

1025 N. FRENCH DR., FLORES, NM 88240
 Phone: (575) 393-6161 Fax: (575) 393-0720
District I
 811 S. First St., Artesia, NM 88210
 Phone: (575) 748-1283 Fax: (575) 748-9720
District III
 1000 Rio Brazos Road, Aztec, NM 87410
 Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505
 Phone: (505) 476-3460 Fax: (505) 476-3462

Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Revised July 18, 2013

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, REENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

¹ Operator Name and Address Hilcorp Energy Company 1111 Travis St. Houston, TX 77002		² OGRID Number 372171
<p align="center">OCT 23 2018</p> <p align="center">DISTRICT III</p>		³ API Number 30-045-35900
		⁴ Property Code 318434
⁵ Property Name San Juan 32-7 Unit		⁶ Well No. 248H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
F	07	32N	07W	03	1193	N	2650	W	San Juan

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
Lat 1: E	08	32N	07W	04	1291	N	832	W	San Juan
ST 1: I	07	32N	07W		2060	S	359	E	San Juan

9. Pool Information

Pool Name Fruitland Coal	Pool Code 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 6418
¹⁶ Multiple N	¹⁷ Proposed Depth Lat 1 (6266 MD / 3085 TVD) ST 1 (5609 MD / 3092 TVD)	¹⁸ Formation Fruitland Coal	¹⁹ Contractor	²⁰ Spud Date 4/1/2019
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	12.25	9.625	32.3	500	265	0
Int 1	8.75	7	23	3928	420	
Liner 1 (Lat1)	6.25	4.5	11.6	3800		
Liner 1 (ST1)	6.25	4.5	11.6	3368		

Casing/Cement Program: Additional Comments

See attached Technical Plans

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	3000	3000	

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

Printed name: Amanda Walker
 Title: Operations / Regulatory Tech - Sr.
 E-mail Address: mwalker@hilcorp.com
 Date: 10/22/2018 Phone: 505.324.5122

OIL CONSERVATION DIVISION	
Approved By:	<i>Charles Perri 10-29-2018</i>
Title:	SUPERVISOR DISTRICT #3
Approved Date:	<i>10-29-18</i> Expiration Date: <i>10-29-20</i>
SEE ATTACHED NMOCD	
CONDITIONS OF APPROVAL	

N

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State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
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

¹ API Number 30,045,35900		² Pool Code 71629		³ Pool Name BASIN FRUITLAND COAL	
⁴ Property Code 318434		⁵ Property Name SAN JUAN 32-7 UNIT		⁶ Well Number 248H (LATERAL 1)	
⁷ OGRID No. 372171		⁸ Operator Name HILCORP ENERGY COMPANY			⁹ Elevation 6418'

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
F	7	32N	7W	3	1193	NORTH	2650	WEST	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
E	8	32N	7W	4	1291	NORTH	832	WEST	SAN JUAN

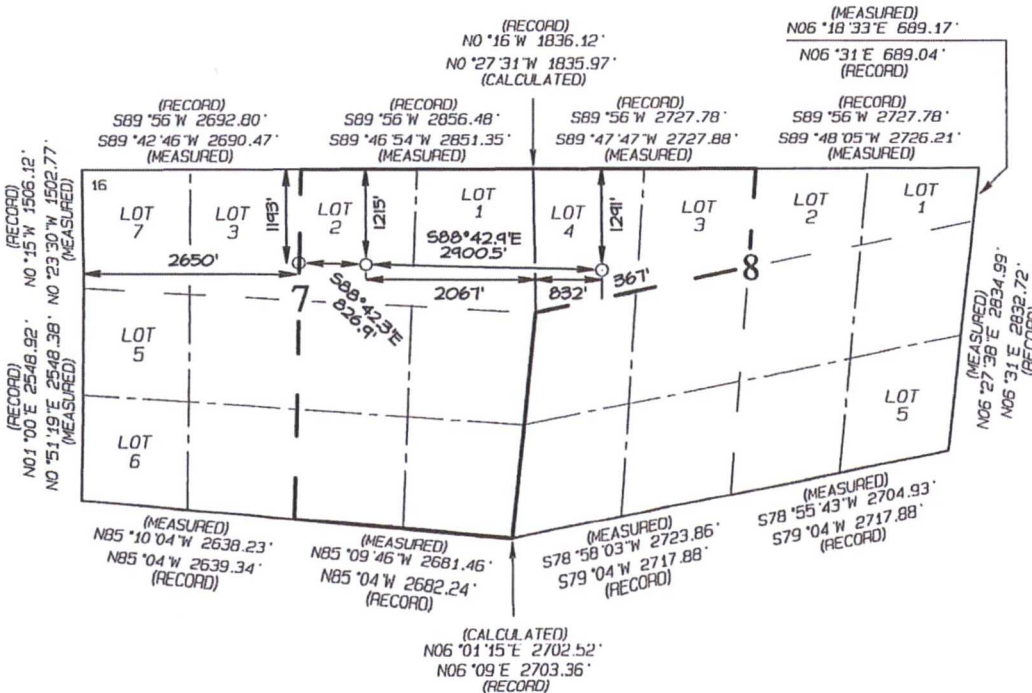
¹² Dedicated Acres 238.23	¹³ Joint or Infill W/2 - Section 7 NW/4 - Section 8	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SURFACE LOCATION
1193' FNL 2650' FWL
SEC 7, T32N, R7W
LAT: 36.996682°N
LONG: 107.608403°W
DATUM: NAD1927
LAT: 36.996686°N
LONG: 107.609014°W
DATUM: NAD1983

FIRST TAKE POINT
1215' FNL 2067' FEL
SEC 7, T32N, R7W
LAT: 36.996625°N
LONG: 107.605572°W
DATUM: NAD1927
LAT: 36.996629°N
LONG: 107.606183°W
DATUM: NAD1983

BOTTOM HOLE LOCATION
1291' FNL 832' FWL
SEC 8, T32N, R7W
LAT: 36.996427°N
LONG: 107.595643°W
DATUM: NAD1927
LAT: 36.996431°N
LONG: 107.596254°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.

Amanda Walker 10/22/18
Signature Date

Amanda Walker

Printed Name

mwalker@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: OCTOBER 5, 2018
Survey Date: SEPTEMBER 1, 2018

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

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AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30.045.35900		*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 318434	*Property Name SAN JUAN 32-7 UNIT		*Well Number 248H (LATERAL 1 - SIDETRACK 1)
*GRID No. 372171	*Operator Name HILCORP ENERGY COMPANY		*Elevation 6418'

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
F	7	32N	7W	3	1193	NORTH	2650	WEST	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
I	7	32N	7W		2060	SOUTH	359	EAST	SAN JUAN

¹² Dedicated Acres 238.23	¹³ Joint or Infill NE/2 - Section 7 NW/4 - Section 8	¹⁴ Consolidation Code	¹⁵ Order No.
---	---	----------------------------------	-------------------------

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

SURFACE LOCATION
1193' FNL 2650' FWL
SEC 7, T32N, R7W
LAT: 36.996682°N
LONG: 107.608403°W
DATUM: NAD1927

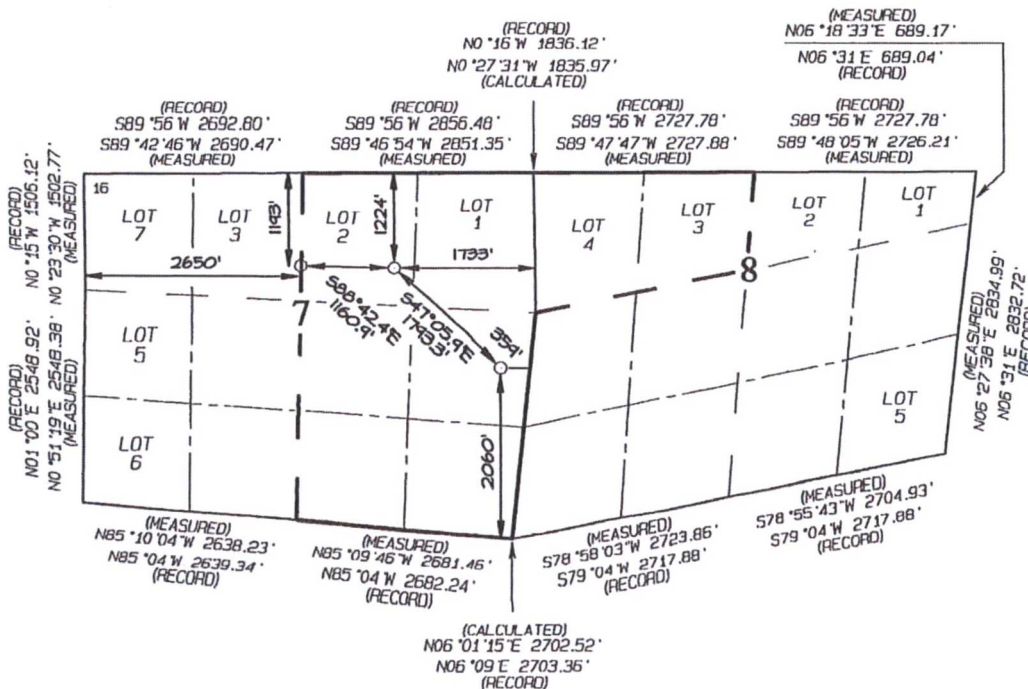
LAT: 36.996686°N
LONG: 107.609014°W
DATUM: NAD1983

FIRST TAKE POINT
1224' FNL 1733' FEL
SEC 7, T32N, R7W
LAT: 36.996603°N
LONG: 107.604429°W
DATUM: NAD1927

LAT: 36.996607°N
LONG: 107.605039°W
DATUM: NAD1983

BOTTOM-HOLE LOCATION
2060' FSL 359' FEL
SEC 7, T32N, R7W
LAT: 36.993241°N
LONG: 107.599940°W
DATUM: NAD1927

LAT: 36.993245°N
LONG: 107.600551°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.

Amanda Walker 10/22/18
Signature Date

Amanda Walker

Printed Name
mwalker@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: OCTOBER 8, 2018
Survey Date: SEPTEMBER 1, 2018

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

Hilcorp Energy Company Technical Plan

1. Location

SAN JUAN 32-7 UNIT 248H
 SHL: 1193' FNL, 2650' FEL – Sec 7, T32N, R7W
 Lat 1 BHL: 1291' FNL, 832' FWL – Sec 8, T32N, R7W
 Lat 1 ST1 BHL: 2060' FSL, 359' FEL – Sec 7, T32N, R7W
 GL: 6418'

2. Geological Markers

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

<u>Formation</u>	<u>Depth (TVD)</u>	<u>Remarks</u>
Ojo Alamo	2324'	Wet
Kirtland	2390'	Wet
Fruitland	2848'	Possible Gas/Water
Pictured Cliffs	3272'	Wet

Formation Top Selection: San Juan 32-7 41A was initially used for regional formation tops; I correlated from that well to 247A to get expected formation tops using 32-7-22-2 well as a good regional check; I had to use the 3-18 as kirtland top because neither the 41-A or the 32-7-22-2 had a kirtland top on the 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' – 3,927.63' (MD)
Prod Liner (predrilled)	6-1/4"	4-1/2"	11.6# J-55/L-80	3,800' – 6,266' (MD)
Prod Liner (predrilled)	6-1/4"	4-1/2"	11.6# J-55/L-80	3,368' – 5,609' (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 3,358.13' MD / 3,031.32' TVD.

Lat 1 will be drilled f/ 3,358.13' to TD at 6,266.4'. The 4-1/2" liner will be run outside the window with top of the liner dropped off at 3,800'.

Lat 1 ST will be drilled f/ 3,700' to TD at 5,609.46'. The 4-1/2" liner will be run outside the window with top of the liner dropped off just outside the window at 3,368'.

If either of the 6-1/4" holes are 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	3,927.63'	420	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%	885 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.



San Juan 32-7 Unit 248H

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.



San Juan 32-7 Unit 248H

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	

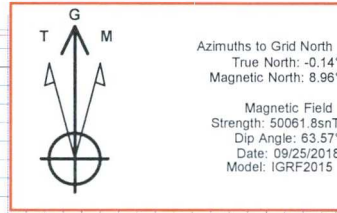
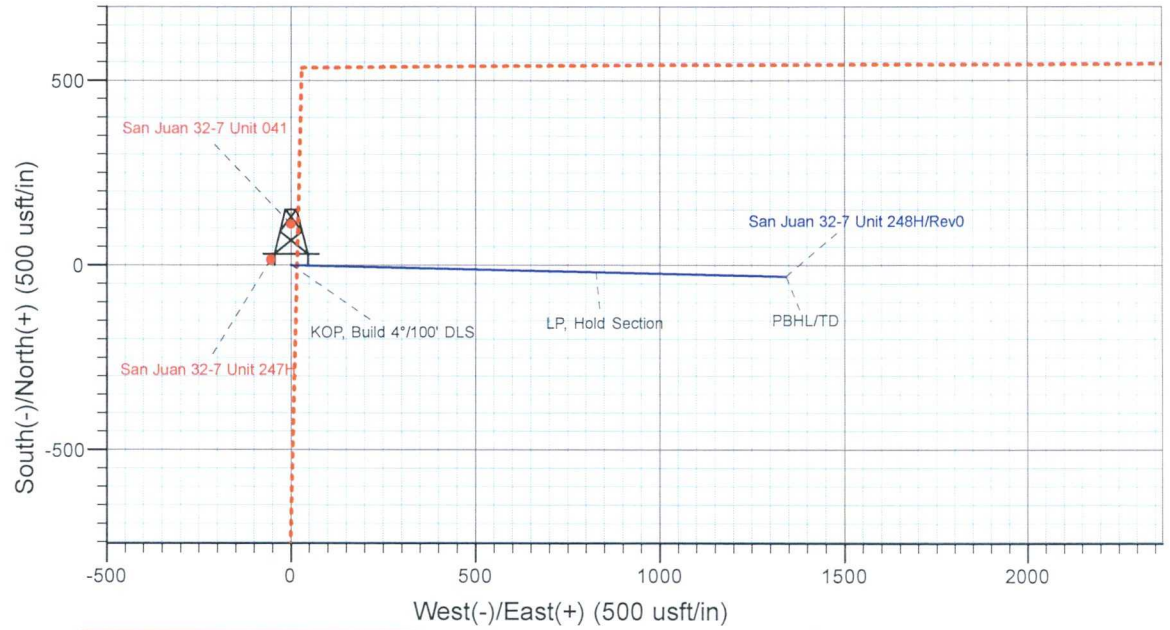
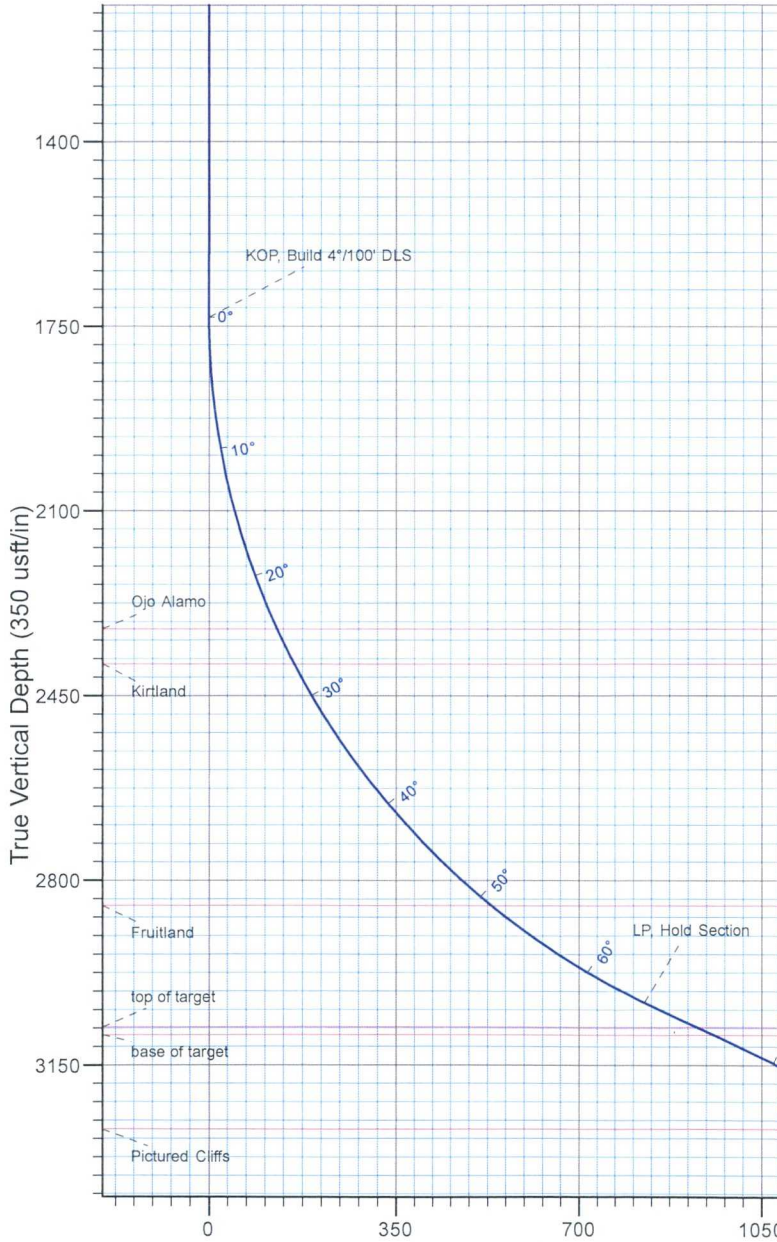
8. Directional Plan

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.07-T32N-R07W
 Well: San Juan 32-7 Unit 248H
 Borehole: Pilot Hole
 Plan: Rev0



WELL DETAILS: San Juan 32-7 Unit 248H						
+N/-S	+E/-W	Northing	GL 6418.00	KB @ 6433.00usft	Latitude	Longitude
0.00	0.00	2182139.31	Easting	565685.99	36.996682°N	107.608403°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	1733.13	0.00	0.00	1733.13	0.00	0.00	0.00	0.00	0.00
3	3358.13	65.00	91.29	3031.32	-18.62	826.83	4.00	91.29	827.04
4	3927.63	65.00	91.29	3272.00	-30.24	1342.84	0.00	0.00	1343.18

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
2324.00	2342.19	Ojo Alamo
2390.00	2415.52	Kirtland
2848.00	3010.82	Fruitland
3078.00	3468.59	top of target
3093.00	3504.08	base of target
3272.00	3927.63	Pictured Cliffs

ANNOTATIONS		
TVD	MD	Annotation
1733.13	1733.13	KOP, Build 4"/100' DLS
3031.32	3358.13	LP, Hold Section
3272.00	3927.63	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.07-T32N-R07W

San Juan 32-7 Unit 248H

Pilot Hole

Plan: Rev0

Standard Planning Report - Geographic

26 September, 2018





Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	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.07-T32N-R07W				
Site Position:		Northing:	2,180,199.75 usft	Latitude:	36.991360°N
From:	Lat/Long	Easting:	564,826.98 usft	Longitude:	107.611360°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.13 °

Well	San Juan 32-7 Unit 248H					
Well Position	+N-S	0.00 usft	Northing:	2,182,139.31 usft	Latitude:	36.996682°N
	+E-W	0.00 usft	Easting:	565,685.99 usft	Longitude:	107.608403°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,418.00 usft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/25/18	9.10	63.57	50,062

