,907.09	59.05	10.06	89.25	1,509.27	1,152.70	2,410.44	2,341.30	69.14	34.861	
5,700.00	2,850.19	2,906.19	2,906.19	60.97	10.06	89.22	1,509.27	1,152.70	2,493.14	2,422.08	71.06	35.087	
5,800.00	2,849.28	2,905.28	2,905.28	62.89	10.06	89.18	1,509.27	1,152.70	2,577.06	2,504.08	72.97	35.315	
5,900.00	2,848.37	2,904.37	2,904.37	64.81	10.06	89.14	1,509.27	1,152.70	2,662.09	2,587.20	74.89	35.546	
6,000.00	2,847.47	2,903.47	2,903.47	66.73	10.05	89.10	1,509.27	1,152.70	2,748.13	2,671.32	76.81	35.777	
6,100.00	2,846.56	2,902.56	2,902.56	68.66	10.05	89.07	1,509.27	1,152.70	2,835.08	2,756.35	78.74	36.007	
6,161.92	2,846.00	2,902.00	2,902.00	69.85	10.05	89.04	1,509.27	1,152.70	2,889.35	2,809.42	79.93	36.149	

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



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design Sec.18-T32N-R07W - San Juan 32-7 Unit 029A - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 358-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	121.35	-31.19	51.19	62.04				
100.00	100.00	83.83	83.83	0.10	1.37	121.92	-31.89	51.19	60.31	58.84	1.47	41.101	
200.00	200.00	184.02	184.02	0.32	3.01	122.14	-32.16	51.19	60.46	57.12	3.33	18.147	
300.00	300.00	284.19	284.19	0.55	4.65	121.87	-31.83	51.19	60.28	55.08	5.20	11.603	
400.00	400.00	384.00	384.00	0.77	6.71	121.35	-31.19	51.19	59.94	52.46	7.48	8.015	
500.00	500.00	484.01	484.00	0.99	9.98	121.35	-31.19	51.19	59.94	48.97	10.98	5.461	
600.00	600.00	584.02	584.00	1.22	13.25	121.35	-31.19	51.19	59.94	45.47	14.47	4.141	
700.00	700.00	684.03	684.00	1.44	16.53	121.35	-31.19	51.19	59.94	41.97	17.97	3.335	
800.00	800.00	784.03	784.00	1.67	19.80	121.35	-31.19	51.19	59.94	38.47	21.47	2.792	
900.00	900.00	884.04	884.00	1.89	23.07	121.35	-31.19	51.19	59.94	34.98	24.97	2.401	
1,000.00	1,000.00	984.05	984.00	2.12	26.34	121.35	-31.19	51.19	59.94	31.48	28.46	2.106	
1,100.00	1,100.00	1,084.06	1,084.00	2.34	29.62	121.35	-31.19	51.19	59.94	27.98	31.96	1.875	
1,200.00	1,200.00	1,184.07	1,184.00	2.57	32.89	121.35	-31.19	51.19	59.94	24.48	35.46	1.690	
1,300.00	1,300.00	1,284.07	1,284.00	2.79	36.16	121.35	-31.19	51.19	59.94	20.98	38.96	1.539	
1,400.00	1,400.00	1,384.15	1,384.07	3.02	39.42	121.34	-31.18	51.19	59.94	17.49	42.44	1.412 Level 3	
1,500.00	1,500.00	1,484.12	1,484.03	3.24	42.38	121.20	-31.00	51.19	59.85	14.22	45.63	1.312 Level 3	
1,519.13	1,519.13	1,503.25	1,503.16	3.29	42.95	121.18	-30.98	51.19	59.84	13.60	46.24	1.294 Level 3	
1,520.41	1,520.41	1,504.53	1,504.44	3.29	42.98	130.19	-30.98	51.19	59.83	13.56	46.27	1.293 Level 3, CC	
1,600.00	1,599.96	1,584.06	1,583.96	3.47	45.34	131.73	-30.92	51.19	61.30	12.53	48.77	1.257 Level 3, ES, SF	
1,700.00	1,699.52	1,683.60	1,683.50	3.70	48.28	137.31	-30.92	51.19	67.72	15.96	51.75	1.308 Level 3	
1,800.00	1,798.20	1,782.25	1,782.14	3.94	51.20	144.80	-31.00	51.19	80.35	25.91	54.43	1.476 Level 3	
1,900.00	1,895.53	1,879.50	1,879.38	4.21	54.08	152.01	-31.16	51.19	100.15	43.47	56.68	1.767	
2,000.00	1,991.02	1,975.14	1,975.02	4.55	56.66	157.84	-31.19	51.19	127.26	69.05	58.21	2.186	
2,100.00	2,084.21	2,068.34	2,068.21	4.98	59.13	162.22	-31.19	51.19	161.58	102.36	59.22	2.728	
2,200.00	2,174.65	2,158.78	2,158.65	5.53	61.52	165.43	-31.19	51.19	202.83	143.07	59.76	3.394	
2,300.00	2,261.89	2,246.03	2,245.89	6.20	63.83	167.77	-31.19	51.19	250.64	190.84	59.80	4.191	
2,400.00	2,345.52	2,329.66	2,329.52	7.00	66.05	169.48	-31.19	51.19	304.68	245.33	59.35	5.133	
2,500.00	2,425.12	2,409.27	2,409.12	7.94	68.16	170.74	-31.19	51.19	364.61	306.21	58.40	6.243	
2,600.00	2,500.31	2,484.46	2,484.31	9.01	70.15	171.66	-31.19	51.19	430.07	373.12	56.96	7.551	
2,700.00	2,570.71	2,554.87	2,554.71	10.20	72.01	172.32	-31.19	51.19	500.71	445.69	55.02	9.101	
2,800.00	2,635.99	2,620.15	2,619.99	11.50	73.74	172.76	-31.19	51.19	576.16	523.54	52.62	10.950	
2,900.00	2,695.84	2,680.00	2,679.84	12.91	75.33	173.02	-31.19	51.19	656.03	606.26	49.78	13.180	
3,000.00	2,749.94	2,734.11	2,733.94	14.42	76.76	173.11	-31.19	51.19	739.93	693.38	46.55	15.897	
3,100.00	2,798.06	2,777.27	2,777.10	16.01	77.97	172.92	-31.23	51.19	827.48	784.48	43.00	19.245	
3,144.10	2,817.31	2,797.26	2,797.09	16.74	78.69	172.82	-31.34	51.19	867.20	825.75	41.45	20.922	
3,150.00	2,819.77	2,799.83	2,799.66	16.82	78.78	172.73	-31.36	51.19	872.56	831.76	40.80	21.385	
3,200.00	2,838.43	2,819.27	2,819.09	17.34	79.48	171.78	-31.44	51.19	918.96	883.69	35.26	26.060	
3,250.00	2,852.97	2,834.46	2,834.29	17.91	80.02	170.03	-31.49	51.19	966.78	936.10	30.67	31.519	
3,300.00	2,863.29	2,845.26	2,845.08	18.52	80.41	166.27	-31.52	51.19	1,015.67	985.71	29.96	33.903	
3,350.00	2,869.30	2,851.54	2,851.37	19.17	80.63	154.48	-31.53	51.19	1,065.26	1,020.59	44.67	23.848	
3,394.16	2,871.00	2,853.27	2,853.10	19.77	80.70	87.01	-31.53	51.19	1,109.36	1,008.97	100.39	11.050	
3,400.00	2,871.00	2,853.25	2,853.08	19.85	80.70	81.71	-31.53	51.19	1,115.19	1,015.52	99.67	11.189	
3,411.47	2,870.93	2,853.16	2,852.98	20.02	80.69	71.61	-31.53	51.19	1,126.66	1,030.68	95.98	11.739	
3,500.00	2,870.12	2,852.13	2,851.95	21.29	80.66	70.17	-31.53	51.19	1,215.14	1,118.78	96.36	12.610	
3,600.00	2,869.22	2,850.95	2,850.78	22.81	80.61	68.56	-31.53	51.19	1,315.09	1,218.32	96.77	13.590	
3,700.00	2,868.31	2,849.77	2,849.59	24.39	80.57	66.96	-31.53	51.19	1,415.05	1,317.90	97.15	14.565	
3,800.00	2,867.40	2,848.56	2,848.39	26.03	80.53	65.38	-31.52	51.19	1,515.01	1,417.52	97.49	15.540	
3,900.00	2,866.50	2,847.35	2,847.17	27.70	80.48	63.83	-31.52	51.19	1,614.98	1,517.19	97.79	16.515	
4,000.00	2,865.59	2,846.11	2,845.94	29.42	80.44	62.29	-31.52	51.19	1,714.95	1,616.92	98.02	17.495	
4,100.00	2,864.69	2,844.86	2,844.69	31.16	80.40	60.78	-31.52	51.19	1,814.92	1,716.71	98.21	18.480	
4,200.00	2,863.78	2,843.60	2,843.43	32.93	80.35	59.29	-31.51	51.19	1,914.90	1,816.56	98.33	19.473	
4,300.00	2,862.87	2,842.32	2,842.15	34.73	80.30	57.83	-31.51	51.19	2,014.87	1,916.47	98.40	20.476	