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 (°)
	0.00	0.00	0.00	91.29

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	0.00
1,733.13	0.00	0.00	1,733.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,358.13	65.00	91.29	3,031.32	-18.62	826.83	4.00	4.00	0.00	91.29	91.29
3,927.63	65.00	91.29	3,272.00	-30.24	1,342.84	0.00	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 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	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	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
100.00	0.00	0.00	100.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
200.00	0.00	0.00	200.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
300.00	0.00	0.00	300.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
400.00	0.00	0.00	400.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
500.00	0.00	0.00	500.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
600.00	0.00	0.00	600.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
700.00	0.00	0.00	700.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
800.00	0.00	0.00	800.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
900.00	0.00	0.00	900.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
1,733.13	0.00	0.00	1,733.13	0.00	0.00	2,182,139.31	565,685.99	36.996682°N	107.608403°W	
KOP, Build 4"/100' DLS										
1,800.00	2.67	91.29	1,799.98	-0.04	1.56	2,182,139.27	565,687.55	36.996682°N	107.608398°W	
1,900.00	6.67	91.29	1,899.62	-0.22	9.71	2,182,139.09	565,695.69	36.996681°N	107.608370°W	
2,000.00	10.67	91.29	1,998.46	-0.56	24.78	2,182,138.75	565,710.77	36.996680°N	107.608318°W	
2,100.00	14.67	91.29	2,096.00	-1.05	46.71	2,182,138.25	565,732.70	36.996679°N	107.608243°W	
2,200.00	18.67	91.29	2,191.78	-1.70	75.39	2,182,137.61	565,761.38	36.996677°N	107.608145°W	
2,300.00	22.67	91.29	2,285.32	-2.49	110.69	2,182,136.81	565,796.67	36.996675°N	107.608024°W	
2,400.00	26.67	91.29	2,376.17	-3.43	152.41	2,182,135.87	565,838.40	36.996672°N	107.607881°W	
2,500.00	30.67	91.29	2,463.89	-4.51	200.37	2,182,134.79	565,886.36	36.996668°N	107.607717°W	
2,600.00	34.67	91.29	2,548.04	-5.73	254.34	2,182,133.58	565,940.33	36.996665°N	107.607532°W	
2,700.00	38.67	91.29	2,628.23	-7.07	314.04	2,182,132.23	566,000.03	36.996661°N	107.607328°W	
2,800.00	42.67	91.29	2,704.06	-8.54	379.18	2,182,130.77	566,065.17	36.996656°N	107.607105°W	
2,900.00	46.67	91.29	2,775.16	-10.12	449.46	2,182,129.18	566,135.45	36.996651°N	107.606864°W	
3,000.00	50.67	91.29	2,841.17	-11.81	524.52	2,182,127.49	566,210.51	36.996646°N	107.606607°W	
3,100.00	54.67	91.29	2,901.80	-13.60	604.01	2,182,125.70	566,290.00	36.996641°N	107.606335°W	
3,200.00	58.67	91.29	2,956.72	-15.48	687.53	2,182,123.82	566,373.52	36.996635°N	107.606049°W	
3,300.00	62.67	91.29	3,005.69	-17.44	774.67	2,182,121.86	566,460.66	36.996629°N	107.605751°W	
3,358.13	65.00	91.29	3,031.32	-18.62	826.83	2,182,120.69	566,512.82	36.996626°N	107.605572°W	
LP, Hold Section										
3,400.00	65.00	91.29	3,049.01	-19.47	864.77	2,182,119.83	566,550.76	36.996623°N	107.605442°W	
3,500.00	65.00	91.29	3,091.28	-21.51	955.38	2,182,117.79	566,641.36	36.996617°N	107.605132°W	
3,600.00	65.00	91.29	3,133.54	-23.55	1,045.98	2,182,115.75	566,731.97	36.996611°N	107.604822°W	
3,700.00	65.00	91.29	3,175.80	-25.59	1,136.59	2,182,113.71	566,822.58	36.996604°N	107.604511°W	
3,800.00	65.00	91.29	3,218.06	-27.63	1,227.20	2,182,111.67	566,913.19	36.996598°N	107.604201°W	
3,900.00	65.00	91.29	3,260.32	-29.68	1,317.81	2,182,109.63	567,003.79	36.996592°N	107.603891°W	
3,927.63	65.00	91.29	3,272.00	-30.24	1,342.84	2,182,109.07	567,028.83	36.996590°N	107.603805°W	
PBHL/TD										



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	Rev0		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,342.19	2,324.00	Ojo Alamo		0.00		
2,415.52	2,390.00	Kirtland		0.00		
3,010.82	2,848.00	Fruitland		0.00		
3,468.59	3,078.00	top of target		0.00		
3,504.08	3,093.00	base of target		0.00		
3,927.63	3,272.00	Pictured Cliffs		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,733.13	1,733.13	0.00	0.00	KOP, Build 4°/100' DLS	
3,358.13	3,031.32	-18.62	826.83	LP, Hold Section	
3,927.63	3,272.00	-30.24	1,342.84	PBHL/TD	



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.07-T32N-R07W

San Juan 32-7 Unit 248H

Pilot Hole

Rev0

Anticollision Report

26 September, 2018





Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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 09/26/18			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	3,927.63	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.07-T32N-R07W						
San Juan 32-7 Unit 041 - Original Hole - Original Hole	800.00	744.02	109.76	96.55	8.308	CC
San Juan 32-7 Unit 041 - Original Hole - Original Hole	2,000.00	1,942.50	113.73	72.34	2.748	ES
San Juan 32-7 Unit 041 - Original Hole - Original Hole	2,100.00	2,040.05	120.98	76.94	2.747	SF
San Juan 32-7 Unit 247H - Original Hole - Original Hole	754.74	739.77	56.20	42.40	4.072	CC
San Juan 32-7 Unit 247H - Original Hole - Original Hole	1,800.00	1,785.03	57.86	15.71	1.373	Level 3, ES, SF

Offset Design Sec.07-T32N-R07W - San Juan 32-7 Unit 041 - Original Hole - Original Hole											Offset Site Error: 0.00 usft		
Survey Program: 100-INC_ONLY<10											Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-0.29	110.31	-0.55	123.71				
100.00	100.00	44.06	44.06	0.10	0.32	-0.29	110.20	-0.55	110.20	109.79	0.42	264.848	
106.02	106.02	50.02	50.02	0.11	0.36	-0.29	110.20	-0.55	110.20	109.73	0.47	232.977	
200.00	200.00	144.00	144.00	0.32	1.37	-0.29	110.31	-0.55	110.31	108.62	1.69	65.360	
300.00	300.00	244.24	244.24	0.55	2.84	-0.29	110.30	-0.55	110.30	106.92	3.38	32.606	
400.00	400.00	344.20	344.19	0.77	4.58	-0.29	110.11	-0.55	110.11	104.76	5.35	20.586	
500.00	500.00	444.15	444.15	0.99	6.32	-0.29	109.95	-0.55	109.96	102.64	7.31	15.033	
600.00	600.00	544.11	544.10	1.22	8.06	-0.29	109.85	-0.55	109.85	100.57	9.28	11.837	
700.00	700.00	644.06	644.05	1.44	9.80	-0.29	109.78	-0.55	109.78	98.54	11.25	9.762	
800.00	800.00	744.02	744.01	1.67	11.54	-0.29	109.76	-0.55	109.76	96.55	13.21	8.308	CC
801.39	801.39	745.40	745.39	1.67	11.57	-0.29	109.76	-0.55	109.76	96.52	13.24	8.291	
900.00	900.00	843.97	843.95	1.89	13.28	-0.29	109.78	-0.55	109.79	94.61	15.18	7.233	
1,000.00	1,000.00	943.91	943.90	2.12	15.02	-0.29	109.85	-0.55	109.85	92.71	17.14	6.408	
1,100.00	1,100.00	1,043.86	1,043.85	2.34	16.77	-0.29	109.96	-0.55	109.96	90.85	19.11	5.754	
1,200.00	1,200.00	1,143.81	1,143.79	2.57	18.51	-0.29	110.11	-0.55	110.11	89.04	21.07	5.225	
1,300.00	1,300.00	1,243.75	1,243.74	2.79	20.25	-0.29	110.31	-0.55	110.31	87.27	23.04	4.788	
1,400.00	1,400.00	1,344.17	1,344.15	3.02	22.58	-0.29	110.13	-0.55	110.14	84.54	25.60	4.302	
1,500.00	1,500.00	1,444.08	1,444.06	3.24	24.91	-0.29	110.04	-0.55	110.04	81.89	28.16	3.908	
1,560.98	1,560.98	1,505.01	1,504.99	3.38	26.33	-0.29	110.03	-0.55	110.03	80.31	29.71	3.703	
1,600.00	1,600.00	1,543.99	1,543.97	3.47	27.24	-0.29	110.03	-0.55	110.03	79.32	30.71	3.583	
1,700.00	1,700.00	1,643.89	1,643.87	3.69	29.57	-0.29	110.11	-0.55	110.11	76.84	33.27	3.310	
1,733.13	1,733.13	1,676.99	1,676.96	3.77	30.35	-0.29	110.15	-0.55	110.15	76.04	34.11	3.229	

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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:	0.00 usft		
Survey Program: 100-INC_ONLY<10													Sec.07-T32N-R07W - San Juan 32-7 Unit 041 - Original Hole - Original Hole		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				
1,800.00	1,799.98	1,743.77	1,743.74	3.91	31.90	-92.38	110.27	-0.55	110.32	74.51	35.81	3.081				
1,900.00	1,899.62	1,843.66	1,843.62	4.11	34.48	-96.55	110.31	-0.55	111.00	72.42	38.59	2.877				
2,000.00	1,998.46	1,942.50	1,942.46	4.34	37.09	-103.93	110.31	-0.55	113.73	72.34	41.39	2.748 ES				
2,100.00	2,096.00	2,040.05	2,040.00	4.61	39.67	-113.58	110.31	-0.55	120.98	76.94	44.03	2.747 SF				
2,200.00	2,191.78	2,135.83	2,135.78	4.94	42.20	-123.98	110.31	-0.55	135.33	89.00	46.33	2.921				
2,300.00	2,285.32	2,229.37	2,229.32	5.38	44.67	-133.59	110.31	-0.55	158.42	110.31	48.11	3.293				
2,400.00	2,376.17	2,320.23	2,320.17	5.95	47.07	-141.56	110.31	-0.55	190.62	141.29	49.33	3.864				
2,500.00	2,463.89	2,407.95	2,407.89	6.67	49.39	-147.78	110.31	-0.55	231.42	181.39	50.03	4.626				
2,600.00	2,548.04	2,492.11	2,492.04	7.58	51.62	-152.49	110.31	-0.55	280.06	229.81	50.25	5.573				
2,700.00	2,628.23	2,572.30	2,572.23	8.67	53.74	-155.99	110.31	-0.55	335.78	285.73	50.05	6.709				
2,800.00	2,704.06	2,648.13	2,648.06	9.95	55.74	-158.58	110.31	-0.55	397.90	348.47	49.43	8.049				
2,900.00	2,775.16	2,719.23	2,719.16	11.41	57.62	-160.45	110.31	-0.55	465.85	417.40	48.45	9.616				
3,000.00	2,841.17	2,785.26	2,785.17	13.06	59.37	-161.75	110.31	-0.55	539.09	491.96	47.13	11.438				
3,100.00	2,901.80	2,845.88	2,845.80	14.89	60.97	-162.56	110.31	-0.55	617.13	571.57	45.56	13.546				
3,200.00	2,956.72	2,900.81	2,900.72	16.87	62.42	-162.93	110.31	-0.55	699.48	655.66	43.82	15.961				
3,300.00	3,005.69	2,949.78	2,949.69	19.00	63.71	-162.84	110.31	-0.55	785.68	743.58	42.10	18.660				
3,358.13	3,031.32	2,975.41	2,975.32	20.30	64.39	-162.55	110.31	-0.55	837.36	796.15	41.22	20.315				
3,400.00	3,049.01	2,993.11	2,993.01	21.25	64.86	-163.27	110.31	-0.55	875.00	833.71	41.29	21.191				
3,500.00	3,091.28	3,035.37	3,035.28	23.55	65.98	-164.77	110.31	-0.55	964.97	923.37	41.60	23.196				
3,600.00	3,133.54	3,077.63	3,077.54	25.88	67.09	-166.04	110.31	-0.55	1,055.06	1,013.00	42.06	25.085				
3,700.00	3,175.80	3,119.90	3,119.80	28.21	68.21	-167.11	110.31	-0.55	1,145.24	1,102.60	42.63	26.863				
3,800.00	3,218.06	3,163.03	3,162.92	30.56	69.58	-168.06	110.15	-0.55	1,235.46	1,192.07	43.39	28.474				
3,900.00	3,260.32	3,205.24	3,205.13	32.92	71.09	-168.88	109.90	-0.55	1,325.73	1,281.44	44.29	29.935				
3,927.63	3,272.00	3,216.90	3,216.79	33.58	71.50	-169.09	109.84	-0.55	1,350.68	1,306.13	44.54	30.322				

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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:
Sec.07-T32N-R07W - San Juan 32-7 Unit 247H - Original Hole - Original Hole														0.00 usft
Survey Program: 134-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	-75.92	13.71	-54.64	58.30					
100.00	100.00	84.98	84.98	0.10	0.62	-76.05	13.57	-54.64	56.30	55.59	0.71	78.877		
200.00	200.00	185.01	185.01	0.32	1.86	-75.99	13.64	-54.64	56.32	54.14	2.18	25.799		
214.01	214.01	199.01	199.01	0.35	2.11	-75.99	13.63	-54.64	56.32	53.86	2.46	22.910		
300.00	300.00	284.98	284.97	0.55	3.60	-75.88	13.75	-54.64	56.34	52.20	4.15	13.583		
400.00	400.00	385.00	385.00	0.77	5.35	-75.79	13.83	-54.64	56.37	50.25	6.12	9.216		
500.00	500.00	485.04	485.03	0.99	7.09	-75.89	13.74	-54.64	56.34	48.26	8.08	6.970		
600.00	600.00	585.06	585.05	1.22	9.08	-76.22	13.40	-54.64	56.26	45.96	10.30	5.461		
700.00	700.00	685.04	685.02	1.44	11.12	-76.42	13.20	-54.64	56.21	43.65	12.57	4.474		
754.74	754.74	739.77	739.75	1.57	12.24	-76.46	13.16	-54.64	56.20	42.40	13.80	4.072	CC	
800.00	800.00	785.01	785.00	1.67	13.16	-76.45	13.17	-54.64	56.21	41.38	14.83	3.791		
900.00	900.00	884.98	884.96	1.89	15.19	-76.30	13.32	-54.64	56.24	39.15	17.09	3.291		
1,000.00	1,000.00	984.93	984.92	2.12	17.23	-75.98	13.64	-54.64	56.32	36.97	19.35	2.910		
1,100.00	1,100.00	1,085.02	1,085.00	2.34	19.78	-75.92	13.71	-54.64	56.33	34.21	22.13	2.546		
1,200.00	1,200.00	1,185.02	1,185.00	2.57	22.43	-75.92	13.71	-54.64	56.33	31.34	25.00	2.254		
1,300.00	1,300.00	1,285.03	1,285.00	2.79	25.07	-75.92	13.71	-54.64	56.33	28.47	27.86	2.022		
1,400.00	1,400.00	1,385.03	1,385.00	3.02	27.71	-75.92	13.71	-54.64	56.33	25.61	30.73	1.833		
1,500.00	1,500.00	1,485.04	1,485.00	3.24	30.35	-75.92	13.71	-54.64	56.33	22.74	33.60	1.677		
1,600.00	1,600.00	1,585.04	1,585.00	3.47	32.99	-75.92	13.71	-54.64	56.33	19.87	36.47	1.545		
1,700.00	1,700.00	1,685.05	1,685.00	3.69	35.64	-75.92	13.71	-54.64	56.33	16.99	39.34	1.432	Level 3	
1,733.13	1,733.13	1,718.18	1,718.13	3.77	36.52	-75.92	13.71	-54.64	56.33	16.04	40.29	1.398	Level 3	
1,800.00	1,799.98	1,785.03	1,784.98	3.91	38.29	-167.54	13.71	-54.64	57.86	15.71	42.15	1.373	Level 3, ES, SF	
1,900.00	1,899.62	1,884.68	1,884.62	4.11	40.93	-169.01	13.71	-54.64	65.84	21.10	44.74	1.471	Level 3	
2,000.00	1,998.46	1,983.52	1,983.46	4.34	43.54	-170.96	13.71	-54.64	80.69	33.64	47.06	1.715		
2,100.00	2,096.00	2,081.02	2,080.95	4.61	45.63	-172.60	14.00	-54.64	102.47	53.90	48.57	2.110		
2,200.00	2,191.78	2,176.82	2,176.75	4.94	47.58	-174.00	14.20	-54.64	131.01	81.35	49.65	2.638		
2,300.00	2,285.32	2,270.40	2,270.32	5.38	49.49	-175.13	14.25	-54.64	166.17	115.79	50.38	3.298		
2,400.00	2,376.17	2,361.29	2,361.21	5.95	51.34	-176.02	14.14	-54.64	207.80	157.07	50.73	4.096		
2,500.00	2,463.89	2,449.06	2,448.97	6.67	53.13	-176.70	13.90	-54.64	255.68	205.00	50.68	5.045		
2,600.00	2,548.04	2,533.21	2,533.12	7.58	54.85	-177.22	13.57	-54.64	309.58	259.34	50.24	6.162		
2,700.00	2,628.23	2,613.38	2,613.29	8.67	56.49	-177.60	13.32	-54.64	369.24	319.85	49.39	7.476		
2,800.00	2,704.06	2,689.19	2,689.09	9.95	58.03	-177.85	13.19	-54.64	434.37	386.23	48.14	9.023		
2,900.00	2,775.16	2,760.25	2,760.16	11.41	59.48	-178.03	13.16	-54.64	504.64	458.15	46.49	10.855		
3,000.00	2,841.17	2,826.24	2,826.14	13.06	60.83	-178.13	13.21	-54.64	579.71	535.26	44.45	13.041		
3,100.00	2,901.80	2,886.82	2,886.72	14.89	62.06	-178.18	13.32	-54.64	659.20	617.16	42.04	15.679		
3,200.00	2,956.72	2,941.71	2,941.61	16.87	63.18	-178.18	13.48	-54.64	742.73	703.44	39.29	18.904		
3,300.00	3,005.69	2,990.63	2,990.53	19.00	64.18	-178.13	13.67	-54.64	829.90	793.68	36.22	22.915		
3,358.13	3,031.32	3,016.42	3,016.32	20.30	64.80	-178.08	13.71	-54.64	882.06	847.72	34.34	25.687		
3,400.00	3,049.01	3,034.11	3,034.01	21.25	65.27	-178.16	13.71	-54.64	920.01	885.23	34.78	26.454		
3,500.00	3,091.28	3,076.38	3,076.28	23.55	66.39	-178.33	13.71	-54.64	1,010.63	974.79	35.84	28.199		
3,600.00	3,133.54	3,118.64	3,118.54	25.88	67.51	-178.46	13.71	-54.64	1,101.26	1,064.34	36.91	29.832		
3,700.00	3,175.80	3,160.91	3,160.80	28.21	68.63	-178.58	13.71	-54.64	1,191.88	1,153.88	38.00	31.365		
3,800.00	3,218.06	3,203.17	3,203.06	30.56	69.75	-178.68	13.71	-54.64	1,282.51	1,243.41	39.09	32.805		
3,900.00	3,260.32	3,245.43	3,245.32	32.92	70.87	-178.77	13.71	-54.64	1,373.13	1,332.94	40.20	34.161		
3,927.63	3,272.00	3,257.11	3,257.00	33.58	71.18	-178.79	13.71	-54.64	1,398.17	1,357.67	40.50	34.522		