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



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design Sec.18-T32N-R07W - San Juan 32-7 Unit 029A - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 358-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,400.00	2,861.97	2,841.02	2,840.85	36.54	80.26	56.39	-31.51	51.19	2,114.85	2,016.43	98.42	21.489	
4,500.00	2,861.06	2,839.71	2,839.54	38.36	80.21	54.99	-31.50	51.19	2,214.83	2,116.45	98.37	22.514	
4,600.00	2,860.15	2,838.38	2,838.20	40.20	80.16	53.61	-31.50	51.19	2,314.81	2,216.53	98.28	23.553	
4,700.00	2,859.25	2,837.03	2,836.86	42.05	80.11	52.27	-31.50	51.19	2,414.79	2,316.65	98.14	24.606	
4,800.00	2,858.34	2,835.66	2,835.49	43.91	80.07	50.95	-31.49	51.19	2,514.77	2,416.82	97.95	25.674	
4,900.00	2,857.44	2,834.28	2,834.11	45.78	80.02	49.67	-31.49	51.19	2,614.76	2,517.04	97.72	26.758	
5,000.00	2,856.53	2,832.88	2,832.70	47.66	79.97	48.42	-31.48	51.19	2,714.74	2,617.29	97.45	27.858	
5,100.00	2,855.62	2,831.45	2,831.28	49.55	79.91	47.19	-31.48	51.19	2,814.72	2,717.58	97.15	28.974	
5,200.00	2,854.72	2,830.01	2,829.84	51.44	79.86	46.00	-31.48	51.19	2,914.71	2,817.90	96.81	30.108	
5,300.00	2,853.81	2,828.55	2,828.38	53.33	79.81	44.84	-31.47	51.19	3,014.69	2,918.25	96.44	31.259	
5,400.00	2,852.90	2,827.07	2,826.90	55.24	79.76	43.71	-31.47	51.19	3,114.68	3,018.63	96.05	32.427	
5,500.00	2,852.00	2,825.57	2,825.40	57.14	79.70	42.61	-31.46	51.19	3,214.66	3,119.02	95.64	33.612	
5,600.00	2,851.09	2,824.05	2,823.88	59.05	79.65	41.54	-31.46	51.19	3,314.65	3,219.44	95.21	34.814	
5,700.00	2,850.19	2,822.50	2,822.33	60.97	79.59	40.50	-31.45	51.19	3,414.64	3,319.87	94.76	36.034	
5,800.00	2,849.28	2,820.94	2,820.77	62.89	79.54	39.48	-31.45	51.19	3,514.62	3,420.32	94.30	37.269	
5,900.00	2,848.37	2,819.35	2,819.18	64.81	79.48	38.50	-31.44	51.19	3,614.61	3,520.78	93.83	38.521	
6,000.00	2,847.47	2,817.74	2,817.57	66.73	79.42	37.54	-31.43	51.19	3,714.60	3,621.24	93.36	39.789	
6,100.00	2,846.56	2,816.11	2,815.94	68.66	79.36	36.61	-31.43	51.19	3,814.58	3,721.71	92.88	41.072	
6,161.92	2,846.00	2,815.08	2,814.91	69.85	79.33	36.05	-31.42	51.19	3,876.50	3,783.92	92.58	41.874	



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,144.10	2,817.31	3,144.10	2,817.31	0.00	0.00	0.00	816.81	-129.52	0.00	0.00	0.00	0.000	Level 1, CC, SF	
3,144.47	2,817.46	3,144.47	2,817.46	0.01	0.01	178.67	817.14	-129.57	0.00	-0.01	0.01	0.011	Level 1	
3,150.00	2,819.77	3,150.00	2,819.80	0.26	0.10	178.75	822.09	-130.35	0.03	-0.14	0.17	0.183	Level 1, ES	
3,200.00	2,838.43	3,199.91	2,840.89	0.60	0.93	178.79	866.77	-137.44	2.72	2.25	0.48	5.698		
3,250.00	2,852.97	3,249.40	2,861.81	1.17	1.77	178.83	911.06	-144.46	9.76	8.97	0.79	12.412		
3,300.00	2,863.29	3,298.08	2,882.38	1.78	2.59	178.85	954.64	-151.37	21.08	20.01	1.07	19.785		
3,350.00	2,869.30	3,345.60	2,902.46	2.43	3.40	178.86	997.17	-158.12	36.60	35.30	1.30	28.161		
3,394.16	2,871.00	3,386.30	2,919.66	3.04	4.09	178.86	1,033.61	-163.89	53.70	52.22	1.48	36.252		
3,400.00	2,871.00	3,391.59	2,921.90	3.12	4.18	178.86	1,038.34	-164.64	56.18	54.66	1.52	36.943		
3,411.47	2,870.93	3,401.95	2,926.28	3.28	4.36	178.86	1,047.62	-166.11	61.09	59.49	1.60	38.171		
3,500.00	2,870.12	3,481.84	2,960.04	4.56	5.72	178.87	1,119.13	-177.45	99.24	96.89	2.35	42.291		
3,600.00	2,869.22	3,572.08	2,998.18	6.08	7.27	178.87	1,199.91	-190.26	142.33	139.06	3.27	43.530		
3,700.00	2,868.31	3,662.32	3,036.32	7.66	8.83	178.88	1,280.68	-203.07	185.42	181.16	4.26	43.518		
3,800.00	2,867.40	3,682.87	3,045.00	9.30	9.18	178.88	1,299.07	-205.99	238.90	234.00	4.89	48.818		
3,900.00	2,866.50	3,682.87	3,045.00	10.98	9.18	178.88	1,299.07	-205.99	315.19	309.74	5.45	57.880		
4,000.00	2,865.59	3,682.87	3,045.00	12.70	9.18	178.88	1,299.07	-205.99	402.01	395.98	6.03	66.687		
4,100.00	2,864.69	3,682.87	3,045.00	14.44	9.18	178.88	1,299.07	-205.99	493.85	487.21	6.64	74.424		
4,200.00	2,863.78	3,682.87	3,045.00	16.21	9.18	178.88	1,299.07	-205.99	588.35	581.09	7.26	81.016		
4,300.00	2,862.87	3,682.87	3,045.00	18.01	9.18	178.88	1,299.07	-205.99	684.42	676.51	7.90	86.589		
4,400.00	2,861.97	3,682.87	3,045.00	19.82	9.18	178.88	1,299.07	-205.99	781.47	772.91	8.56	91.306		
4,500.00	2,861.06	3,682.87	3,045.00	21.64	9.18	178.88	1,299.07	-205.99	879.19	869.96	9.22	95.318		
4,600.00	2,860.15	3,682.87	3,045.00	23.48	9.18	178.88	1,299.07	-205.99	977.36	967.47	9.90	98.753		
4,700.00	2,859.25	3,682.87	3,045.00	25.34	9.18	178.88	1,299.07	-205.99	1,075.88	1,065.30	10.58	101.714		
4,800.00	2,858.34	3,682.87	3,045.00	27.20	9.18	178.88	1,299.07	-205.99	1,174.64	1,163.38	11.26	104.284		
4,900.00	2,857.44	3,682.87	3,045.00	29.07	9.18	178.88	1,299.07	-205.99	1,273.60	1,261.64	11.96	106.531		
5,000.00	2,856.53	3,682.87	3,045.00	30.95	9.18	178.88	1,299.07	-205.99	1,372.71	1,360.05	12.65	108.507		
5,100.00	2,855.62	3,682.87	3,045.00	32.83	9.18	178.88	1,299.07	-205.99	1,471.93	1,458.58	13.35	110.255		
5,200.00	2,854.72	3,682.87	3,045.00	34.72	9.18	178.88	1,299.07	-205.99	1,571.26	1,557.21	14.05	111.811		
5,300.00	2,853.81	3,682.87	3,045.00	36.62	9.18	178.88	1,299.07	-205.99	1,670.67	1,655.91	14.76	113.203		
5,400.00	2,852.90	3,682.87	3,045.00	38.52	9.18	178.88	1,299.07	-205.99	1,770.14	1,754.68	15.47	114.455		
5,500.00	2,852.00	3,682.87	3,045.00	40.43	9.18	178.88	1,299.07	-205.99	1,869.67	1,853.50	16.18	115.585		
5,600.00	2,851.09	3,682.87	3,045.00	42.34	9.18	178.88	1,299.07	-205.99	1,969.25	1,952.36	16.89	116.610		
5,700.00	2,850.19	3,682.87	3,045.00	44.26	9.18	178.88	1,299.07	-205.99	2,068.87	2,051.27	17.60	117.543		
5,800.00	2,849.28	3,682.87	3,045.00	46.18	9.18	178.88	1,299.07	-205.99	2,168.52	2,150.21	18.32	118.396		
5,900.00	2,848.37	3,682.87	3,045.00	48.10	9.18	178.88	1,299.07	-205.99	2,268.21	2,249.17	19.03	119.179		
6,000.00	2,847.47	3,682.87	3,045.00	50.02	9.18	178.88	1,299.07	-205.99	2,367.92	2,348.17	19.75	119.899		
6,100.00	2,846.56	3,682.87	3,045.00	51.95	9.18	178.88	1,299.07	-205.99	2,467.65	2,447.18	20.47	120.565		
6,161.92	2,846.00	3,682.87	3,045.00	53.14	9.18	178.88	1,299.07	-205.99	2,529.42	2,508.51	20.91	120.958		