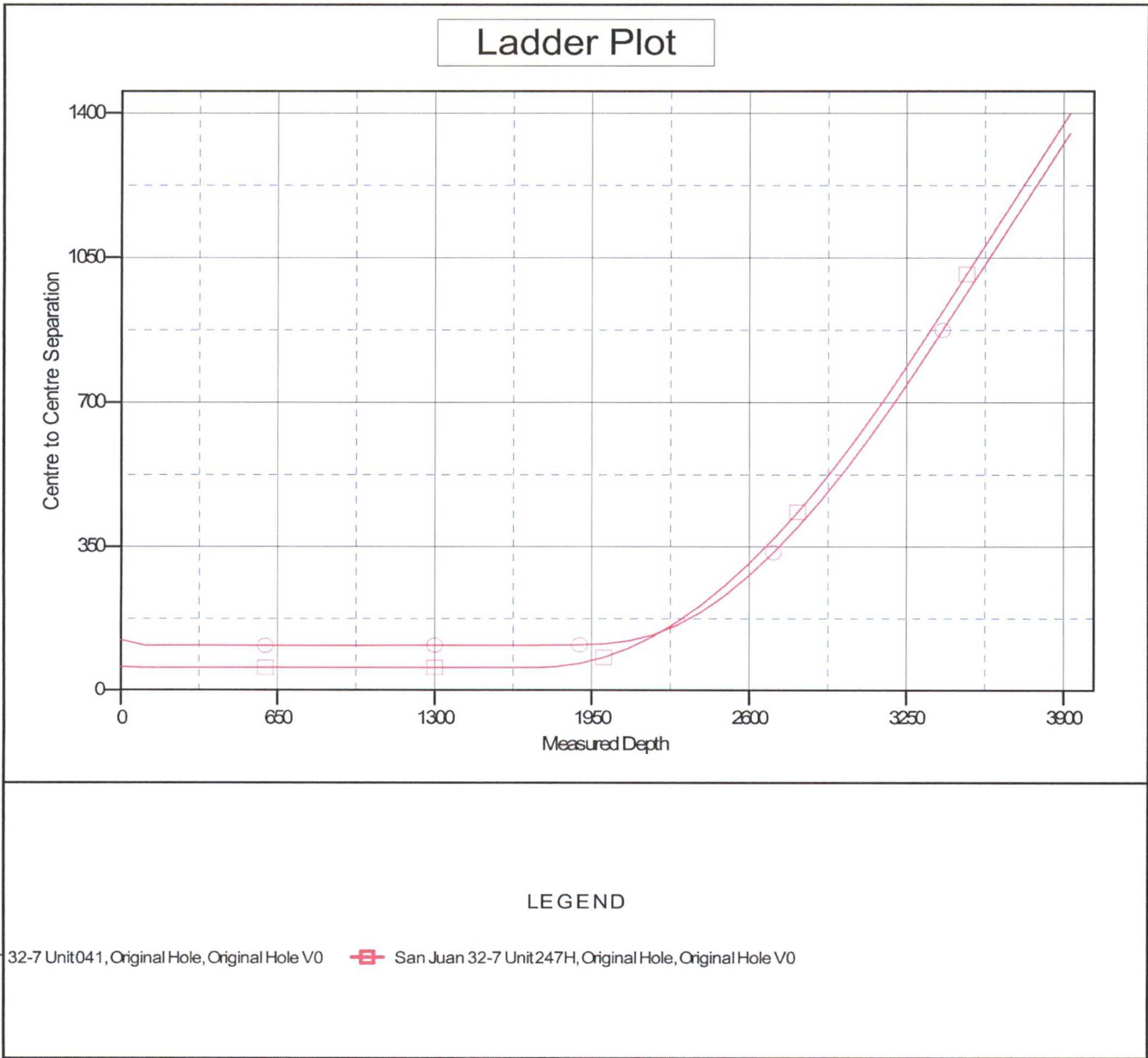
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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 @ 6433.00usft
 Offset Depths are relative to Offset Datum
 Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 248H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
 Grid Convergence at Surface is: 0.14°



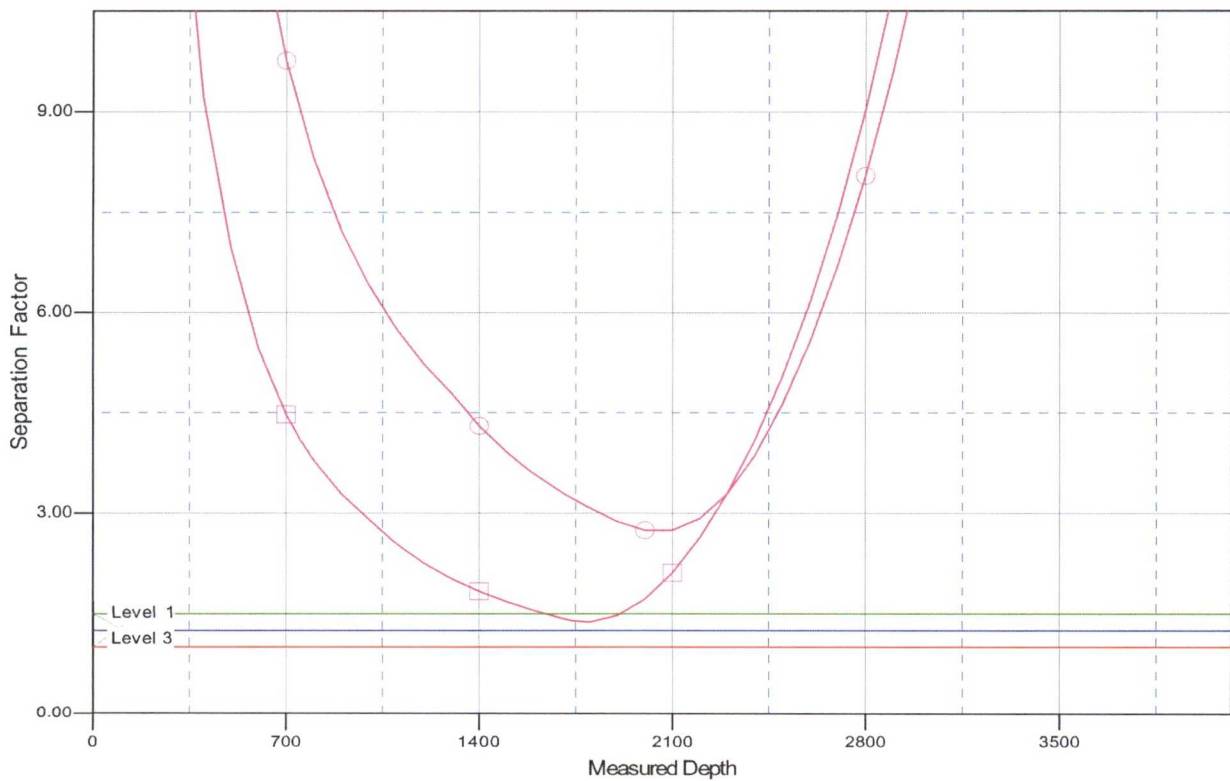


Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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 @ 6433.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 248H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°

Separation Factor Plot



LEGEND

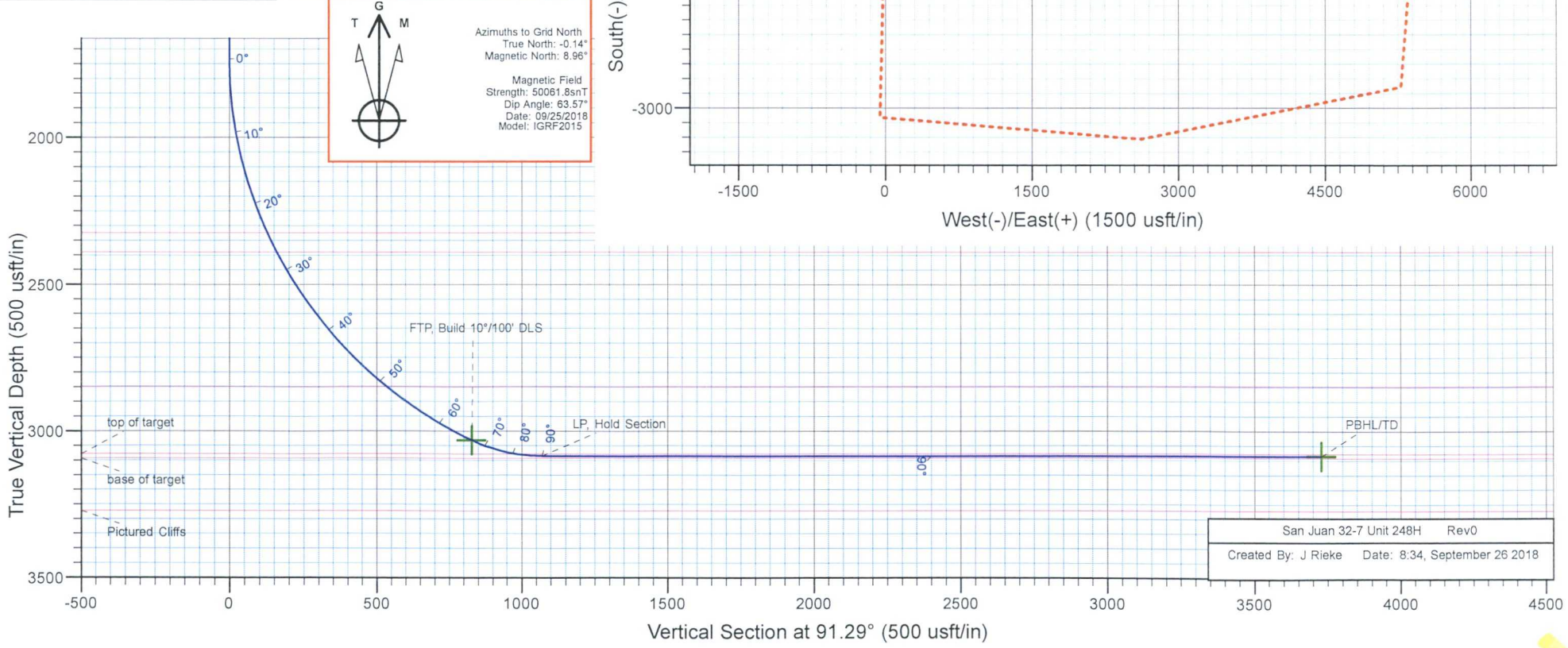
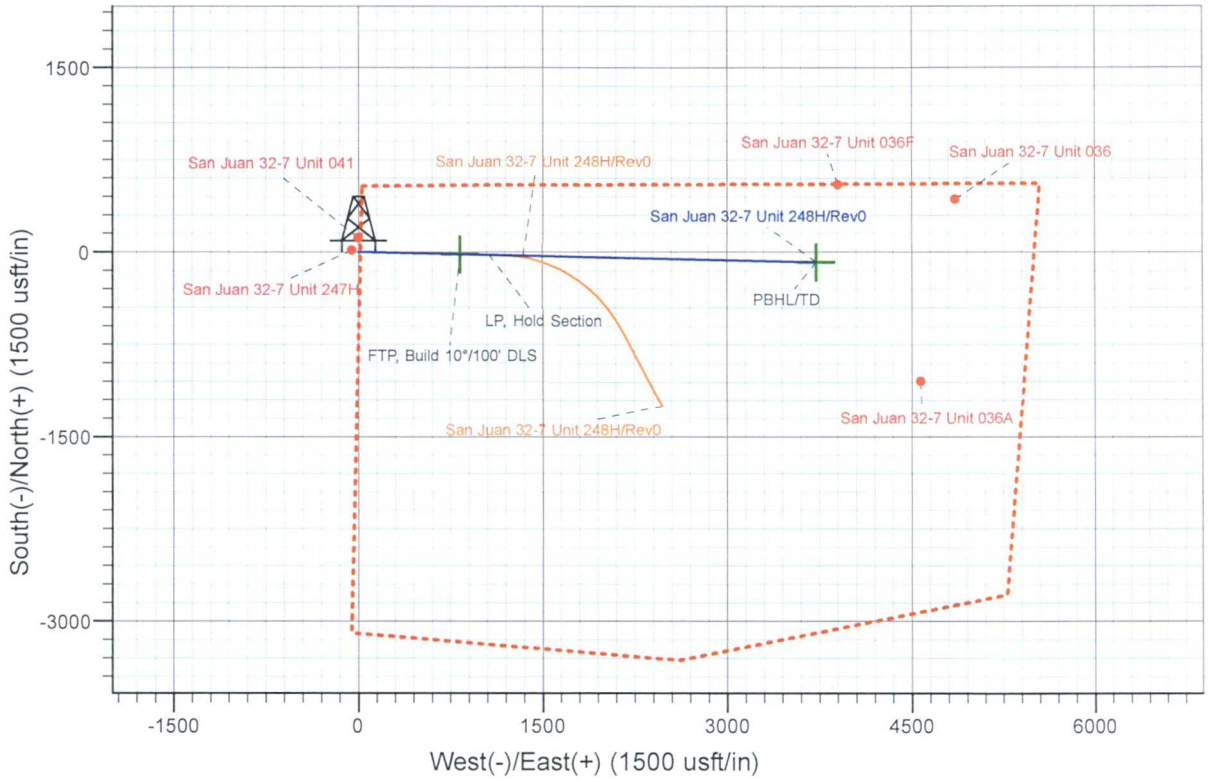
San Juan 32-7 Unit041, Original Hole, Original Hole V0 ■ San Juan 32-7 Unit247H, Original Hole, Original Hole V0



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.07-T32N-R07W
 Well: San Juan 32-7 Unit 248H
 Borehole: Lat 1
 Plan: Rev0



WELL DETAILS: San Juan 32-7 Unit 248H						
+N/-S	+E/-W	GL 6418.00	KB @ 6433.00usft	GL 6418.00	KB @ 6433.00usft	
0.00	0.00	2182139.31	565685.99	36.996682°N	107.608403°W	
SECTION DETAILS						
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W
1	3358.13	65.00	91.29	3031.32	-18.62	826.83
2	3608.13	90.00	91.29	3085.00	-24.06	1068.91
3	6266.40	90.00	91.29	3085.00	-83.71	3726.51
DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
SJ 32-7 Unit 248H Lat 1 FTP	3031.32	-18.62	826.83	36.996625°N	107.605572°W	
SJ 32-7 Unit 248H Lat 1 Toe	3085.00	-83.71	3726.51	36.996427°N	107.595643°W	
FORMATION TOP DETAILS			ANNOTATIONS			
TVDPath	MDPath	Formation	TVD	MD	FTP, Build	Annotation
2324.00	2342.19	Ojo Alamo	3031.32	3358.13	10°/100' DLS	LP, Hold Section
2390.00	2415.52	Kirtland	3085.00	3608.13		PBHL/TD
2848.00	3010.82	Fruitland	3085.00	6266.40		
3078.00	3518.47	top of target				



San Juan 32-7 Unit 248H Rev0
 Created By: J Rieke Date: 8:34, September 26 2018



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.07-T32N-R07W

San Juan 32-7 Unit 248H

Lat 1

Plan: Rev0

Standard Planning Report - Geographic

26 September, 2018





Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	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.07-T32N-R07W				
Site Position:		Northing:	2,180,199.75 usft	Latitude:	36.991360°N
From:	Lat/Long	Easting:	564,826.98 usft	Longitude:	107.611360°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.13 °

Well	San Juan 32-7 Unit 248H					
Well Position	+N/-S	0.00 usft	Northing:	2,182,139.31 usft	Latitude:	36.996682°N
	+E/-W	0.00 usft	Easting:	565,685.99 usft	Longitude:	107.608403°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,418.00 usft

Wellbore	Lat 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/25/18	9.10	63.57	50,062

Design	Rev0			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	3,358.13
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	91.29

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
3,358.13	65.00	91.29	3,031.32	-18.62	826.83	0.00	0.00	0.00	0.00	
3,608.13	90.00	91.29	3,085.00	-24.06	1,068.91	10.00	10.00	0.00	-0.01	SJ 32-7 Unit 248H La
6,266.40	90.00	91.29	3,085.00	-83.71	3,726.51	0.00	0.00	0.00	0.00	SJ 32-7 Unit 248H La



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	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
3,358.13	65.00	91.29	3,031.32	-18.62	826.83	2,182,120.69	566,512.82	36.996626°N	107.605572°W
FTP, Build 10°/100' DLS									
3,400.00	69.19	91.29	3,047.61	-19.49	865.38	2,182,119.82	566,551.37	36.996623°N	107.605440°W
3,500.00	79.19	91.29	3,074.83	-21.65	961.45	2,182,117.66	566,647.44	36.996616°N	107.605111°W
3,600.00	89.19	91.29	3,084.94	-23.88	1,060.78	2,182,115.43	566,746.77	36.996610°N	107.604771°W
3,608.13	90.00	91.29	3,085.00	-24.06	1,068.91	2,182,115.24	566,754.90	36.996609°N	107.604743°W
LP, Hold Section									
3,700.00	90.00	91.29	3,085.00	-26.12	1,160.76	2,182,113.18	566,846.75	36.996603°N	107.604429°W
3,800.00	90.00	91.29	3,085.00	-28.37	1,260.73	2,182,110.94	566,946.72	36.996596°N	107.604086°W
3,900.00	90.00	91.29	3,085.00	-30.61	1,360.71	2,182,108.70	567,046.70	36.996589°N	107.603744°W
4,000.00	90.00	91.29	3,085.00	-32.85	1,460.68	2,182,106.45	567,146.67	36.996582°N	107.603402°W
4,100.00	90.00	91.29	3,085.00	-35.10	1,560.66	2,182,104.21	567,246.65	36.996575°N	107.603059°W
4,200.00	90.00	91.29	3,085.00	-37.34	1,660.63	2,182,101.96	567,346.62	36.996569°N	107.602717°W
4,300.00	90.00	91.29	3,085.00	-39.58	1,760.61	2,182,099.72	567,446.60	36.996562°N	107.602375°W
4,400.00	90.00	91.29	3,085.00	-41.83	1,860.58	2,182,097.48	567,546.57	36.996555°N	107.602032°W
4,500.00	90.00	91.29	3,085.00	-44.07	1,960.56	2,182,095.23	567,646.55	36.996548°N	107.601690°W
4,600.00	90.00	91.29	3,085.00	-46.32	2,060.53	2,182,092.99	567,746.52	36.996541°N	107.601348°W
4,700.00	90.00	91.29	3,085.00	-48.56	2,160.51	2,182,090.75	567,846.49	36.996534°N	107.601005°W
4,800.00	90.00	91.29	3,085.00	-50.80	2,260.48	2,182,088.50	567,946.47	36.996528°N	107.600663°W
4,900.00	90.00	91.29	3,085.00	-53.05	2,360.46	2,182,086.26	568,046.44	36.996521°N	107.600321°W
5,000.00	90.00	91.29	3,085.00	-55.29	2,460.43	2,182,084.01	568,146.42	36.996514°N	107.599978°W
5,100.00	90.00	91.29	3,085.00	-57.54	2,560.41	2,182,081.77	568,246.39	36.996507°N	107.599636°W
5,200.00	90.00	91.29	3,085.00	-59.78	2,660.38	2,182,079.53	568,346.37	36.996500°N	107.599294°W
5,300.00	90.00	91.29	3,085.00	-62.02	2,760.36	2,182,077.28	568,446.34	36.996493°N	107.598952°W
5,400.00	90.00	91.29	3,085.00	-64.27	2,860.33	2,182,075.04	568,546.32	36.996487°N	107.598609°W
5,500.00	90.00	91.29	3,085.00	-66.51	2,960.31	2,182,072.80	568,646.29	36.996480°N	107.598267°W
5,600.00	90.00	91.29	3,085.00	-68.75	3,060.28	2,182,070.55	568,746.27	36.996473°N	107.597925°W
5,700.00	90.00	91.29	3,085.00	-71.00	3,160.25	2,182,068.31	568,846.24	36.996466°N	107.597582°W
5,800.00	90.00	91.29	3,085.00	-73.24	3,260.23	2,182,066.06	568,946.22	36.996459°N	107.597240°W
5,900.00	90.00	91.29	3,085.00	-75.49	3,360.20	2,182,063.82	569,046.19	36.996452°N	107.596898°W
6,000.00	90.00	91.29	3,085.00	-77.73	3,460.18	2,182,061.58	569,146.17	36.996446°N	107.596555°W
6,100.00	90.00	91.29	3,085.00	-79.97	3,560.15	2,182,059.33	569,246.14	36.996439°N	107.596213°W
6,200.00	90.00	91.29	3,085.00	-82.22	3,660.13	2,182,057.09	569,346.12	36.996432°N	107.595871°W
6,266.40	90.00	91.29	3,085.00	-83.71	3,726.51	2,182,055.60	569,412.50	36.996427°N	107.595643°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 248H Lat 1 - hit/miss target - Shape - Point	0.00	0.00	3,031.32	-18.62	826.83	2,182,120.69	566,512.82	36.996626°N	107.605572°W
SJ 32-7 Unit 248H Lat 1 - plan hits target center - Point	0.00	0.00	3,085.00	-83.71	3,726.51	2,182,055.60	569,412.50	36.996427°N	107.595643°W