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 213-INC_ONLY<10													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	60.24	60.24	0.00	0.61	50.98	1,138.26	1,404.79	1,808.06					
100.00	100.00	153.70	153.70	0.10	1.57	50.98	1,138.26	1,404.79	1,808.06	1,806.40	1.66	1,086.958		
200.00	200.00	259.08	259.07	0.32	3.25	50.98	1,138.45	1,404.79	1,808.18	1,804.61	3.57	506.116		
300.00	300.00	358.20	358.19	0.55	5.57	50.98	1,138.31	1,404.79	1,808.09	1,801.97	6.12	295.443		
400.00	400.00	457.31	457.30	0.77	7.90	50.98	1,138.24	1,404.79	1,808.05	1,799.38	8.67	208.611		
433.50	433.50	490.51	490.50	0.85	8.68	50.98	1,138.24	1,404.79	1,808.04	1,798.52	9.52	189.914		
500.00	500.00	556.42	556.41	0.99	10.22	50.98	1,138.26	1,404.79	1,808.06	1,796.84	11.21	161.230		
600.00	600.00	655.53	655.52	1.22	12.54	50.98	1,138.35	1,404.79	1,808.11	1,794.35	13.76	131.393		
700.00	700.00	754.63	754.62	1.44	14.86	50.98	1,138.51	1,404.79	1,808.22	1,791.91	16.31	110.879		
800.00	800.00	857.02	857.00	1.67	17.54	50.98	1,138.54	1,404.79	1,808.24	1,789.03	19.21	94.154		
900.00	900.00	957.03	957.00	1.89	20.19	50.98	1,138.54	1,404.79	1,808.24	1,786.16	22.08	81.894		
1,000.00	1,000.00	1,057.03	1,057.00	2.12	22.84	50.98	1,138.54	1,404.79	1,808.24	1,783.28	24.96	72.459		
1,100.00	1,100.00	1,157.04	1,157.00	2.34	25.49	50.98	1,138.54	1,404.79	1,808.24	1,780.40	27.83	64.973		
1,200.00	1,200.00	1,257.04	1,257.00	2.57	28.14	50.98	1,138.54	1,404.79	1,808.24	1,777.53	30.71	58.890		
1,300.00	1,300.00	1,357.05	1,357.00	2.79	30.79	50.98	1,138.54	1,404.79	1,808.24	1,774.65	33.58	53.848		
1,400.00	1,400.00	1,457.05	1,457.00	3.02	33.44	50.98	1,138.54	1,404.79	1,808.24	1,771.78	36.46	49.601		
1,500.00	1,500.00	1,557.06	1,557.00	3.24	36.09	50.98	1,138.54	1,404.79	1,808.24	1,768.90	39.33	45.975		
1,519.13	1,519.13	1,576.19	1,576.13	3.29	36.60	50.98	1,138.54	1,404.79	1,808.24	1,768.35	39.88	45.341		
1,600.00	1,599.96	1,657.02	1,656.96	3.47	38.74	60.09	1,138.54	1,404.79	1,807.09	1,764.90	42.20	42.826		
1,700.00	1,699.52	1,756.59	1,756.52	3.70	41.38	60.50	1,138.54	1,404.79	1,802.56	1,757.55	45.01	40.046		
1,800.00	1,798.20	1,855.27	1,855.20	3.94	43.99	61.22	1,138.54	1,404.79	1,794.66	1,746.90	47.77	37.572		
1,900.00	1,895.53	1,952.60	1,952.53	4.21	46.57	62.24	1,138.54	1,404.79	1,783.59	1,733.12	50.47	35.338		
2,000.00	1,991.02	2,048.10	2,048.02	4.55	49.10	63.56	1,138.54	1,404.79	1,769.59	1,716.43	53.16	33.288		
2,100.00	2,084.21	2,141.30	2,141.21	4.98	51.57	65.17	1,138.54	1,404.79	1,753.01	1,697.15	55.87	31.378		
2,200.00	2,174.65	2,231.74	2,231.65	5.53	53.97	67.05	1,138.54	1,404.79	1,734.26	1,675.62	58.64	29.576		
2,300.00	2,261.89	2,318.99	2,318.89	6.20	56.28	69.17	1,138.54	1,404.79	1,713.83	1,652.33	61.51	27.864		
2,400.00	2,345.52	2,402.62	2,402.52	7.00	58.50	71.48	1,138.54	1,404.79	1,692.29	1,627.80	64.49	26.240		
2,500.00	2,425.12	2,482.22	2,482.12	7.94	60.61	73.95	1,138.54	1,404.79	1,670.28	1,602.68	67.60	24.709		
2,600.00	2,500.31	2,557.41	2,557.31	9.01	62.60	76.51	1,138.54	1,404.79	1,648.49	1,577.69	70.80	23.284		
2,700.00	2,570.71	2,627.82	2,627.71	10.20	64.47	79.09	1,138.54	1,404.79	1,627.68	1,553.63	74.05	21.981		
2,800.00	2,635.99	2,693.11	2,692.99	11.50	66.20	81.61	1,138.54	1,404.79	1,608.65	1,531.35	77.29	20.812		
2,900.00	2,695.84	2,752.95	2,752.84	12.91	67.78	83.99	1,138.54	1,404.79	1,592.18	1,511.70	80.48	19.784		
3,000.00	2,749.94	2,807.06	2,806.94	14.42	69.22	86.17	1,138.54	1,404.79	1,579.10	1,495.54	83.56	18.898		
3,100.00	2,798.06	2,849.00	2,848.88	16.01	70.33	87.87	1,138.54	1,404.79	1,570.15	1,483.82	86.33	18.188		
3,144.10	2,817.31	2,874.43	2,874.31	16.74	71.00	88.80	1,138.54	1,404.79	1,567.68	1,479.93	87.75	17.866		
3,150.00	2,819.77	2,876.90	2,876.77	16.82	71.07	88.92	1,138.54	1,404.79	1,567.42	1,479.53	87.89	17.834		
3,200.00	2,838.43	2,895.55	2,895.43	17.34	71.56	89.73	1,138.54	1,404.79	1,566.03	1,477.13	88.90	17.615		
3,222.00	2,845.34	2,902.46	2,902.34	17.59	71.74	90.00	1,138.54	1,404.79	1,565.88	1,476.55	89.33	17.528 CC		
3,250.00	2,852.97	2,910.09	2,909.97	17.91	71.95	90.26	1,138.54	1,404.79	1,566.13	1,476.28	89.85	17.430 ES		
3,300.00	2,863.29	2,920.41	2,920.29	18.52	72.22	90.48	1,138.54	1,404.79	1,567.83	1,477.09	90.74	17.279		
3,350.00	2,869.30	2,926.43	2,926.30	19.17	72.38	90.37	1,138.54	1,404.79	1,571.20	1,479.65	91.55	17.162		
3,394.16	2,871.00	2,928.13	2,928.00	19.77	72.42	90.00	1,138.54	1,404.79	1,575.57	1,483.37	92.20	17.089		
3,400.00	2,871.00	2,928.12	2,928.00	19.85	72.42	89.98	1,138.54	1,404.79	1,576.24	1,483.97	92.28	17.081		
3,411.47	2,870.93	2,928.05	2,927.93	20.02	72.42	89.93	1,138.54	1,404.79	1,577.63	1,485.19	92.44	17.067		
3,500.00	2,870.12	2,927.25	2,927.12	21.29	72.40	89.91	1,138.54	1,404.79	1,591.09	1,497.39	93.69	16.982		
3,600.00	2,869.22	2,926.34	2,926.22	22.81	72.38	89.87	1,138.54	1,404.79	1,612.01	1,516.82	95.19	16.935 SF		
3,700.00	2,868.31	2,925.44	2,925.31	24.39	72.35	89.84	1,138.54	1,404.79	1,638.77	1,542.03	96.74	16.939		
3,800.00	2,867.40	2,924.53	2,924.40	26.03	72.33	89.81	1,138.54	1,404.79	1,671.10	1,572.74	98.36	16.990		
3,900.00	2,866.50	2,923.62	2,923.50	27.70	72.31	89.77	1,138.54	1,404.79	1,708.68	1,608.66	100.01	17.085		
4,000.00	2,865.59	2,922.72	2,922.59	29.42	72.28	89.74	1,138.54	1,404.79	1,751.16	1,649.46	101.70	17.219		
4,100.00	2,864.69	2,921.81	2,921.69	31.16	72.26	89.71	1,138.54	1,404.79	1,798.21	1,694.79	103.42	17.387		
4,200.00	2,863.78	2,920.90	2,920.78	32.93	72.23	89.67	1,138.54	1,404.79	1,849.48	1,744.31	105.17	17.586		