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lat 1		
Design:	Rev0		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,342.19	2,324.00	Ojo Alamo		0.00		
2,415.52	2,390.00	Kirtland		0.00		
3,010.82	2,848.00	Fruitland		0.00		
3,518.47	3,078.00	top of target		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
3,358.13	3,031.32	-18.62	826.83	FTP, Build 10"/100' DLS	
3,608.13	3,085.00	-24.06	1,068.91	LP, Hold Section	
6,266.40	3,085.00	-83.71	3,726.51	PBHL/TD	



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.07-T32N-R07W

San Juan 32-7 Unit 248H

Lat 1

Rev0

Anticollision Report

26 September, 2018





Koltek Energy Services
Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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 09/26/18			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	3,358.13	Rev0 (Pilot Hole)	MWD	MWD - Standard
3,358.13	6,266.40	Rev0 (Lat 1)	MWD	MWD - Standard

Summary							
Site Name	Reference		Offset		Distance		Warning
	Measured Depth (usft)	Measured Depth (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor		
Offset Well - Wellbore - Design							
Sec.07-T32N-R07W							
San Juan 32-7 Unit 041 - Original Hole - Original Hole	800.00	744.02	109.76	96.55	8.308	CC	
San Juan 32-7 Unit 041 - Original Hole - Original Hole	2,000.00	1,942.50	113.73	72.34	2.748	ES	
San Juan 32-7 Unit 041 - Original Hole - Original Hole	2,100.00	2,040.05	120.98	76.94	2.747	SF	
San Juan 32-7 Unit 247H - Original Hole - Original Hole	754.74	739.77	56.20	42.40	4.072	CC	
San Juan 32-7 Unit 247H - Original Hole - Original Hole	1,800.00	1,785.03	57.86	15.71	1.373	Level 3, ES, SF	
San Juan 32-7 Unit 248H - Lat 1 ST01 - Rev0	3,760.21	3,760.15	1.58	-0.36	0.816	Level 1, CC, ES, SF	
San Juan 32-7 Unit 248H - Pilot Hole - Rev0	3,358.13	3,358.13	0.00	0.00	10,000.000	CC, ES	
San Juan 32-7 Unit 248H - Pilot Hole - Rev0	3,380.31	3,380.31	0.43	0.17	1.659	SF	
Sec.08-T32N-R07W							
San Juan 32-7 Unit 036 - Original Hole - Original Hole	6,266.77	2,899.18	1,236.16	1,094.53	8.728	CC, ES, SF	
San Juan 32-7 Unit 036A - Original Hole - Original Hole	6,266.77	2,885.32	1,279.63	1,087.86	6.673	CC, ES, SF	
San Juan 32-7 Unit 036F - Original Hole - Original Hole	6,266.77	2,875.13	654.09	492.01	4.035	CC, ES, SF	

Offset Design												Sec.07-T32N-R07W - San Juan 32-7 Unit 041 - Original Hole - Original Hole		Offset Site Error: 0.00 usft	
Survey Program: 100-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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-0.29	110.31	-0.55	123.71						
100.00	100.00	44.06	44.06	0.10	0.32	-0.29	110.20	-0.55	110.20	109.79	0.42	264.848			
106.02	106.02	50.02	50.02	0.11	0.36	-0.29	110.20	-0.55	110.20	109.73	0.47	232.977			
200.00	200.00	144.00	144.00	0.32	1.37	-0.29	110.31	-0.55	110.31	108.62	1.69	65.360			
300.00	300.00	244.24	244.24	0.55	2.84	-0.29	110.30	-0.55	110.30	106.92	3.38	32.606			
400.00	400.00	344.20	344.19	0.77	4.58	-0.29	110.11	-0.55	110.11	104.76	5.35	20.586			
500.00	500.00	444.15	444.15	0.99	6.32	-0.29	109.95	-0.55	109.96	102.64	7.31	15.033			
600.00	600.00	544.11	544.10	1.22	8.06	-0.29	109.85	-0.55	109.85	100.57	9.28	11.837			
700.00	700.00	644.06	644.05	1.44	9.80	-0.29	109.78	-0.55	109.78	98.54	11.25	9.762			
800.00	800.00	744.02	744.01	1.67	11.54	-0.29	109.76	-0.55	109.76	96.55	13.21	8.308 CC			
801.39	801.39	745.40	745.39	1.67	11.57	-0.29	109.76	-0.55	109.76	96.52	13.24	8.291			
900.00	900.00	843.97	843.95	1.89	13.28	-0.29	109.78	-0.55	109.79	94.61	15.18	7.233			
1,000.00	1,000.00	943.91	943.90	2.12	15.02	-0.29	109.85	-0.55	109.85	92.71	17.14	6.408			
1,100.00	1,100.00	1,043.86	1,043.85	2.34	16.77	-0.29	109.96	-0.55	109.96	90.85	19.11	5.754			

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 100-INC_ONLY<10													Offset Well Error:	0.00 usft						
Reference													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								
1,200.00	1,200.00	1,143.81	1,143.79	2.57	18.51	-0.29	110.11	-0.55	110.11	89.04	21.07	5.225								
1,300.00	1,300.00	1,243.75	1,243.74	2.79	20.25	-0.29	110.31	-0.55	110.31	87.27	23.04	4.788								
1,400.00	1,400.00	1,344.17	1,344.15	3.02	22.58	-0.29	110.13	-0.55	110.14	84.54	25.60	4.302								
1,500.00	1,500.00	1,444.08	1,444.06	3.24	24.91	-0.29	110.04	-0.55	110.04	81.89	28.16	3.908								
1,560.98	1,560.98	1,505.01	1,504.99	3.38	26.33	-0.29	110.03	-0.55	110.03	80.31	29.71	3.703								
1,600.00	1,600.00	1,543.99	1,543.97	3.47	27.24	-0.29	110.03	-0.55	110.03	79.32	30.71	3.583								
1,700.00	1,700.00	1,643.89	1,643.87	3.69	29.57	-0.29	110.11	-0.55	110.11	76.84	33.27	3.310								
1,733.13	1,733.13	1,676.99	1,676.96	3.77	30.35	-0.29	110.15	-0.55	110.15	76.04	34.11	3.229								
1,800.00	1,799.98	1,743.77	1,743.74	3.91	31.90	-92.38	110.27	-0.55	110.32	74.51	35.81	3.081								
1,900.00	1,899.62	1,843.66	1,843.62	4.11	34.48	-96.55	110.31	-0.55	111.00	72.42	38.59	2.877								
2,000.00	1,998.46	1,942.50	1,942.46	4.34	37.09	-103.93	110.31	-0.55	113.73	72.34	41.39	2.748 ES								
2,100.00	2,096.00	2,040.05	2,040.00	4.61	39.67	-113.58	110.31	-0.55	120.98	76.94	44.03	2.747 SF								
2,200.00	2,191.78	2,135.83	2,135.78	4.94	42.20	-123.98	110.31	-0.55	135.33	89.00	46.33	2.921								
2,300.00	2,285.32	2,229.37	2,229.32	5.38	44.67	-133.59	110.31	-0.55	158.42	110.31	48.11	3.293								
2,400.00	2,376.17	2,320.23	2,320.17	5.95	47.07	-141.56	110.31	-0.55	190.62	141.29	49.33	3.864								
2,500.00	2,463.89	2,407.95	2,407.89	6.67	49.39	-147.78	110.31	-0.55	231.42	181.39	50.03	4.626								
2,600.00	2,548.04	2,492.11	2,492.04	7.58	51.62	-152.49	110.31	-0.55	280.06	229.81	50.25	5.573								
2,700.00	2,628.23	2,572.30	2,572.23	8.67	53.74	-155.99	110.31	-0.55	335.78	285.73	50.05	6.709								
2,800.00	2,704.06	2,648.13	2,648.06	9.95	55.74	-158.58	110.31	-0.55	397.90	348.47	49.43	8.049								
2,900.00	2,775.16	2,719.23	2,719.16	11.41	57.62	-160.45	110.31	-0.55	465.85	417.40	48.45	9.616								
3,000.00	2,841.17	2,785.26	2,785.17	13.06	59.37	-161.75	110.31	-0.55	539.09	491.96	47.13	11.438								
3,100.00	2,901.80	2,845.88	2,845.80	14.89	60.97	-162.56	110.31	-0.55	617.13	571.57	45.56	13.546								
3,200.00	2,956.72	2,900.81	2,900.72	16.87	62.42	-162.93	110.31	-0.55	699.48	655.66	43.82	15.961								
3,300.00	3,005.69	2,949.78	2,949.69	19.00	63.71	-162.84	110.31	-0.55	785.68	743.58	42.10	18.660								
3,358.13	3,031.32	2,975.41	2,975.32	20.30	64.39	-162.55	110.31	-0.55	837.36	796.15	41.22	20.315								
3,358.13	3,031.32	2,975.41	2,975.32	20.30	64.39	-162.55	110.31	-0.55	837.37	796.15	41.22	20.315								
3,400.00	3,047.61	2,991.70	2,991.61	20.96	64.82	-160.34	110.31	-0.55	875.61	835.48	40.13	21.820								
3,450.00	3,063.32	3,007.41	3,007.32	21.44	65.24	-156.16	110.31	-0.55	922.70	881.41	41.29	22.346								
3,500.00	3,074.83	3,018.92	3,018.83	22.01	65.54	-148.64	110.31	-0.55	971.01	922.89	48.12	20.180								
3,550.00	3,082.05	3,026.15	3,026.05	22.66	65.73	-132.96	110.31	-0.55	1,020.16	954.91	65.26	15.633								
3,600.00	3,084.94	3,029.04	3,028.94	23.37	65.81	-97.79	110.31	-0.55	1,069.79	981.43	88.35	12.108								
3,608.13	3,085.00	3,029.09	3,029.00	23.49	65.81	-90.00	110.31	-0.55	1,077.87	988.57	89.30	12.070								
3,700.00	3,085.00	3,029.09	3,029.00	24.97	65.81	-90.00	110.31	-0.55	1,169.30	1,078.51	90.78	12.880								
3,800.00	3,085.00	3,029.09	3,029.00	26.77	65.81	-90.00	110.31	-0.55	1,268.89	1,176.31	92.58	13.706								
3,900.00	3,085.00	3,029.09	3,029.00	28.72	65.81	-90.00	110.31	-0.55	1,368.54	1,274.00	94.53	14.477								
4,000.00	3,085.00	3,029.09	3,029.00	30.81	65.81	-90.00	110.31	-0.55	1,468.23	1,371.62	96.62	15.197								
4,100.00	3,085.00	3,029.09	3,029.00	32.99	65.81	-90.00	110.31	-0.55	1,567.97	1,469.17	98.80	15.870								
4,200.00	3,085.00	3,029.09	3,029.00	35.26	65.81	-90.00	110.31	-0.55	1,667.73	1,566.67	101.07	16.501								
4,300.00	3,085.00	3,029.09	3,029.00	37.60	65.81	-90.00	110.31	-0.55	1,767.53	1,664.12	103.41	17.093								
4,400.00	3,085.00	3,029.09	3,029.00	39.99	65.81	-90.00	110.31	-0.55	1,867.34	1,761.54	105.80	17.650								
4,500.00	3,085.00	3,029.09	3,029.00	42.43	65.81	-90.00	110.31	-0.55	1,967.18	1,858.94	108.24	18.174								
4,600.00	3,085.00	3,029.09	3,029.00	44.91	65.81	-90.00	110.31	-0.55	2,067.03	1,956.30	110.72	18.669								
4,700.00	3,085.00	3,029.09	3,029.00	47.43	65.81	-90.00	110.31	-0.55	2,166.89	2,053.65	113.24	19.136								
4,800.00	3,085.00	3,029.09	3,029.00	49.97	65.81	-90.00	110.31	-0.55	2,266.77	2,150.99	115.78	19.578								
4,900.00	3,085.00	3,029.09	3,029.00	52.54	65.81	-90.00	110.31	-0.55	2,366.65	2,248.31	118.35	19.998								
5,000.00	3,085.00	3,029.09	3,029.00	55.12	65.81	-90.00	110.31	-0.55	2,466.55	2,345.62	120.93	20.396								
5,100.00	3,085.00	3,029.09	3,029.00	57.73	65.81	-90.00	110.31	-0.55	2,566.45	2,442.92	123.54	20.775								
5,200.00	3,085.00	3,029.09	3,029.00	60.35	65.81	-90.00	110.31	-0.55	2,666.36	2,540.21	126.16	21.135								
5,300.00	3,085.00	3,029.09	3,029.00	62.98	65.81	-90.00	110.31	-0.55	2,766.28	2,637.49	128.79	21.479								
5,400.00	3,085.00	3,029.09	3,029.00	65.63	65.81	-90.00	110.31	-0.55	2,866.20	2,734.77	131.44	21.806								
5,500.00	3,085.00	3,029.09	3,029.00	68.29	65.81	-90.00	110.31	-0.55	2,966.13	2,832.04	134.10	22.119								
5,600.00	3,085.00	3,029.09	3,029.00	70.95	65.81	-90.00	110.31	-0.55	3,066.07	2,929.30	136.76	22.419								

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 100-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.07-T32N-R07W - San Juan 32-7 Unit 041 - Original Hole - Original Hole														
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		
5,700.00	3,085.00	3,029.09	3,029.00	73.63	65.81	-90.00	110.31	-0.55	3,166.00	3,026.57	139.44	22.705		
5,800.00	3,085.00	3,029.09	3,029.00	76.31	65.81	-90.00	110.31	-0.55	3,265.94	3,123.82	142.12	22.980		
5,900.00	3,085.00	3,029.09	3,029.00	79.00	65.81	-90.00	110.31	-0.55	3,365.89	3,221.08	144.81	23.243		
6,000.00	3,085.00	3,029.09	3,029.00	81.70	65.81	-90.00	110.31	-0.55	3,465.84	3,318.33	147.51	23.496		
6,100.00	3,085.00	3,029.09	3,029.00	84.40	65.81	-90.00	110.31	-0.55	3,565.79	3,415.58	150.21	23.739		
6,200.00	3,085.00	3,029.09	3,029.00	87.10	65.81	-90.00	110.31	-0.55	3,665.74	3,512.83	152.91	23.973		
6,266.40	3,085.00	3,029.09	3,029.00	88.90	65.81	-90.00	110.31	-0.55	3,732.11	3,577.40	154.71	24.123		
6,266.77	3,085.00	3,029.09	3,029.00	88.91	65.81	-90.00	110.31	-0.55	3,732.48	3,577.76	154.72	24.124		

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 134-INC_ONLY<10														Offset Well Error:		0.00 usft					
Reference														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	0.00	0.00	-75.92	13.71	-54.64	58.30												
100.00	100.00	84.98	84.98	0.10	0.62	-76.05	13.57	-54.64	56.30	55.59	0.71	78.877									
200.00	200.00	185.01	185.01	0.32	1.86	-75.99	13.64	-54.64	56.32	54.14	2.18	25.799									
214.01	214.01	199.01	199.01	0.35	2.11	-75.99	13.63	-54.64	56.32	53.86	2.46	22.910									
300.00	300.00	284.98	284.97	0.55	3.60	-75.88	13.75	-54.64	56.34	52.20	4.15	13.583									
400.00	400.00	385.00	385.00	0.77	5.35	-75.79	13.83	-54.64	56.37	50.25	6.12	9.216									
500.00	500.00	485.04	485.03	0.99	7.09	-75.89	13.74	-54.64	56.34	48.26	8.08	6.970									
600.00	600.00	585.06	585.05	1.22	9.08	-76.22	13.40	-54.64	56.26	45.96	10.30	5.461									
700.00	700.00	685.04	685.02	1.44	11.12	-76.42	13.20	-54.64	56.21	43.65	12.57	4.474									
754.74	754.74	739.77	739.75	1.57	12.24	-76.46	13.16	-54.64	56.20	42.40	13.80	4.072 CC									
800.00	800.00	785.01	785.00	1.67	13.16	-76.45	13.17	-54.64	56.21	41.38	14.83	3.791									
900.00	900.00	884.98	884.96	1.89	15.19	-76.30	13.32	-54.64	56.24	39.15	17.09	3.291									
1,000.00	1,000.00	984.93	984.92	2.12	17.23	-75.98	13.64	-54.64	56.32	36.97	19.35	2.910									
1,100.00	1,100.00	1,085.02	1,085.00	2.34	19.78	-75.92	13.71	-54.64	56.33	34.21	22.13	2.546									
1,200.00	1,200.00	1,185.02	1,185.00	2.57	22.43	-75.92	13.71	-54.64	56.33	31.34	25.00	2.254									
1,300.00	1,300.00	1,285.03	1,285.00	2.79	25.07	-75.92	13.71	-54.64	56.33	28.47	27.86	2.022									
1,400.00	1,400.00	1,385.03	1,385.00	3.02	27.71	-75.92	13.71	-54.64	56.33	25.61	30.73	1.833									
1,500.00	1,500.00	1,485.04	1,485.00	3.24	30.35	-75.92	13.71	-54.64	56.33	22.74	33.60	1.677									
1,600.00	1,600.00	1,585.04	1,585.00	3.47	32.99	-75.92	13.71	-54.64	56.33	19.87	36.47	1.545									
1,700.00	1,700.00	1,685.05	1,685.00	3.69	35.64	-75.92	13.71	-54.64	56.33	16.99	39.34	1.432 Level 3									
1,733.13	1,733.13	1,718.18	1,718.13	3.77	36.52	-75.92	13.71	-54.64	56.33	16.04	40.29	1.398 Level 3									
1,800.00	1,799.98	1,785.03	1,784.98	3.91	38.29	-167.54	13.71	-54.64	57.86	15.71	42.15	1.373 Level 3, ES, SF									
1,900.00	1,899.62	1,884.68	1,884.62	4.11	40.93	-169.01	13.71	-54.64	65.84	21.10	44.74	1.471 Level 3									
2,000.00	1,998.46	1,983.52	1,983.46	4.34	43.54	-170.96	13.71	-54.64	80.69	33.64	47.06	1.715									
2,100.00	2,096.00	2,081.02	2,080.95	4.61	45.63	-172.60	14.00	-54.64	102.47	53.90	48.57	2.110									
2,200.00	2,191.78	2,176.82	2,176.75	4.94	47.58	-174.00	14.20	-54.64	131.01	81.35	49.65	2.638									
2,300.00	2,285.32	2,270.40	2,270.32	5.38	49.49	-175.13	14.25	-54.64	166.17	115.79	50.38	3.298									
2,400.00	2,376.17	2,361.29	2,361.21	5.95	51.34	-176.02	14.14	-54.64	207.80	157.07	50.73	4.096									
2,500.00	2,463.89	2,449.06	2,448.97	6.67	53.13	-176.70	13.90	-54.64	255.68	205.00	50.68	5.045									
2,600.00	2,548.04	2,533.21	2,533.12	7.58	54.85	-177.22	13.57	-54.64	309.58	259.34	50.24	6.162									
2,700.00	2,628.23	2,613.38	2,613.29	8.67	56.49	-177.60	13.32	-54.64	369.24	319.85	49.39	7.476									
2,800.00	2,704.06	2,689.19	2,689.09	9.95	58.03	-177.85	13.19	-54.64	434.37	386.23	48.14	9.023									
2,900.00	2,775.16	2,760.25	2,760.16	11.41	59.48	-178.03	13.16	-54.64	504.64	458.15	46.49	10.855									
3,000.00	2,841.17	2,826.24	2,826.14	13.06	60.83	-178.13	13.21	-54.64	579.71	535.26	44.45	13.041									
3,100.00	2,901.80	2,886.82	2,886.72	14.89	62.06	-178.18	13.32	-54.64	659.20	617.16	42.04	15.679									
3,200.00	2,956.72	2,941.71	2,941.61	16.87	63.18	-178.18	13.48	-54.64	742.73	703.44	39.29	18.904									
3,300.00	3,005.69	2,990.63	2,990.53	19.00	64.18	-178.13	13.67	-54.64	829.90	793.68	36.22	22.915									
3,358.13	3,031.32	3,016.42	3,016.32	20.30	64.80	-178.08	13.71	-54.64	882.06	847.72	34.34	25.687									
3,358.13	3,031.32	3,016.42	3,016.32	20.30	64.80	-178.08	13.71	-54.64	882.06	847.73	34.34	25.687									
3,400.00	3,047.61	3,032.71	3,032.61	20.96	65.24	-177.81	13.71	-54.64	920.62	890.61	30.01	30.682									
3,450.00	3,063.32	3,048.42	3,048.32	21.44	65.65	-177.29	13.71	-54.64	968.07	943.57	24.50	39.520									
3,500.00	3,074.83	3,059.93	3,059.83	22.01	65.96	-176.25	13.71	-54.64	1,016.71	997.53	19.17	53.027									
3,550.00	3,082.05	3,067.16	3,067.05	22.66	66.15	-173.38	13.71	-54.64	1,066.16	1,049.89	16.28	65.504									
3,600.00	3,084.94	3,070.04	3,069.94	23.37	66.22	-141.61	13.71	-54.64	1,116.06	1,059.93	56.13	19.885									
3,608.13	3,085.00	3,070.10	3,070.00	23.49	66.23	-90.00	13.71	-54.64	1,124.19	1,034.47	89.72	12.530									
3,700.00	3,085.00	3,070.10	3,070.00	24.97	66.23	-90.00	13.71	-54.64	1,216.05	1,124.85	91.20	13.334									
3,800.00	3,085.00	3,070.10	3,070.00	26.77	66.23	-90.00	13.71	-54.64	1,316.05	1,223.05	93.00	14.152									
3,900.00	3,085.00	3,070.10	3,070.00	28.72	66.23	-90.00	13.71	-54.64	1,416.04	1,321.09	94.95	14.914									
4,000.00	3,085.00	3,070.10	3,070.00	30.81	66.23	-90.00	13.71	-54.64	1,516.04	1,419.01	97.03	15.624									
4,100.00	3,085.00	3,070.10	3,070.00	32.99	66.23	-90.00	13.71	-54.64	1,616.04	1,516.82	99.22	16.288									
4,200.00	3,085.00	3,070.10	3,070.00	35.26	66.23	-90.00	13.71	-54.64	1,716.03	1,614.55	101.48	16.909									
4,300.00	3,085.00	3,070.10	3,070.00	37.60	66.23	-90.00	13.71	-54.64	1,816.03	1,712.21	103.82	17.492									