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



Koltek Energy Services

Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 202H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6196.00usft
Reference Site:	Sec.18-T32N-R07W	MD Reference:	KB @ 6196.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 202H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 213-INC_ONLY<10													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,300.00	2,862.87	2,920.00	2,919.87	34.73	72.21	89.64	1,138.54	1,404.79	1,904.62	1,797.68	106.94	17.811		
4,400.00	2,861.97	2,919.09	2,918.97	36.54	72.19	89.61	1,138.54	1,404.79	1,963.30	1,854.58	108.72	18.058		
4,500.00	2,861.06	2,918.19	2,918.06	38.36	72.16	89.57	1,138.54	1,404.79	2,025.23	1,914.70	110.52	18.324		
4,600.00	2,860.15	2,917.28	2,917.15	40.20	72.14	89.54	1,138.54	1,404.79	2,090.10	1,977.76	112.34	18.605		
4,700.00	2,859.25	2,916.37	2,916.25	42.05	72.11	89.51	1,138.54	1,404.79	2,157.67	2,043.50	114.17	18.899		
4,800.00	2,858.34	2,915.47	2,915.34	43.91	72.09	89.47	1,138.54	1,404.79	2,227.67	2,111.67	116.00	19.203		
4,900.00	2,857.44	2,914.56	2,914.44	45.78	72.07	89.44	1,138.54	1,404.79	2,299.89	2,182.04	117.85	19.515		
5,000.00	2,856.53	2,913.65	2,913.53	47.66	72.04	89.41	1,138.54	1,404.79	2,374.13	2,254.42	119.70	19.833		
5,100.00	2,855.62	2,912.75	2,912.62	49.55	72.02	89.37	1,138.54	1,404.79	2,450.20	2,328.63	121.57	20.155		
5,200.00	2,854.72	2,911.84	2,911.72	51.44	71.99	89.34	1,138.54	1,404.79	2,527.93	2,404.50	123.43	20.480		
5,300.00	2,853.81	2,910.94	2,910.81	53.33	71.97	89.31	1,138.54	1,404.79	2,607.19	2,481.88	125.31	20.807		
5,400.00	2,852.90	2,910.03	2,909.90	55.24	71.95	89.28	1,138.54	1,404.79	2,687.82	2,560.64	127.18	21.133		
5,500.00	2,852.00	2,909.12	2,909.00	57.14	71.92	89.24	1,138.54	1,404.79	2,769.72	2,640.66	129.07	21.460		
5,600.00	2,851.09	2,908.22	2,908.09	59.05	71.90	89.21	1,138.54	1,404.79	2,852.78	2,721.83	130.95	21.785		
5,700.00	2,850.19	2,907.31	2,907.19	60.97	71.87	89.18	1,138.54	1,404.79	2,936.89	2,804.05	132.84	22.108		
5,800.00	2,849.28	2,906.40	2,906.28	62.89	71.85	89.14	1,138.54	1,404.79	3,021.97	2,887.23	134.74	22.429		
5,900.00	2,848.37	2,905.50	2,905.37	64.81	71.82	89.11	1,138.54	1,404.79	3,107.94	2,971.30	136.63	22.747		
6,000.00	2,847.47	2,904.59	2,904.47	66.73	71.80	89.08	1,138.54	1,404.79	3,194.72	3,056.19	138.53	23.061		
6,100.00	2,846.56	2,903.69	2,903.56	68.66	71.78	89.04	1,138.54	1,404.79	3,282.25	3,141.82	140.43	23.372		
6,161.92	2,846.00	2,903.12	2,903.00	69.85	71.76	89.02	1,138.54	1,404.79	3,336.81	3,195.19	141.61	23.563		

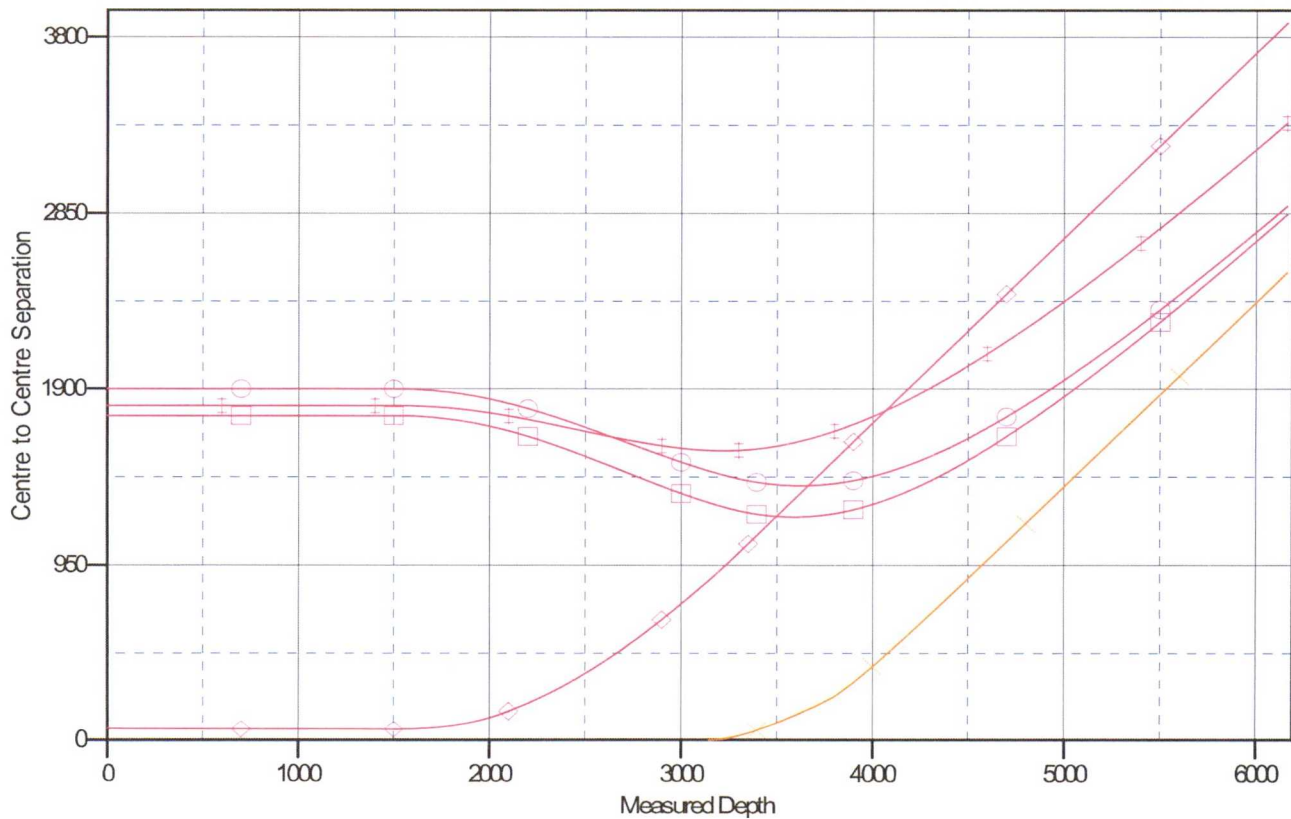
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.18-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 202H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 202H
TVD Reference: KB @ 6196.00usft
MD Reference: KB @ 6196.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 6196.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 202H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°

Ladder Plot



LEGEND

San Juan 32-7 Unit 202H, Pilot Hole, Rev0 V0
San Juan 32-7 Unit 246A, Original Hole, Original Hole V0
San Juan 32-7 Unit 003, Original Hole, Original Hole V0
San Juan 32-7 Unit 029, Original Hole, Original Hole V0
San Juan 32-7 Unit 029A, Original Hole, Original Hole V0

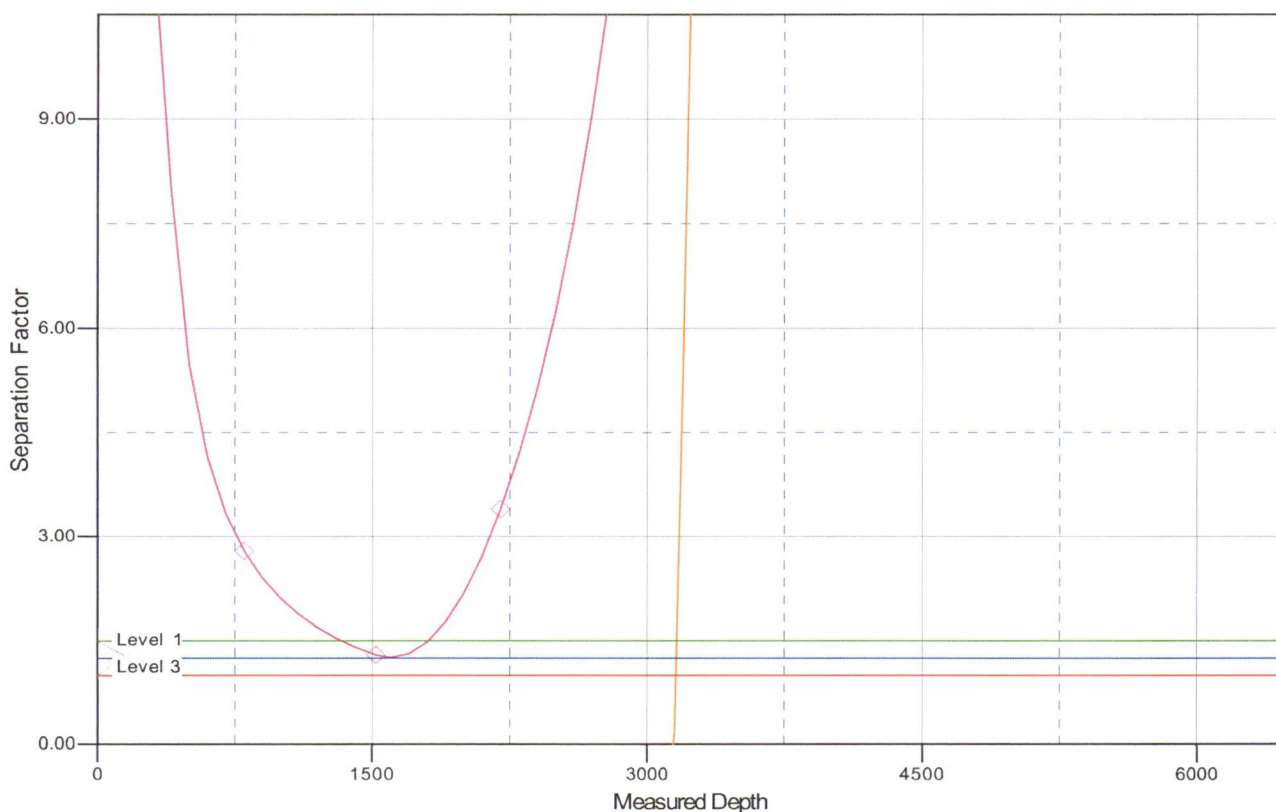
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.18-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 202H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 202H
TVD Reference: KB @ 6196.00usft
MD Reference: KB @ 6196.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 6196.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 202H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°