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 134-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.07-T32N-R07W - San Juan 32-7 Unit 247H - Original Hole - Original Hole														
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
4,400.00	3,085.00	3,070.10	3,070.00	39.99	66.23	-90.00	13.71	-54.64	1,916.03	1,809.81	106.22	18.039		
4,500.00	3,085.00	3,070.10	3,070.00	42.43	66.23	-90.00	13.71	-54.64	2,016.03	1,907.37	108.66	18.554		
4,600.00	3,085.00	3,070.10	3,070.00	44.91	66.23	-90.00	13.71	-54.64	2,116.03	2,004.89	111.14	19.040		
4,700.00	3,085.00	3,070.10	3,070.00	47.43	66.23	-90.00	13.71	-54.64	2,216.02	2,102.37	113.65	19.498		
4,800.00	3,085.00	3,070.10	3,070.00	49.97	66.23	-90.00	13.71	-54.64	2,316.02	2,199.83	116.19	19.932		
4,900.00	3,085.00	3,070.10	3,070.00	52.54	66.23	-90.00	13.71	-54.64	2,416.02	2,297.26	118.76	20.344		
5,000.00	3,085.00	3,070.10	3,070.00	55.12	66.23	-90.00	13.71	-54.64	2,516.02	2,394.67	121.35	20.734		
5,100.00	3,085.00	3,070.10	3,070.00	57.73	66.23	-90.00	13.71	-54.64	2,616.02	2,492.06	123.95	21.105		
5,200.00	3,085.00	3,070.10	3,070.00	60.35	66.23	-90.00	13.71	-54.64	2,716.02	2,589.44	126.57	21.458		
5,300.00	3,085.00	3,070.10	3,070.00	62.98	66.23	-90.00	13.71	-54.64	2,816.02	2,686.81	129.21	21.794		
5,400.00	3,085.00	3,070.10	3,070.00	65.63	66.23	-90.00	13.71	-54.64	2,916.01	2,784.16	131.85	22.115		
5,500.00	3,085.00	3,070.10	3,070.00	68.29	66.23	-90.00	13.71	-54.64	3,016.01	2,881.50	134.51	22.422		
5,600.00	3,085.00	3,070.10	3,070.00	70.95	66.23	-90.00	13.71	-54.64	3,116.01	2,978.83	137.18	22.715		
5,700.00	3,085.00	3,070.10	3,070.00	73.63	66.23	-90.00	13.71	-54.64	3,216.01	3,076.16	139.85	22.996		
5,800.00	3,085.00	3,070.10	3,070.00	76.31	66.23	-90.00	13.71	-54.64	3,316.01	3,173.48	142.54	23.264		
5,900.00	3,085.00	3,070.10	3,070.00	79.00	66.23	-90.00	13.71	-54.64	3,416.01	3,270.79	145.23	23.522		
6,000.00	3,085.00	3,070.10	3,070.00	81.70	66.23	-90.00	13.71	-54.64	3,516.01	3,368.09	147.92	23.769		
6,100.00	3,085.00	3,070.10	3,070.00	84.40	66.23	-90.00	13.71	-54.64	3,616.01	3,465.39	150.62	24.007		
6,200.00	3,085.00	3,070.10	3,070.00	87.10	66.23	-90.00	13.71	-54.64	3,716.01	3,562.68	153.33	24.236		
6,266.40	3,085.00	3,070.10	3,070.00	88.90	66.23	-90.00	13.71	-54.64	3,782.41	3,627.28	155.13	24.383		
6,266.77	3,085.00	3,070.10	3,070.00	88.91	66.23	-90.00	13.71	-54.64	3,782.78	3,627.64	155.13	24.384		



Koltek Energy Services
Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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, 3358-MWD, 3700-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		
3,760.21	3,085.00	3,760.15	3,085.01	1.08	0.85	90.34	-29.05	1,220.83	1.58	-0.36	1.94	0.816	Level 1, CC, ES, SF	
3,800.00	3,085.00	3,799.75	3,085.03	1.80	1.42	90.34	-32.69	1,260.26	4.36	1.14	3.21	1.355	Level 3	
3,900.00	3,085.00	3,898.01	3,085.10	3.75	2.68	90.34	-47.60	1,357.35	17.32	10.91	6.41	2.703		
4,000.00	3,085.00	3,993.41	3,085.22	5.83	4.16	90.34	-69.98	1,450.07	38.62	28.75	9.87	3.912		
4,100.00	3,085.00	4,084.85	3,085.38	8.02	5.81	90.34	-98.60	1,536.88	67.81	54.31	13.50	5.023		
4,200.00	3,085.00	4,171.46	3,085.56	10.29	7.57	90.34	-132.01	1,616.77	104.33	87.13	17.20	6.066		
4,300.00	3,085.00	4,252.73	3,085.77	12.62	9.33	90.34	-168.75	1,689.24	147.58	126.67	20.91	7.059		
4,400.00	3,085.00	4,328.39	3,085.99	15.02	11.04	90.34	-207.50	1,754.20	196.89	172.32	24.57	8.013		
4,500.00	3,085.00	4,400.00	3,086.22	17.46	12.70	90.34	-248.05	1,813.21	251.63	223.42	28.21	8.920		
4,600.00	3,085.00	4,462.92	3,086.44	19.94	14.17	90.34	-286.66	1,862.88	311.18	279.48	31.70	9.817		
4,700.00	3,085.00	4,522.20	3,086.66	22.45	15.57	90.34	-325.48	1,907.68	374.98	339.84	35.14	10.671		
4,800.00	3,085.00	4,576.58	3,086.88	25.00	16.85	90.34	-363.08	1,946.95	442.52	404.02	38.50	11.494		
4,900.00	3,085.00	4,626.41	3,087.08	27.56	18.01	90.34	-399.14	1,981.34	513.34	471.55	41.78	12.285		
5,000.00	3,085.00	4,672.09	3,087.28	30.15	19.06	90.34	-433.48	2,011.46	587.04	542.04	45.00	13.045		
5,100.00	3,085.00	4,700.00	3,087.41	32.75	19.71	90.34	-455.04	2,029.17	663.50	615.50	47.99	13.825		
5,200.00	3,085.00	4,752.44	3,087.65	35.38	20.88	90.34	-496.70	2,061.03	741.71	690.45	51.26	14.470		
5,300.00	3,085.00	4,800.00	3,087.87	38.01	21.95	90.34	-535.70	2,088.24	822.27	767.79	54.48	15.093		
5,400.00	3,085.00	4,800.00	3,087.87	40.66	21.95	90.34	-535.70	2,088.24	904.65	847.52	57.13	15.836		
5,500.00	3,085.00	4,850.37	3,088.12	43.31	23.03	90.34	-578.19	2,115.26	987.89	927.57	60.32	16.376		
5,600.00	3,085.00	4,900.00	3,088.37	45.98	24.11	90.34	-621.19	2,140.04	1,073.33	1,009.80	63.52	16.896		
5,700.00	3,085.00	4,903.78	3,088.39	48.66	24.19	90.34	-624.51	2,141.85	1,159.11	1,092.87	66.24	17.499		
5,800.00	3,085.00	4,944.55	3,088.60	51.34	25.03	90.34	-660.46	2,161.09	1,246.17	1,176.85	69.31	17.979		
5,900.00	3,085.00	4,993.64	3,088.85	54.03	26.05	90.34	-703.75	2,184.22	1,333.29	1,260.82	72.48	18.396		
6,000.00	3,085.00	5,042.73	3,089.10	56.72	27.06	90.34	-747.05	2,207.36	1,420.41	1,344.77	75.64	18.778		
6,100.00	3,085.00	5,091.82	3,089.35	59.42	28.07	90.34	-790.35	2,230.49	1,507.53	1,428.72	78.81	19.128		
6,200.00	3,085.00	5,140.91	3,089.60	62.13	29.09	90.34	-833.64	2,253.62	1,594.66	1,512.66	81.99	19.449		
6,266.40	3,085.00	5,173.50	3,089.77	63.93	29.76	90.34	-862.39	2,268.98	1,652.51	1,568.40	84.11	19.648		
6,266.77	3,085.00	5,173.68	3,089.77	63.94	29.77	90.34	-862.55	2,269.07	1,652.83	1,568.71	84.11	19.650		

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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
Sec.07-T32N-R07W - San Juan 32-7 Unit 248H - Pilot Hole - Rev0															
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
3,358.13	3,031.32	3,358.13	3,031.32	0.00	0.00	0.00	-18.62	826.83	0.00	0.00	0.00	N/A	CC, ES		
3,380.31	3,040.30	3,380.31	3,040.69	0.35	0.51	179.99	-19.07	846.93	0.43	0.17	0.26	1.659	SF		
3,400.00	3,047.61	3,399.96	3,049.00	0.66	0.95	179.99	-19.47	864.73	1.53	1.05	0.47	3.222			
3,450.00	3,063.32	3,449.61	3,069.98	1.14	2.10	179.99	-20.49	909.72	7.35	6.58	0.77	9.517			
3,500.00	3,074.83	3,498.55	3,090.67	1.71	3.22	179.99	-21.48	954.07	17.47	16.43	1.04	16.749			
3,550.00	3,082.05	3,546.43	3,110.90	2.36	4.33	179.99	-22.46	997.45	31.83	30.56	1.27	25.111			
3,600.00	3,084.94	3,592.88	3,130.53	3.07	5.41	179.99	-23.41	1,039.53	50.30	48.85	1.45	34.703			
3,608.13	3,085.00	3,600.27	3,133.65	3.19	5.58	179.99	-23.56	1,046.23	53.68	52.20	1.48	36.279			
3,700.00	3,085.00	3,683.53	3,168.84	4.67	7.53	179.99	-25.26	1,121.67	92.51	90.29	2.22	41.620			
3,800.00	3,085.00	3,774.17	3,207.14	6.47	9.66	179.99	-27.11	1,203.79	134.77	131.65	3.12	43.246			
3,900.00	3,085.00	3,864.80	3,245.45	8.43	11.79	179.99	-28.96	1,285.91	177.03	172.95	4.08	43.360			
4,000.00	3,085.00	3,927.63	3,272.00	10.51	13.28	179.99	-30.24	1,342.84	221.05	216.11	4.94	44.724			
4,100.00	3,085.00	3,927.63	3,272.00	12.69	13.28	179.99	-30.24	1,342.84	287.12	281.64	5.48	52.435			
4,200.00	3,085.00	3,927.63	3,272.00	14.96	13.28	179.99	-30.24	1,342.84	368.80	362.75	6.04	61.032			
4,300.00	3,085.00	3,927.63	3,272.00	17.30	13.28	179.99	-30.24	1,342.84	457.80	451.17	6.64	68.982			
4,400.00	3,085.00	3,927.63	3,272.00	19.69	13.28	179.99	-30.24	1,342.84	550.60	543.35	7.25	75.926			
4,500.00	3,085.00	3,927.63	3,272.00	22.13	13.28	179.99	-30.24	1,342.84	645.55	637.66	7.88	81.879			
4,600.00	3,085.00	3,927.63	3,272.00	24.61	13.28	179.99	-30.24	1,342.84	741.83	733.30	8.53	86.963			
4,700.00	3,085.00	3,927.63	3,272.00	27.13	13.28	179.99	-30.24	1,342.84	838.98	829.79	9.19	91.314			
4,800.00	3,085.00	3,927.63	3,272.00	29.67	13.28	179.99	-30.24	1,342.84	936.73	926.87	9.85	95.054			
4,900.00	3,085.00	3,927.63	3,272.00	32.24	13.28	179.99	-30.24	1,342.84	1,034.91	1,024.38	10.53	98.287			
5,000.00	3,085.00	3,927.63	3,272.00	34.82	13.28	179.99	-30.24	1,342.84	1,133.40	1,122.19	11.21	101.101			
5,100.00	3,085.00	3,927.63	3,272.00	37.43	13.28	179.99	-30.24	1,342.84	1,232.14	1,220.25	11.90	103.565			
5,200.00	3,085.00	3,927.63	3,272.00	40.05	13.28	179.99	-30.24	1,342.84	1,331.07	1,318.48	12.59	105.735			
5,300.00	3,085.00	3,927.63	3,272.00	42.68	13.28	179.99	-30.24	1,342.84	1,430.15	1,416.86	13.28	107.657			
5,400.00	3,085.00	3,927.63	3,272.00	45.33	13.28	179.99	-30.24	1,342.84	1,529.35	1,515.36	13.98	109.369			
5,500.00	3,085.00	3,927.63	3,272.00	47.99	13.28	179.99	-30.24	1,342.84	1,628.64	1,613.96	14.69	110.902			
5,600.00	3,085.00	3,927.63	3,272.00	50.65	13.28	179.99	-30.24	1,342.84	1,728.02	1,712.63	15.39	112.281			
5,700.00	3,085.00	3,927.63	3,272.00	53.33	13.28	179.99	-30.24	1,342.84	1,827.46	1,811.37	16.10	113.526			
5,800.00	3,085.00	3,927.63	3,272.00	56.01	13.28	179.99	-30.24	1,342.84	1,926.97	1,910.16	16.81	114.656			
5,900.00	3,085.00	3,927.63	3,272.00	58.70	13.28	179.99	-30.24	1,342.84	2,026.52	2,009.00	17.52	115.685			
6,000.00	3,085.00	3,927.63	3,272.00	61.40	13.28	179.99	-30.24	1,342.84	2,126.11	2,107.88	18.23	116.626			
6,100.00	3,085.00	3,927.63	3,272.00	64.10	13.28	179.99	-30.24	1,342.84	2,225.74	2,206.80	18.94	117.488			
6,200.00	3,085.00	3,927.63	3,272.00	66.80	13.28	179.99	-30.24	1,342.84	2,325.40	2,305.74	19.66	118.282			
6,266.40	3,085.00	3,927.63	3,272.00	68.60	13.28	179.99	-30.24	1,342.84	2,391.59	2,371.46	20.14	118.775			
6,266.77	3,085.00	3,927.63	3,272.00	68.61	13.28	179.99	-30.24	1,342.84	2,391.96	2,371.82	20.14	118.785			

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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:
Sec.08-T32N-R07W - San Juan 32-7 Unit 036 - Original Hole - Original Hole														0.00 usft
Survey Program: 280-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	0.00	0.00	84.98	426.19	4,853.34	4,875.57					
100.00	100.00	0.00	0.00	0.10	0.00	84.98	426.19	4,853.34	4,872.78	4,872.68	0.10	N/A		
200.00	200.00	15.65	15.65	0.32	0.11	84.98	426.13	4,853.34	4,872.01	4,871.58	0.43	N/A		
300.00	300.00	114.34	114.34	0.55	0.83	84.98	425.90	4,853.34	4,871.99	4,870.61	1.38	3,538.425		
326.00	326.00	140.00	140.00	0.60	1.02	84.99	425.89	4,853.34	4,871.99	4,870.37	1.62	3,003.788		
400.00	400.00	213.03	213.03	0.77	1.55	84.98	425.97	4,853.34	4,872.00	4,869.68	2.32	2,100.539		
500.00	500.00	315.70	315.70	0.99	2.76	84.98	426.04	4,853.34	4,872.00	4,868.25	3.76	1,296.167		
600.00	600.00	415.27	415.26	1.22	4.79	84.99	425.70	4,853.34	4,871.97	4,865.96	6.01	810.331		
700.00	700.00	514.83	514.82	1.44	6.82	84.99	425.46	4,853.34	4,871.95	4,863.69	8.27	589.411		
800.00	800.00	614.38	614.38	1.67	8.85	84.99	425.32	4,853.34	4,871.94	4,861.42	10.52	463.148		
881.01	881.01	695.03	695.02	1.85	10.49	84.99	425.29	4,853.34	4,871.94	4,859.59	12.34	394.665		
900.00	900.00	713.94	713.93	1.89	10.88	84.99	425.29	4,853.34	4,871.94	4,859.17	12.77	381.440		
1,000.00	1,000.00	813.48	813.47	2.12	12.91	84.99	425.36	4,853.34	4,871.94	4,856.92	15.03	324.241		
1,100.00	1,100.00	913.02	913.01	2.34	14.94	84.99	425.54	4,853.34	4,871.96	4,854.68	17.28	281.962		
1,200.00	1,200.00	1,012.56	1,012.55	2.57	16.96	84.99	425.82	4,853.34	4,871.98	4,852.45	19.53	249.439		
1,300.00	1,300.00	1,110.00	1,109.99	2.79	18.95	84.98	426.19	4,853.34	4,872.02	4,850.28	21.74	224.083		
1,400.00	1,400.00	1,214.02	1,214.00	3.02	21.70	84.98	426.19	4,853.34	4,872.02	4,847.30	24.72	197.109		
1,500.00	1,500.00	1,314.02	1,314.00	3.24	24.34	84.98	426.19	4,853.34	4,872.02	4,844.43	27.59	176.607		
1,600.00	1,600.00	1,414.03	1,414.00	3.47	26.99	84.98	426.19	4,853.34	4,872.02	4,841.56	30.46	159.969		
1,700.00	1,700.00	1,514.03	1,514.00	3.69	29.63	84.98	426.19	4,853.34	4,872.02	4,838.69	33.33	146.195		
1,733.13	1,733.13	1,547.16	1,547.13	3.77	30.51	84.98	426.19	4,853.34	4,872.02	4,837.74	34.28	142.141		
1,800.00	1,799.98	1,614.01	1,613.98	3.91	32.28	-6.32	426.19	4,853.34	4,870.47	4,834.30	36.16	134.681		
1,900.00	1,899.62	1,713.66	1,713.62	4.11	34.91	-6.36	426.19	4,853.34	4,862.37	4,823.56	38.81	125.290		
2,000.00	1,998.46	1,812.50	1,812.46	4.34	37.53	-6.45	426.19	4,853.34	4,847.38	4,806.16	41.22	117.607		
2,100.00	2,096.00	1,908.13	1,908.08	4.61	39.53	-6.59	426.51	4,853.34	4,825.61	4,782.82	42.78	112.792		
2,200.00	2,191.78	2,005.37	2,005.32	4.94	41.22	-6.77	426.78	4,853.34	4,797.12	4,753.32	43.80	109.521		
2,300.00	2,285.32	2,100.37	2,100.31	5.38	42.86	-7.00	426.72	4,853.34	4,762.04	4,717.51	44.53	106.950		
2,400.00	2,376.17	2,192.65	2,192.59	5.95	44.47	-7.28	426.36	4,853.34	4,720.53	4,675.59	44.94	105.030		
2,500.00	2,463.89	2,278.82	2,278.75	6.67	45.61	-7.64	426.07	4,853.34	4,672.85	4,628.13	44.71	104.508		
2,600.00	2,548.04	2,362.88	2,362.81	7.58	46.58	-8.07	425.91	4,853.34	4,619.21	4,575.11	44.10	104.742		
2,700.00	2,628.23	2,442.97	2,442.90	8.67	47.49	-8.61	425.78	4,853.34	4,559.89	4,516.64	43.25	105.433		
2,800.00	2,704.06	2,518.70	2,518.63	9.95	48.36	-9.26	425.67	4,853.34	4,495.18	4,452.99	42.18	106.561		
2,900.00	2,775.16	2,589.71	2,589.64	11.41	49.18	-10.06	425.59	4,853.34	4,425.38	4,384.44	40.95	108.081		
3,000.00	2,841.17	2,655.65	2,655.58	13.06	49.93	-11.06	425.52	4,853.34	4,350.85	4,311.26	39.60	109.879		
3,100.00	2,901.80	2,716.19	2,716.12	14.89	50.62	-12.31	425.47	4,853.34	4,271.96	4,233.71	38.24	111.709		
3,200.00	2,956.72	2,771.05	2,770.98	16.87	51.25	-13.90	425.44	4,853.34	4,189.08	4,152.03	37.05	113.068		
3,300.00	3,005.69	2,819.96	2,819.89	19.00	51.81	-15.98	425.41	4,853.34	4,102.64	4,066.34	36.30	113.013		
3,358.13	3,031.32	2,845.55	2,845.48	20.30	52.11	-17.49	425.40	4,853.34	4,050.92	4,014.67	36.25	111.746		
3,358.13	3,031.32	2,845.55	2,845.48	20.30	52.11	-17.49	425.40	4,853.34	4,050.92	4,014.67	36.25	111.746		
3,400.00	3,047.61	2,861.83	2,861.75	20.96	52.29	-20.72	425.40	4,853.34	4,012.70	3,976.48	36.22	110.802		
3,450.00	3,063.32	2,877.51	2,877.44	21.44	52.47	-26.53	425.39	4,853.34	3,965.67	3,926.74	38.93	101.863		
3,500.00	3,074.83	2,889.01	2,888.93	22.01	52.60	-36.28	425.39	4,853.34	3,917.48	3,870.46	47.03	83.306		
3,550.00	3,082.05	2,896.22	2,896.15	22.66	52.69	-54.02	425.39	4,853.34	3,868.49	3,806.37	62.12	62.276		
3,600.00	3,084.94	2,899.11	2,899.04	23.37	52.72	-84.28	425.39	4,853.34	3,819.07	3,743.24	75.83	50.362		
3,608.13	3,085.00	2,899.17	2,899.09	23.49	52.72	-90.01	425.39	4,853.34	3,811.02	3,734.81	76.21	50.005		
3,700.00	3,085.00	2,899.17	2,899.10	24.97	52.72	-90.01	425.39	4,853.34	3,720.08	3,642.39	77.69	47.882		
3,800.00	3,085.00	2,899.17	2,899.10	26.77	52.72	-90.01	425.39	4,853.34	3,621.15	3,541.66	79.49	45.554		
3,900.00	3,085.00	2,899.17	2,899.10	28.72	52.72	-90.01	425.39	4,853.34	3,522.27	3,440.83	81.44	43.247		
4,000.00	3,085.00	2,899.17	2,899.10	30.81	52.72	-90.01	425.39	4,853.34	3,423.46	3,339.94	83.53	40.987		
4,100.00	3,085.00	2,899.17	2,899.10	32.99	52.72	-90.01	425.39	4,853.34	3,324.73	3,239.02	85.71	38.790		
4,200.00	3,085.00	2,899.17	2,899.10	35.26	52.72	-90.01	425.39	4,853.34	3,226.07	3,138.09	87.98	36.669		
4,300.00	3,085.00	2,899.17	2,899.10	37.60	52.72	-90.01	425.39	4,853.34	3,127.49	3,037.17	90.32	34.628		

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 280-INC_ONLY<10													Offset Well Error:	0.00 usft					
Reference													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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor							
4,400.00	3,085.00	2,899.17	2,899.10	39.99	52.72	-90.01	425.39	4,853.34	3,029.01	2,936.30	92.71	32.672							
4,500.00	3,085.00	2,899.17	2,899.10	42.43	52.72	-90.01	425.39	4,853.34	2,930.63	2,835.48	95.15	30.799							
4,600.00	3,085.00	2,899.17	2,899.10	44.91	52.72	-90.01	425.39	4,853.34	2,832.36	2,734.73	97.63	29.010							
4,700.00	3,085.00	2,899.17	2,899.10	47.43	52.72	-90.01	425.39	4,853.34	2,734.22	2,634.08	100.15	27.302							
4,800.00	3,085.00	2,899.17	2,899.10	49.97	52.72	-90.01	425.39	4,853.34	2,636.22	2,533.53	102.69	25.672							
4,900.00	3,085.00	2,899.17	2,899.10	52.54	52.72	-90.01	425.39	4,853.34	2,538.38	2,433.12	105.26	24.116							
5,000.00	3,085.00	2,899.17	2,899.10	55.12	52.72	-90.01	425.39	4,853.34	2,440.71	2,332.87	107.84	22.632							
5,100.00	3,085.00	2,899.17	2,899.10	57.73	52.72	-90.01	425.39	4,853.34	2,343.24	2,232.79	110.45	21.216							
5,200.00	3,085.00	2,899.17	2,899.10	60.35	52.72	-90.01	425.39	4,853.34	2,245.99	2,132.92	113.07	19.864							
5,300.00	3,085.00	2,899.17	2,899.10	62.98	52.72	-90.01	425.39	4,853.34	2,148.99	2,033.29	115.70	18.573							
5,400.00	3,085.00	2,899.17	2,899.10	65.63	52.72	-90.01	425.39	4,853.34	2,052.28	1,933.93	118.35	17.341							
5,500.00	3,085.00	2,899.17	2,899.10	68.29	52.72	-90.01	425.39	4,853.34	1,955.90	1,834.89	121.01	16.164							
5,600.00	3,085.00	2,899.17	2,899.10	70.95	52.72	-90.01	425.39	4,853.34	1,859.90	1,736.23	123.67	15.039							
5,700.00	3,085.00	2,899.17	2,899.10	73.63	52.72	-90.01	425.39	4,853.34	1,764.35	1,638.00	126.35	13.964							
5,800.00	3,085.00	2,899.18	2,899.10	76.31	52.72	-90.01	425.39	4,853.34	1,669.32	1,540.29	129.03	12.937							
5,900.00	3,085.00	2,899.18	2,899.10	79.00	52.72	-90.01	425.39	4,853.34	1,574.91	1,443.19	131.72	11.956							
6,000.00	3,085.00	2,899.18	2,899.11	81.70	52.72	-90.01	425.39	4,853.34	1,481.22	1,346.81	134.42	11.020							
6,100.00	3,085.00	2,899.18	2,899.11	84.40	52.72	-90.01	425.39	4,853.34	1,388.42	1,251.31	137.12	10.126							
6,200.00	3,085.00	2,899.18	2,899.11	87.10	52.72	-90.01	425.39	4,853.34	1,296.69	1,156.87	139.82	9.274							
6,266.40	3,085.00	2,899.18	2,899.11	88.90	52.72	-90.01	425.39	4,853.34	1,236.49	1,094.87	141.62	8.731							
6,266.77	3,085.00	2,899.18	2,899.11	88.91	52.72	-90.01	425.39	4,853.34	1,236.16	1,094.53	141.63	8.728	CC, ES, SF						

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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:
Survey Program: 154-INC_ONLY<10														Offset Well Error:
Sec.08-T32N-R07W - San Juan 32-7 Unit 036A - Original Hole - Original Hole														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	0.00	0.00	102.88	-1,045.34	4,570.87	4,693.27					
100.00	100.00	0.00	0.00	0.10	0.00	102.88	-1,045.34	4,570.87	4,690.01	4,689.92	0.10	N/A		
200.00	200.00	0.00	0.00	0.32	0.00	102.88	-1,045.34	4,570.87	4,688.88	4,688.56	0.32	N/A		
205.55	205.55	0.00	0.00	0.33	0.00	102.88	-1,045.34	4,570.87	4,688.88	4,688.55	0.33	N/A		
300.00	300.00	98.95	98.95	0.55	1.01	102.88	-1,045.57	4,570.87	4,688.93	4,687.38	1.55	3,016.273		
382.34	382.34	177.64	177.64	0.73	2.12	102.88	-1,045.38	4,570.87	4,688.89	4,686.04	2.86	1,642.323		
400.00	400.00	195.76	195.76	0.77	2.55	102.88	-1,045.41	4,570.87	4,688.90	4,685.58	3.32	1,412.691		
500.00	500.00	298.30	298.29	0.99	4.95	102.88	-1,045.41	4,570.87	4,688.90	4,682.95	5.95	788.545		
517.67	517.67	316.42	316.41	1.03	5.38	102.88	-1,045.38	4,570.87	4,688.89	4,682.48	6.41	731.446		
600.00	600.00	392.05	392.03	1.22	7.82	102.89	-1,045.64	4,570.87	4,688.95	4,679.92	9.03	518.978		
700.00	700.00	495.63	495.61	1.44	11.52	102.89	-1,045.96	4,570.87	4,689.02	4,676.05	12.97	361.638		
800.00	800.00	599.18	599.16	1.67	15.23	102.89	-1,045.92	4,570.87	4,689.01	4,672.12	16.90	277.519		
900.00	900.00	702.71	702.69	1.89	18.93	102.88	-1,045.53	4,570.87	4,688.93	4,668.10	20.83	225.156		
1,000.00	1,000.00	799.28	799.25	2.12	22.59	102.88	-1,045.13	4,570.87	4,688.84	4,664.13	24.71	189.754		
1,065.45	1,065.45	862.48	862.44	2.27	25.05	102.88	-1,045.06	4,570.87	4,688.82	4,661.50	27.32	171.628		
1,100.00	1,100.00	895.85	895.81	2.34	26.35	102.88	-1,045.08	4,570.87	4,688.82	4,660.13	28.70	163.388		
1,200.00	1,200.00	990.24	990.17	2.57	30.03	102.88	-1,045.34	4,570.87	4,688.89	4,656.29	32.60	143.828		
1,300.00	1,300.00	1,094.17	1,094.10	2.79	34.41	102.89	-1,045.82	4,570.87	4,688.99	4,651.79	37.20	126.039		
1,400.00	1,400.00	1,198.08	1,197.99	3.02	38.79	102.89	-1,045.92	4,570.87	4,689.01	4,647.21	41.80	112.168		
1,500.00	1,500.00	1,301.94	1,301.85	3.24	43.16	102.89	-1,045.63	4,570.87	4,688.95	4,642.55	46.40	101.049		
1,600.00	1,600.00	1,397.10	1,397.00	3.47	47.58	102.88	-1,045.34	4,570.87	4,688.88	4,637.84	51.04	91.863		
1,700.00	1,700.00	1,497.12	1,497.00	3.69	52.73	102.88	-1,045.34	4,570.87	4,688.88	4,632.46	56.42	83.100		
1,733.13	1,733.13	1,530.26	1,530.13	3.77	54.44	102.88	-1,045.34	4,570.87	4,688.88	4,630.67	58.21	80.554		
1,800.00	1,799.98	1,597.12	1,596.98	3.91	57.89	11.61	-1,045.34	4,570.87	4,687.35	4,625.60	61.75	75.908		
1,900.00	1,899.62	1,696.79	1,696.62	4.11	63.03	11.69	-1,045.34	4,570.87	4,679.37	4,612.62	66.75	70.104		
2,000.00	1,998.46	1,802.48	1,802.29	4.34	67.89	11.85	-1,044.98	4,570.87	4,664.53	4,593.42	71.10	65.603		
2,100.00	2,096.00	1,895.50	1,895.30	4.61	71.52	12.08	-1,044.57	4,570.87	4,642.95	4,569.12	73.82	62.893		
2,200.00	2,191.78	1,986.88	1,986.66	4.94	75.08	12.40	-1,044.56	4,570.87	4,614.86	4,538.81	76.05	60.685		
2,300.00	2,285.32	2,076.16	2,075.93	5.38	78.57	12.82	-1,044.93	4,570.87	4,580.39	4,502.66	77.73	58.924		
2,400.00	2,376.17	2,173.42	2,173.17	5.95	81.83	13.36	-1,045.34	4,570.87	4,539.64	4,460.89	78.76	57.641		
2,500.00	2,463.89	2,261.15	2,260.89	6.67	84.14	14.00	-1,045.34	4,570.87	4,492.72	4,414.22	78.51	57.227		
2,600.00	2,548.04	2,345.31	2,345.04	7.58	86.37	14.79	-1,045.34	4,570.87	4,439.96	4,362.15	77.81	57.062		
2,700.00	2,628.23	2,425.50	2,425.23	8.67	88.48	15.75	-1,045.34	4,570.87	4,381.63	4,304.90	76.72	57.111		
2,800.00	2,704.06	2,501.33	2,501.06	9.95	90.49	16.91	-1,045.34	4,570.87	4,318.01	4,242.67	75.34	57.315		
2,900.00	2,775.16	2,568.67	2,568.39	11.41	92.48	18.32	-1,045.47	4,570.87	4,249.47	4,175.58	73.89	57.513		
3,000.00	2,841.17	2,636.21	2,635.93	13.06	94.69	20.07	-1,045.67	4,570.87	4,176.34	4,103.57	72.77	57.389		
3,100.00	2,901.80	2,698.21	2,697.93	14.89	96.72	22.22	-1,045.76	4,570.87	4,098.95	4,026.91	72.03	56.903		
3,200.00	2,956.72	2,754.38	2,754.09	16.87	98.55	24.91	-1,045.78	4,570.87	4,017.70	3,945.52	72.18	55.662		
3,300.00	3,005.69	2,804.45	2,804.16	19.00	100.19	28.29	-1,045.73	4,570.87	3,933.00	3,859.11	73.90	53.222		
3,358.13	3,031.32	2,830.65	2,830.36	20.30	101.05	30.66	-1,045.69	4,570.87	3,882.36	3,806.42	75.95	51.119		
3,358.13	3,031.32	2,830.65	2,830.36	20.30	101.05	30.66	-1,045.69	4,570.87	3,882.36	3,806.41	75.95	51.118		
3,400.00	3,047.61	2,847.30	2,847.01	20.96	101.59	35.48	-1,045.65	4,570.87	3,844.96	3,765.00	79.95	48.089		
3,450.00	3,063.32	2,863.36	2,863.07	21.44	102.12	43.30	-1,045.61	4,570.87	3,798.96	3,709.96	89.00	42.684		
3,500.00	3,074.83	2,875.12	2,874.83	22.01	102.50	54.26	-1,045.58	4,570.87	3,751.85	3,649.11	102.74	36.520		
3,550.00	3,082.05	2,882.50	2,882.21	22.66	102.75	69.12	-1,045.56	4,570.87	3,703.99	3,586.28	117.71	31.468		
3,600.00	3,084.94	2,885.45	2,885.16	23.37	102.84	87.15	-1,045.55	4,570.87	3,655.75	3,529.62	126.14	28.983		
3,608.13	3,085.00	2,885.51	2,885.22	23.49	102.84	90.20	-1,045.55	4,570.87	3,647.90	3,521.54	126.36	28.869		
3,700.00	3,085.00	2,885.50	2,885.21	24.97	102.84	90.20	-1,045.55	4,570.87	3,559.23	3,431.39	127.84	27.841		
3,800.00	3,085.00	2,885.50	2,885.21	26.77	102.84	90.19	-1,045.55	4,570.87	3,462.90	3,333.26	129.64	26.712		
3,900.00	3,085.00	2,885.49	2,885.20	28.72	102.84	90.19	-1,045.55	4,570.87	3,366.79	3,235.20	131.59	25.585		
4,000.00	3,085.00	2,885.48	2,885.19	30.81	102.84	90.19	-1,045.55	4,570.87	3,270.91	3,137.24	133.67	24.470		
4,100.00	3,085.00	2,885.47	2,885.18	32.99	102.84	90.19	-1,045.55	4,570.87	3,175.28	3,039.42	135.86	23.372		

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 154-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.08-T32N-R07W - San Juan 32-7 Unit 036A - Original Hole - Original Hole														
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		
4,200.00	3,085.00	2,885.47	2,885.18	35.26	102.84	90.19	-1,045.55	4,570.87	3,079.93	2,941.81	138.13	22.298		
4,300.00	3,085.00	2,885.46	2,885.17	37.60	102.84	90.19	-1,045.55	4,570.87	2,984.89	2,844.43	140.46	21.250		
4,400.00	3,085.00	2,885.45	2,885.16	39.99	102.84	90.19	-1,045.55	4,570.87	2,890.18	2,747.32	142.86	20.231		
4,500.00	3,085.00	2,885.45	2,885.15	42.43	102.84	90.19	-1,045.55	4,570.87	2,795.84	2,650.54	145.30	19.242		
4,600.00	3,085.00	2,885.44	2,885.15	44.91	102.84	90.19	-1,045.55	4,570.87	2,701.90	2,554.13	147.78	18.284		
4,700.00	3,085.00	2,885.43	2,885.14	47.43	102.84	90.19	-1,045.55	4,570.87	2,608.42	2,458.13	150.29	17.356		
4,800.00	3,085.00	2,885.42	2,885.13	49.97	102.84	90.19	-1,045.55	4,570.87	2,515.44	2,362.61	152.83	16.459		
4,900.00	3,085.00	2,885.42	2,885.13	52.54	102.84	90.19	-1,045.55	4,570.87	2,423.02	2,267.62	155.40	15.592		
5,000.00	3,085.00	2,885.41	2,885.12	55.12	102.84	90.19	-1,045.55	4,570.87	2,331.22	2,173.23	157.99	14.756		
5,100.00	3,085.00	2,885.40	2,885.11	57.73	102.84	90.19	-1,045.55	4,570.87	2,240.12	2,079.53	160.59	13.949		
5,200.00	3,085.00	2,885.39	2,885.10	60.35	102.84	90.19	-1,045.55	4,570.87	2,149.82	1,986.61	163.21	13.172		
5,300.00	3,085.00	2,885.39	2,885.10	62.98	102.84	90.19	-1,045.55	4,570.87	2,060.41	1,894.57	165.85	12.424		
5,400.00	3,085.00	2,885.38	2,885.09	65.63	102.84	90.19	-1,045.55	4,570.87	1,972.02	1,803.53	168.49	11.704		
5,500.00	3,085.00	2,885.37	2,885.08	68.29	102.84	90.19	-1,045.55	4,570.87	1,884.79	1,713.64	171.15	11.013		
5,600.00	3,085.00	2,885.37	2,885.07	70.95	102.84	90.19	-1,045.55	4,570.87	1,798.90	1,625.08	173.82	10.349		
5,700.00	3,085.00	2,885.36	2,885.07	73.63	102.84	90.19	-1,045.55	4,570.87	1,714.53	1,538.03	176.49	9.715		
5,800.00	3,085.00	2,885.35	2,885.06	76.31	102.84	90.19	-1,045.55	4,570.87	1,631.92	1,452.75	179.17	9.108		
5,900.00	3,085.00	2,885.34	2,885.05	79.00	102.84	90.19	-1,045.55	4,570.87	1,551.37	1,369.51	181.86	8.530		
6,000.00	3,085.00	2,885.34	2,885.05	81.70	102.84	90.19	-1,045.55	4,570.87	1,473.20	1,288.64	184.56	7.982		
6,100.00	3,085.00	2,885.33	2,885.04	84.40	102.84	90.18	-1,045.55	4,570.87	1,397.82	1,210.56	187.26	7.485		
6,200.00	3,085.00	2,885.32	2,885.03	87.10	102.84	90.18	-1,045.55	4,570.87	1,325.70	1,135.73	189.96	6.979		
6,266.40	3,085.00	2,885.32	2,885.03	88.90	102.84	90.18	-1,045.55	4,570.87	1,279.88	1,088.11	191.76	6.674		
6,266.77	3,085.00	2,885.32	2,885.03	88.91	102.84	90.18	-1,045.55	4,570.87	1,279.63	1,087.86	191.77	6.673	CC, ES, SF	