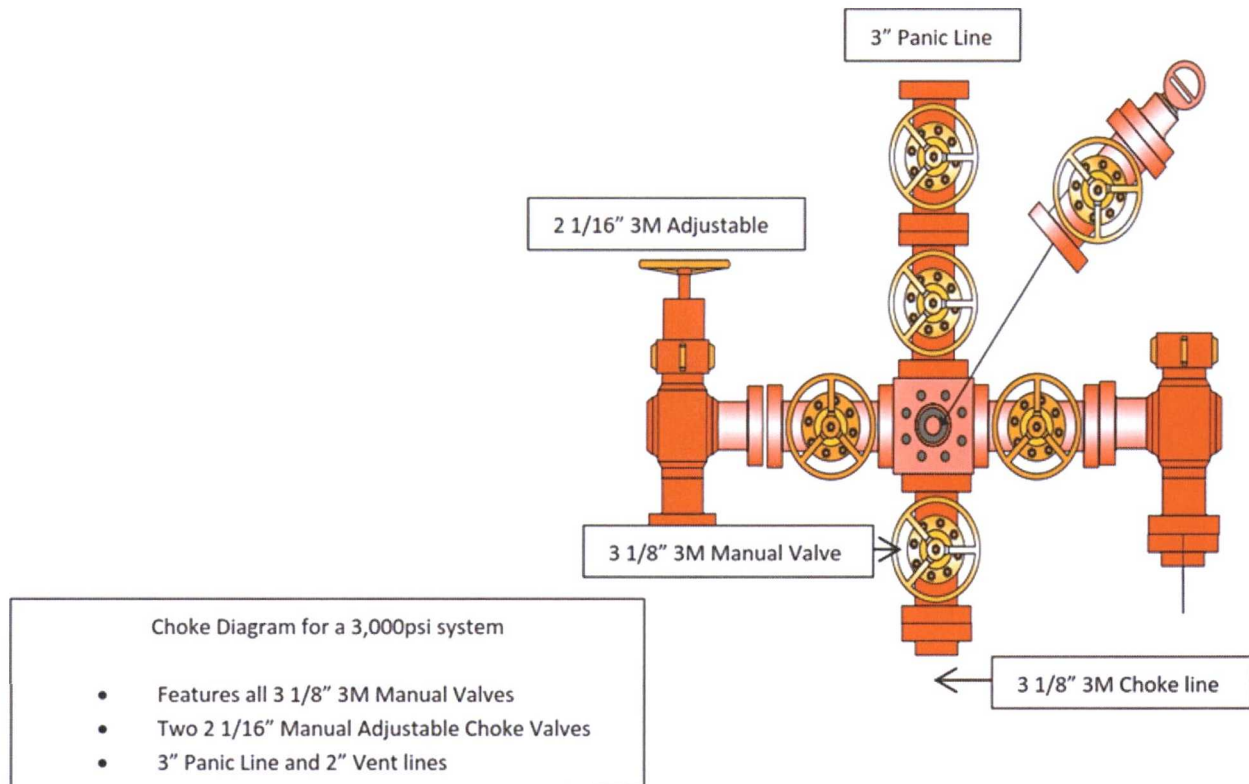
Separation Factor Plot



LEGEND

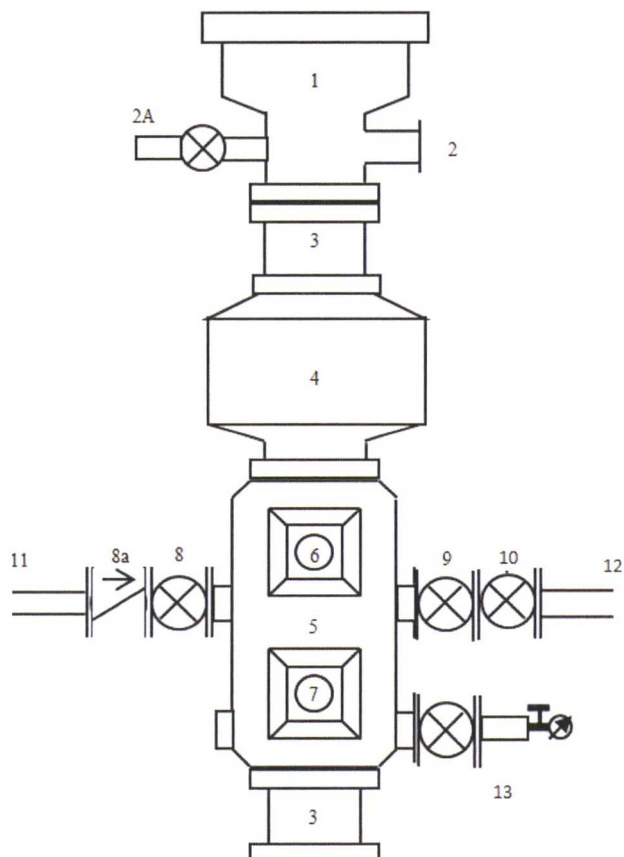
San Juan 32-7 Unit 202H, Pilot Hole, Rev0 V0
San Juan 32-7 Unit 246A, Original Hole, Original Hole V0
San Juan 32-7 Unit 003, Original Hole, Original Hole V0
San Juan 32-7 Unit 029, Original Hole, Original Hole V0
San Juan 32-7 Unit 029A, Original Hole, Original Hole V0

Choke Manifold Schematic – Aztec 777



BOPE Schematic – Aztec 777

1. Rotating Head
2. Flow line
- 2A. Fill up line and valve
3. Spacer Spools (as needed)
4. 11" 3M Annular Preventer
5. 11" 3M Double Ram Preventer
6. Blind Rams
7. Pipe Rams
8. 3M Gate Valve (2")
- 8a. Check valve
9. 3M Manual Gate Valve (3")
10. 3M Manual Gate Valve (3")
11. Kill Line Connection, 2" hard line
12. Choke Line (3" Co-Flex)
13. Secondary outlet with valve, bull plug, needle valve, and pressure gauge



State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

Heather Riley, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division Conditions of Approval
C-101 Application for Permit to Drill

Operator Signature Date: 10.12.18

Well information;

Operator Hilcorp, Well Name and Number San Juan 32-7 Unit #202H

API# 30045-35898, Section 18, Township 32N, Range 7E

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 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.