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 229-INC_ONLY<10														Offset Well Error:	0.00 usft						
Reference														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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor									
0.00	0.00	0.00	0.00	0.00	0.00	82.00	547.57	3,898.11	3,941.98												
100.00	100.00	0.00	0.00	0.10	0.00	82.00	547.57	3,898.11	3,937.92	3,937.82	0.10	N/A									
200.00	200.00	0.00	0.00	0.32	0.00	82.00	547.57	3,898.11	3,936.39	3,936.07	0.32	N/A									
300.00	300.00	90.99	90.99	0.55	1.21	82.01	547.09	3,898.11	3,936.32	3,934.56	1.75	2,247.898									
324.50	324.50	114.51	114.51	0.60	1.52	82.01	547.07	3,898.11	3,936.31	3,934.19	2.12	1,858.569									
400.00	400.00	186.97	186.97	0.77	2.48	82.01	547.27	3,898.11	3,936.34	3,933.09	3.25	1,211.953									
500.00	500.00	290.00	290.00	0.99	4.65	82.00	547.57	3,898.11	3,936.38	3,930.74	5.65	697.111									
600.00	600.00	390.01	390.00	1.22	7.30	82.00	547.57	3,898.11	3,936.38	3,927.86	8.52	461.892									
700.00	700.00	490.01	490.00	1.44	9.95	82.00	547.57	3,898.11	3,936.38	3,924.98	11.40	345.360									
800.00	800.00	590.02	590.00	1.67	12.60	82.00	547.57	3,898.11	3,936.38	3,922.11	14.27	275.783									
900.00	900.00	690.02	690.00	1.89	15.26	82.00	547.57	3,898.11	3,936.38	3,919.23	17.15	229.539									
1,000.00	1,000.00	790.03	790.00	2.12	17.91	82.00	547.57	3,898.11	3,936.38	3,916.36	20.02	196.577									
1,100.00	1,100.00	890.03	890.00	2.34	20.56	82.00	547.57	3,898.11	3,936.38	3,913.48	22.90	171.892									
1,200.00	1,200.00	990.04	990.00	2.57	23.21	82.00	547.57	3,898.11	3,936.38	3,910.61	25.78	152.716									
1,300.00	1,300.00	1,090.04	1,090.00	2.79	25.86	82.00	547.57	3,898.11	3,936.38	3,907.73	28.65	137.389									
1,400.00	1,400.00	1,190.05	1,190.00	3.02	28.51	82.00	547.57	3,898.11	3,936.38	3,904.85	31.53	124.857									
1,500.00	1,500.00	1,290.05	1,290.00	3.24	31.16	82.00	547.57	3,898.11	3,936.38	3,901.98	34.40	114.421									
1,600.00	1,600.00	1,390.06	1,390.00	3.47	33.81	82.00	547.57	3,898.11	3,936.38	3,899.10	37.28	105.595									
1,700.00	1,700.00	1,490.06	1,490.00	3.69	36.46	82.00	547.57	3,898.11	3,936.38	3,896.23	40.15	98.033									
1,733.13	1,733.13	1,523.20	1,523.13	3.77	37.34	82.00	547.57	3,898.11	3,936.38	3,895.28	41.11	95.761									
1,800.00	1,799.98	1,590.04	1,589.98	3.91	39.11	-9.30	547.57	3,898.11	3,934.84	3,891.85	42.99	91.530									
1,900.00	1,899.62	1,689.70	1,689.62	4.11	41.75	-9.37	547.57	3,898.11	3,926.80	3,881.19	45.61	86.103									
2,000.00	1,998.46	1,788.54	1,788.46	4.34	44.37	-9.51	547.57	3,898.11	3,911.92	3,863.96	47.96	81.572									
2,100.00	2,096.00	1,886.09	1,886.00	4.61	46.96	-9.71	547.57	3,898.11	3,890.28	3,840.28	50.00	77.808									
2,200.00	2,191.78	1,981.87	1,981.78	4.94	49.50	-9.98	547.57	3,898.11	3,861.98	3,810.28	51.70	74.703									
2,300.00	2,285.32	2,075.41	2,075.32	5.38	51.98	-10.34	547.57	3,898.11	3,827.16	3,774.14	53.02	72.177									
2,400.00	2,376.17	2,166.27	2,166.17	5.95	54.39	-10.78	547.57	3,898.11	3,786.01	3,732.05	53.96	70.164									
2,500.00	2,463.89	2,253.99	2,253.89	6.67	56.71	-11.33	547.57	3,898.11	3,738.72	3,684.23	54.49	68.609									
2,600.00	2,548.04	2,338.15	2,338.04	7.58	58.94	-12.01	547.57	3,898.11	3,685.54	3,630.91	54.63	67.459									
2,700.00	2,628.23	2,418.34	2,418.23	8.67	61.07	-12.84	547.57	3,898.11	3,626.74	3,572.33	54.41	66.660									
2,800.00	2,704.06	2,494.17	2,494.06	9.95	63.08	-13.84	547.57	3,898.11	3,562.60	3,508.73	53.67	66.133									
2,900.00	2,775.16	2,565.27	2,565.16	11.41	64.96	-15.08	547.57	3,898.11	3,493.45	3,440.34	53.11	65.777									
3,000.00	2,841.17	2,631.30	2,631.17	13.06	66.71	-16.61	547.57	3,898.11	3,419.65	3,367.37	52.27	65.418									
3,100.00	2,901.80	2,691.92	2,691.80	14.89	68.32	-18.51	547.57	3,898.11	3,341.56	3,289.97	51.59	64.769									
3,200.00	2,956.72	2,746.85	2,746.72	16.87	69.78	-20.91	547.57	3,898.11	3,259.58	3,208.16	51.42	63.388									
3,300.00	3,005.69	2,795.82	2,795.69	19.00	71.07	-23.99	547.57	3,898.11	3,174.13	3,121.83	52.30	60.692									
3,358.13	3,031.32	2,821.45	2,821.32	20.30	71.75	-26.18	547.57	3,898.11	3,123.04	3,069.46	53.57	58.297									
3,358.13	3,031.32	2,821.45	2,821.32	20.30	71.75	-26.18	547.57	3,898.11	3,123.03	3,069.46	53.57	58.297									
3,400.00	3,047.61	2,837.74	2,837.61	20.96	72.18	-30.63	547.57	3,898.11	3,085.29	3,029.32	55.97	55.123									
3,450.00	3,063.32	2,853.45	2,853.32	21.44	72.60	-38.11	547.57	3,898.11	3,038.87	2,976.41	62.46	48.654									
3,500.00	3,074.83	2,864.96	2,864.83	22.01	72.91	-49.19	547.57	3,898.11	2,991.32	2,917.56	73.76	40.556									
3,550.00	3,082.05	2,872.19	2,872.05	22.66	73.10	-65.38	547.57	3,898.11	2,943.01	2,855.28	87.73	33.547									
3,600.00	3,084.94	2,875.08	2,874.94	23.37	73.17	-86.39	547.57	3,898.11	2,894.30	2,797.89	96.41	30.020									
3,608.13	3,085.00	2,875.14	2,875.00	23.49	73.18	-90.00	547.57	3,898.11	2,886.37	2,789.70	96.67	29.858									
3,700.00	3,085.00	2,875.14	2,875.00	24.97	73.18	-90.00	547.57	3,898.11	2,796.82	2,698.67	98.15	28.496									
3,800.00	3,085.00	2,875.14	2,875.00	26.77	73.18	-90.00	547.57	3,898.11	2,699.53	2,599.58	99.95	27.010									
3,900.00	3,085.00	2,875.14	2,875.00	28.72	73.18	-90.00	547.57	3,898.11	2,602.44	2,500.54	101.90	25.539									
4,000.00	3,085.00	2,875.14	2,875.00	30.81	73.18	-90.00	547.57	3,898.11	2,505.58	2,401.60	103.98	24.096									
4,100.00	3,085.00	2,875.14	2,875.00	32.99	73.18	-90.00	547.57	3,898.11	2,408.98	2,302.81	106.17	22.691									
4,200.00	3,085.00	2,875.14	2,875.00	35.26	73.18	-90.00	547.57	3,898.11	2,312.67	2,204.23	108.44	21.328									
4,300.00	3,085.00	2,875.14	2,875.00	37.60	73.18	-90.00	547.57	3,898.11	2,216.68	2,105.91	110.77	20.011									
4,400.00	3,085.00	2,875.14	2,875.00	39.99	73.18	-90.00	547.57	3,898.11	2,121.06	2,007.90	113.17	18.743									

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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: 229-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.08-T32N-R07W - San Juan 32-7 Unit 036F - Original Hole - Original Hole														
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		
4,500.00	3,085.00	2,875.14	2,875.00	42.43	73.18	-90.00	547.57	3,898.11	2,025.87	1,910.26	115.61	17.524		
4,600.00	3,085.00	2,875.14	2,875.00	44.91	73.18	-90.00	547.57	3,898.11	1,931.16	1,813.08	118.09	16.353		
4,700.00	3,085.00	2,875.14	2,875.00	47.43	73.18	-90.00	547.57	3,898.11	1,837.02	1,716.42	120.60	15.232		
4,800.00	3,085.00	2,875.14	2,875.00	49.97	73.18	-90.00	547.57	3,898.11	1,743.53	1,620.38	123.15	14.158		
4,900.00	3,085.00	2,875.14	2,875.00	52.54	73.18	-90.00	547.57	3,898.11	1,650.79	1,525.08	125.71	13.132		
5,000.00	3,085.00	2,875.14	2,875.00	55.12	73.18	-90.00	547.57	3,898.11	1,558.96	1,430.66	128.30	12.151		
5,100.00	3,085.00	2,875.14	2,875.00	57.73	73.18	-90.00	547.57	3,898.11	1,468.20	1,337.29	130.90	11.216		
5,200.00	3,085.00	2,875.14	2,875.00	60.35	73.18	-90.00	547.57	3,898.11	1,378.71	1,245.19	133.52	10.326		
5,300.00	3,085.00	2,875.14	2,875.00	62.98	73.18	-90.00	547.57	3,898.11	1,290.77	1,154.61	136.16	9.480		
5,400.00	3,085.00	2,875.14	2,875.00	65.63	73.18	-90.00	547.57	3,898.11	1,204.71	1,065.91	138.81	8.679		
5,500.00	3,085.00	2,875.14	2,875.00	68.29	73.18	-90.00	547.57	3,898.11	1,120.97	979.51	141.46	7.924		
5,600.00	3,085.00	2,875.14	2,875.00	70.95	73.18	-90.00	547.57	3,898.11	1,040.10	895.97	144.13	7.216		
5,700.00	3,085.00	2,875.14	2,875.00	73.63	73.18	-90.00	547.57	3,898.11	962.84	816.03	146.80	6.559		
5,800.00	3,085.00	2,875.14	2,875.00	76.31	73.18	-90.00	547.57	3,898.11	890.11	740.62	149.49	5.954		
5,900.00	3,085.00	2,875.14	2,875.00	79.00	73.18	-90.00	547.57	3,898.11	823.13	670.95	152.18	5.409		
6,000.00	3,085.00	2,875.14	2,875.00	81.70	73.18	-90.00	547.57	3,898.11	763.40	608.53	154.87	4.929		
6,100.00	3,085.00	2,875.14	2,875.00	84.40	73.18	-90.00	547.57	3,898.11	712.76	555.18	157.57	4.523		
6,200.00	3,085.00	2,875.14	2,875.00	87.10	73.18	-90.00	547.57	3,898.11	673.25	512.97	160.28	4.200		
6,266.40	3,085.00	2,875.13	2,875.00	88.90	73.18	-90.00	547.57	3,898.11	654.18	492.10	162.08	4.036		
6,266.77	3,085.00	2,875.13	2,875.00	88.91	73.18	-90.00	547.57	3,898.11	654.09	492.01	162.08	4.035	CC, ES, SF	

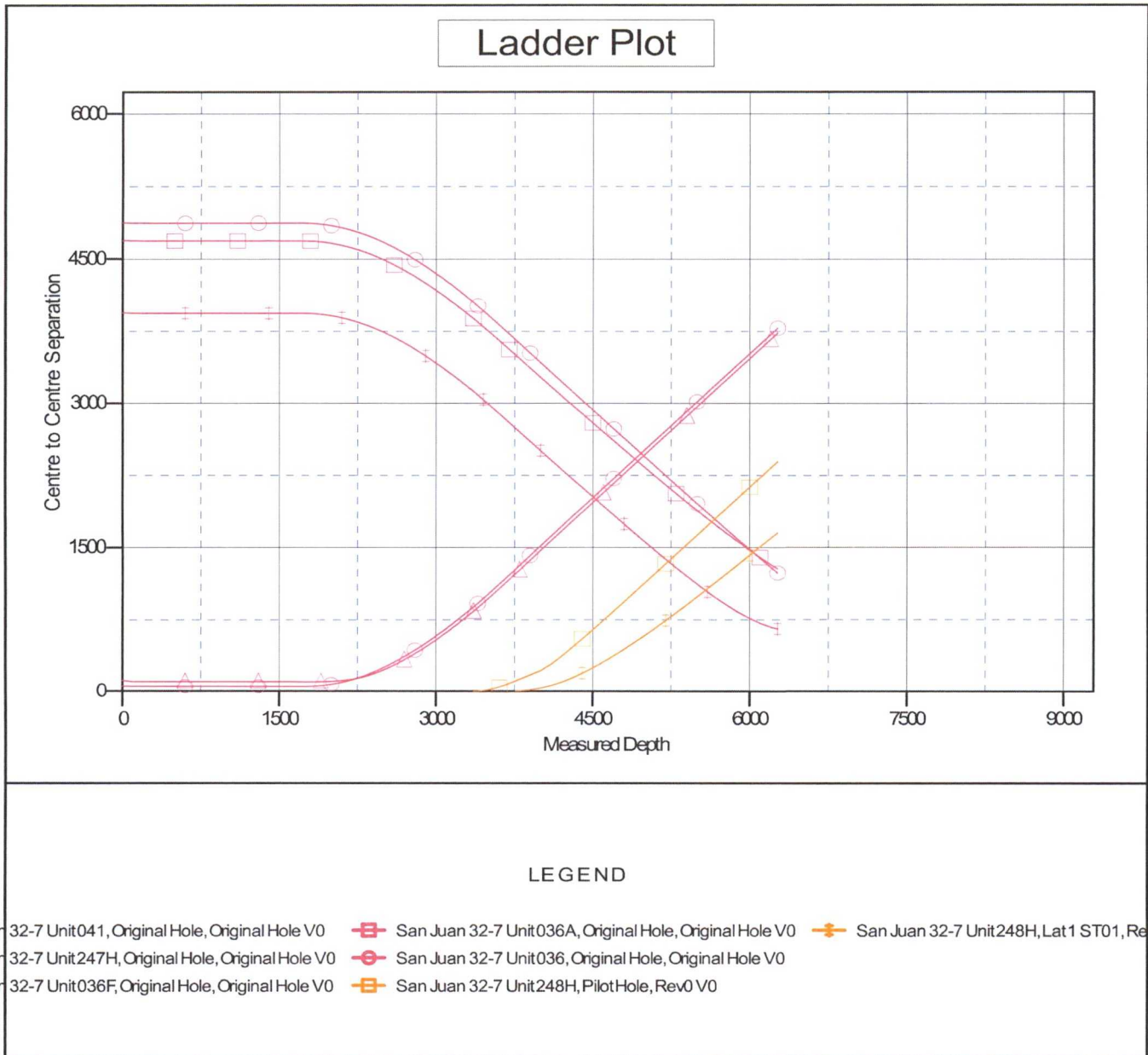
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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 Depths are relative to KB @ 6433.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 248H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°



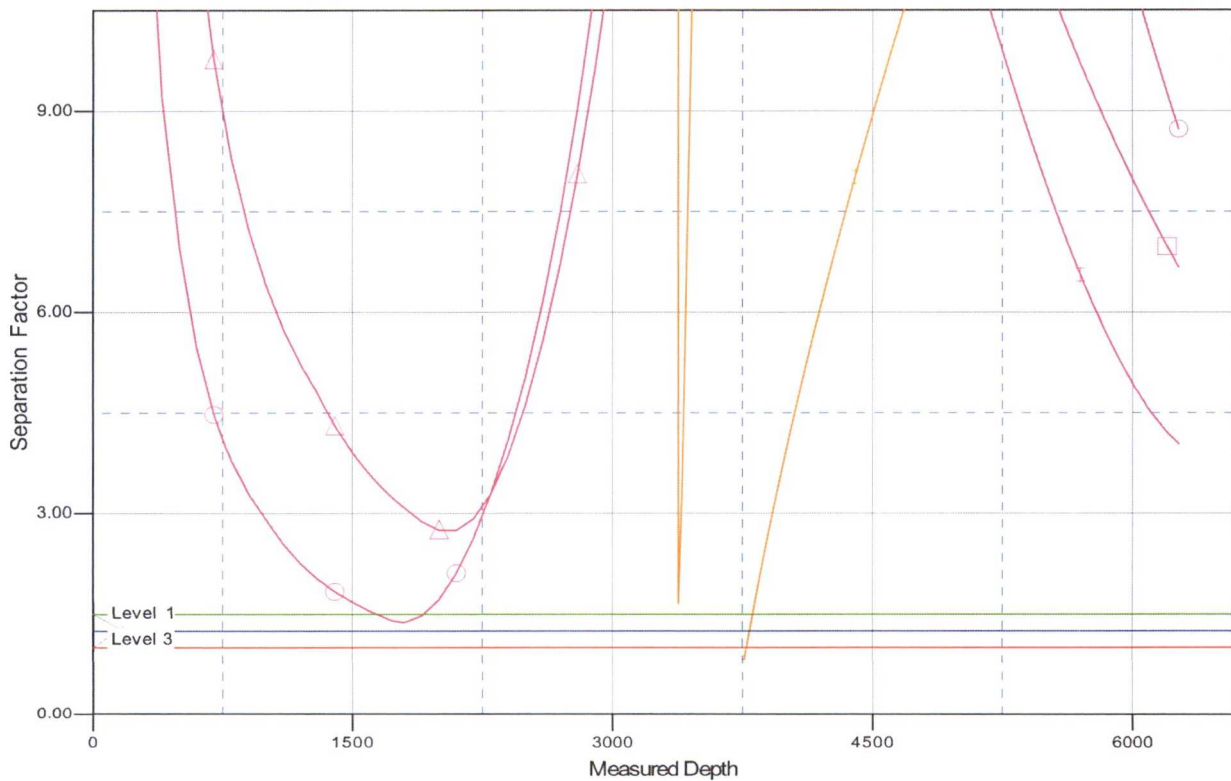


Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	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 Depths are relative to KB @ 6433.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 248H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°

Separation Factor Plot



LEGEND

- ar 32-7 Unit041, Original Hole, Original Hole V0 ▢ San Juan 32-7 Unit036A, Original Hole, Original Hole V0 ▢ San Juan 32-7 Unit248H, Lat1 ST01, Rev0
- ar 32-7 Unit247H, Original Hole, Original Hole V0 ○ San Juan 32-7 Unit036, Original Hole, Original Hole V0
- ar 32-7 Unit036F, Original Hole, Original Hole V0 ▢ San Juan 32-7 Unit248H, PilotHole, Rev0 V0



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.07-T32N-R07W
 Well: San Juan 32-7 Unit 248H
 Borehole: Lat 1 ST01
 Plan: Rev0

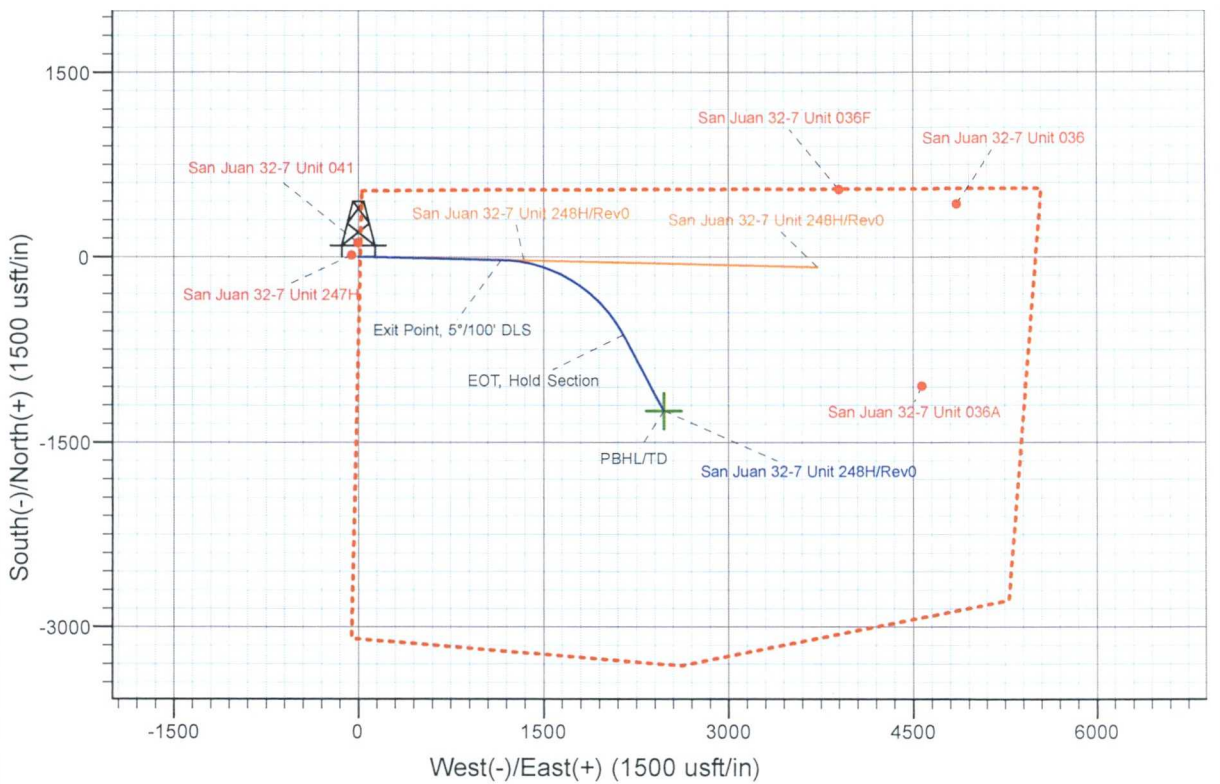
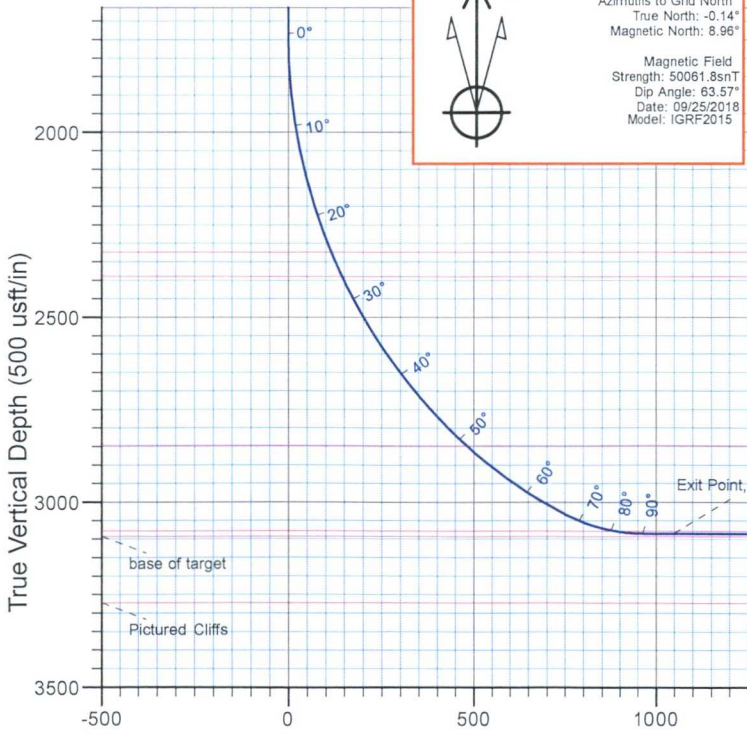
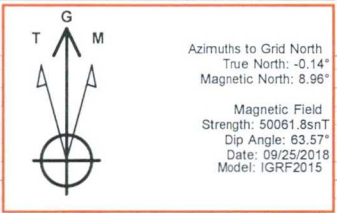


WELL DETAILS: San Juan 32-7 Unit 248H						
+N/-S	+E/-W	Northing	GL 6418.00	KB @ 6433.00usft	Latitude	Longitude
0.00	0.00	2182139.31		565685.99	36.996682°N	107.608403°W

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	3700.00	90.00	91.29	3085.00	-26.12	1160.76	0.00	0.00	1048.34
2	4912.01	89.71	151.89	3088.43	-631.75	2145.76	5.00	90.34	2200.51
3	5609.46	89.71	151.89	3092.00	-1246.91	2474.41	0.00	0.00	2770.83

DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
SJ 32-7 Unit 248H Lat 1 ST01 Toe	3092.00	-1246.91	2474.41	36.993241°N	107.599940°W	

ANNOTATIONS		
TVD	MD	Annotation
3085.00	3700.00	Exit Point, 5°/100' DLS
3088.43	4912.01	EOT, Hold Section
3092.00	5609.46	PBHL/TD



San Juan 32-7 Unit 248H Rev0
 Created By: J Rieke Date: 8:42, September 26 2018



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.07-T32N-R07W

San Juan 32-7 Unit 248H

Lat 1 ST01

Plan: Rev0

Standard Planning Report - Geographic

26 September, 2018





Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lat 1 ST01		
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.07-T32N-R07W				
Site Position:		Northing:	2,180,199.75 usft	Latitude:	36.991360°N
From:	Lat/Long	Easting:	564,826.98 usft	Longitude:	107.611360°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.13 °

Well	San Juan 32-7 Unit 248H					
Well Position	+N/-S	0.00 usft	Northing:	2,182,139.31 usft	Latitude:	36.996682°N
	+E/-W	0.00 usft	Easting:	565,685.99 usft	Longitude:	107.608403°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,418.00 usft

Wellbore	Lat 1 ST01				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/25/18	9.10	63.57	50,062

Design	Rev0			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	3,700.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	116.74

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	
3,700.00	90.00	91.29	3,085.00	-26.12	1,160.76	0.00	0.00	0.00	0.00		
4,912.01	89.71	151.89	3,088.43	-631.75	2,145.76	5.00	-0.02	5.00	90.34		
5,609.46	89.71	151.89	3,092.00	-1,246.91	2,474.41	0.00	0.00	0.00	0.00	SJ 32-7 Unit 248H La	



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lat 1 ST01		
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	
3,700.00	90.00	91.29	3,085.00	-26.12	1,160.76	2,182,113.18	566,846.75	36.996603°N	107.604429°W	
Exit Point, 5°/100' DLS										
3,800.00	89.97	96.29	3,085.03	-32.72	1,260.51	2,182,106.58	566,946.50	36.996584°N	107.604087°W	
3,900.00	89.94	101.29	3,085.10	-47.99	1,359.30	2,182,091.31	567,045.29	36.996541°N	107.603749°W	
4,000.00	89.91	106.29	3,085.23	-71.81	1,456.39	2,182,067.49	567,142.38	36.996475°N	107.603417°W	
4,100.00	89.88	111.29	3,085.41	-104.00	1,551.04	2,182,035.30	567,237.02	36.996386°N	107.603093°W	
4,200.00	89.86	116.29	3,085.63	-144.32	1,642.51	2,181,994.98	567,328.50	36.996275°N	107.602780°W	
4,300.00	89.83	121.29	3,085.90	-192.46	1,730.13	2,181,946.84	567,416.12	36.996142°N	107.602480°W	
4,400.00	89.81	126.29	3,086.22	-248.05	1,813.21	2,181,891.25	567,499.20	36.995989°N	107.602196°W	
4,500.00	89.78	131.29	3,086.58	-310.67	1,891.14	2,181,828.63	567,577.13	36.995816°N	107.601930°W	
4,600.00	89.76	136.29	3,086.97	-379.84	1,963.31	2,181,759.46	567,649.30	36.995626°N	107.601683°W	
4,700.00	89.74	141.29	3,087.41	-455.04	2,029.17	2,181,684.26	567,715.16	36.995419°N	107.601459°W	
4,800.00	89.72	146.29	3,087.87	-535.70	2,088.24	2,181,603.61	567,774.22	36.995197°N	107.601257°W	
4,900.00	89.71	151.29	3,088.37	-621.19	2,140.04	2,181,518.11	567,826.03	36.994962°N	107.601080°W	
4,912.01	89.71	151.89	3,088.43	-631.76	2,145.76	2,181,507.55	567,831.75	36.994933°N	107.601061°W	
EOT, Hold Section										
5,000.00	89.71	151.89	3,088.88	-709.36	2,187.22	2,181,429.94	567,873.21	36.994719°N	107.600919°W	
5,100.00	89.71	151.89	3,089.39	-797.56	2,234.34	2,181,341.74	567,920.33	36.994477°N	107.600759°W	
5,200.00	89.71	151.89	3,089.90	-885.76	2,281.47	2,181,253.54	567,967.46	36.994234°N	107.600598°W	
5,300.00	89.71	151.89	3,090.42	-973.96	2,328.59	2,181,165.34	568,014.58	36.993991°N	107.600438°W	
5,400.00	89.71	151.89	3,090.93	-1,062.16	2,375.71	2,181,077.14	568,061.70	36.993749°N	107.600277°W	
5,500.00	89.71	151.89	3,091.44	-1,150.36	2,422.83	2,180,988.94	568,108.82	36.993506°N	107.600116°W	
5,600.00	89.71	151.89	3,091.95	-1,238.56	2,469.96	2,180,900.74	568,155.94	36.993264°N	107.599956°W	
5,609.46	89.71	151.89	3,092.00	-1,246.91	2,474.41	2,180,892.40	568,160.40	36.993241°N	107.599941°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 248H Lat 1 - hit/miss target - Shape - plan hits target center - Point	0.00	0.00	3,092.00	-1,246.91	2,474.41	2,180,892.40	568,160.40	36.993241°N	107.599941°W	

Formations							
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)		
2,342.19	2,324.00	Ojo Alamo		0.00			
2,415.52	2,390.00	Kirtland		0.00			
3,010.82	2,848.00	Fruitland		0.00			
3,518.47	3,078.00	top of target		0.00			



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Company:	Hilcorp Energy Company	TVD Reference:	KB @ 6433.00usft
Project:	San Juan Co., NM (NAD27)	MD Reference:	KB @ 6433.00usft
Site:	Sec.07-T32N-R07W	North Reference:	Grid
Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lat 1 ST01		
Design:	Rev0		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,700.00	3,085.00	-26.12	1,160.76	Exit Point, 5°/100' DLS
4,912.01	3,088.43	-631.76	2,145.76	EOT, Hold Section
5,609.46	3,092.00	-1,246.91	2,474.41	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.07-T32N-R07W

San Juan 32-7 Unit 248H

Lat 1 ST01

Rev0

Anticollision Report

26 September, 2018





Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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	09/26/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	3,358.13	Rev0 (Pilot Hole)	MWD	MWD - Standard
3,358.13	3,700.00	Rev0 (Lat 1)	MWD	MWD - Standard
3,700.00	5,609.46	Rev0 (Lat 1 ST01)	MWD	MWD - Standard

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec.07-T32N-R07W						
San Juan 32-7 Unit 041 - Original Hole - Original Hole	800.00	744.02	109.76	96.55	8.308	CC
San Juan 32-7 Unit 041 - Original Hole - Original Hole	2,000.00	1,942.50	113.73	72.34	2.748	ES
San Juan 32-7 Unit 041 - Original Hole - Original Hole	2,100.00	2,040.05	120.98	76.94	2.747	SF
San Juan 32-7 Unit 247H - Original Hole - Original Hole	754.74	739.77	56.20	42.40	4.072	CC
San Juan 32-7 Unit 247H - Original Hole - Original Hole	1,800.00	1,785.03	57.86	15.71	1.373	Level 3, ES, SF
San Juan 32-7 Unit 248H - Lat 1 - Rev0	3,700.00	3,700.00	0.00	0.00	0.000	Level 1, CC, SF
San Juan 32-7 Unit 248H - Lat 1 - Rev0	3,760.21	3,760.18	1.58	-0.35	0.817	Level 1, ES
San Juan 32-7 Unit 248H - Pilot Hole - Rev0	3,358.13	3,358.13	0.00	0.00	0.000	Level 1, CC, ES, SF
Sec.08-T32N-R07W						
San Juan 32-7 Unit 036 - Original Hole - Original Hole	5,255.50	2,904.51	2,886.27	2,793.34	31.058	CC
San Juan 32-7 Unit 036 - Original Hole - Original Hole	5,300.00	2,904.74	2,886.61	2,792.75	30.753	ES
San Juan 32-7 Unit 036 - Original Hole - Original Hole	5,609.46	2,906.37	2,907.89	2,807.46	28.954	SF
San Juan 32-7 Unit 036A - Original Hole - Original Hole	5,609.46	2,888.62	2,106.11	1,955.53	13.987	CC, ES, SF
San Juan 32-7 Unit 036F - Original Hole - Original Hole	4,836.45	2,878.18	2,108.40	2,001.86	19.791	CC, ES
San Juan 32-7 Unit 036F - Original Hole - Original Hole	5,609.46	2,882.13	2,290.64	2,169.65	18.932	SF

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 100-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	0.00	0.00	-0.29	110.31	-0.55	123.71				
100.00	100.00	44.06	44.06	0.10	0.32	-0.29	110.20	-0.55	110.20	109.79	0.42	264.848	
106.02	106.02	50.02	50.02	0.11	0.36	-0.29	110.20	-0.55	110.20	109.73	0.47	232.977	
200.00	200.00	144.00	144.00	0.32	1.37	-0.29	110.31	-0.55	110.31	108.62	1.69	65.360	
300.00	300.00	244.24	244.24	0.55	2.84	-0.29	110.30	-0.55	110.30	106.92	3.38	32.606	
400.00	400.00	344.20	344.19	0.77	4.58	-0.29	110.11	-0.55	110.11	104.76	5.35	20.586	
500.00	500.00	444.15	444.15	0.99	6.32	-0.29	109.95	-0.55	109.96	102.64	7.31	15.033	
600.00	600.00	544.11	544.10	1.22	8.06	-0.29	109.85	-0.55	109.85	100.57	9.28	11.837	
700.00	700.00	644.06	644.05	1.44	9.80	-0.29	109.78	-0.55	109.78	98.54	11.25	9.762	
800.00	800.00	744.02	744.01	1.67	11.54	-0.29	109.76	-0.55	109.76	96.55	13.21	8.308	CC

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 100-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.07-T32N-R07W - San Juan 32-7 Unit 041 - Original Hole - Original Hole														
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		
801.39	801.39	745.40	745.39	1.67	11.57	-0.29	109.76	-0.55	109.76	96.52	13.24	8.291		
900.00	900.00	843.97	843.95	1.89	13.28	-0.29	109.78	-0.55	109.79	94.61	15.18	7.233		
1,000.00	1,000.00	943.91	943.90	2.12	15.02	-0.29	109.85	-0.55	109.85	92.71	17.14	6.408		
1,100.00	1,100.00	1,043.86	1,043.85	2.34	16.77	-0.29	109.96	-0.55	109.96	90.85	19.11	5.754		
1,200.00	1,200.00	1,143.81	1,143.79	2.57	18.51	-0.29	110.11	-0.55	110.11	89.04	21.07	5.225		
1,300.00	1,300.00	1,243.75	1,243.74	2.79	20.25	-0.29	110.31	-0.55	110.31	87.27	23.04	4.788		
1,400.00	1,400.00	1,344.17	1,344.15	3.02	22.58	-0.29	110.13	-0.55	110.14	84.54	25.60	4.302		
1,500.00	1,500.00	1,444.08	1,444.06	3.24	24.91	-0.29	110.04	-0.55	110.04	81.89	28.16	3.908		
1,560.98	1,560.98	1,505.01	1,504.99	3.38	26.33	-0.29	110.03	-0.55	110.03	80.31	29.71	3.703		
1,600.00	1,600.00	1,543.99	1,543.97	3.47	27.24	-0.29	110.03	-0.55	110.03	79.32	30.71	3.583		
1,700.00	1,700.00	1,643.89	1,643.87	3.69	29.57	-0.29	110.11	-0.55	110.11	76.84	33.27	3.310		
1,733.13	1,733.13	1,676.99	1,676.96	3.77	30.35	-0.29	110.15	-0.55	110.15	76.04	34.11	3.229		
1,800.00	1,799.98	1,743.77	1,743.74	3.91	31.90	-92.38	110.27	-0.55	110.32	74.51	35.81	3.081		
1,900.00	1,899.62	1,843.66	1,843.62	4.11	34.48	-96.55	110.31	-0.55	111.00	72.42	38.59	2.877		
2,000.00	1,998.46	1,942.50	1,942.46	4.34	37.09	-103.93	110.31	-0.55	113.73	72.34	41.39	2.748 ES		
2,100.00	2,096.00	2,040.05	2,040.00	4.61	39.67	-113.58	110.31	-0.55	120.98	76.94	44.03	2.747 SF		
2,200.00	2,191.78	2,135.83	2,135.78	4.94	42.20	-123.98	110.31	-0.55	135.33	89.00	46.33	2.921		
2,300.00	2,285.32	2,229.37	2,229.32	5.38	44.67	-133.59	110.31	-0.55	158.42	110.31	48.11	3.293		
2,400.00	2,376.17	2,320.23	2,320.17	5.95	47.07	-141.56	110.31	-0.55	190.62	141.29	49.33	3.864		
2,500.00	2,463.89	2,407.95	2,407.89	6.67	49.39	-147.78	110.31	-0.55	231.42	181.39	50.03	4.626		
2,600.00	2,548.04	2,492.11	2,492.04	7.58	51.62	-152.49	110.31	-0.55	280.06	229.81	50.25	5.573		
2,700.00	2,628.23	2,572.30	2,572.23	8.67	53.74	-155.99	110.31	-0.55	335.78	285.73	50.05	6.709		
2,800.00	2,704.06	2,648.13	2,648.06	9.95	55.74	-158.58	110.31	-0.55	397.90	348.47	49.43	8.049		
2,900.00	2,775.16	2,719.23	2,719.16	11.41	57.62	-160.45	110.31	-0.55	465.85	417.40	48.45	9.616		
3,000.00	2,841.17	2,785.26	2,785.17	13.06	59.37	-161.75	110.31	-0.55	539.09	491.96	47.13	11.438		
3,100.00	2,901.80	2,845.88	2,845.80	14.89	60.97	-162.56	110.31	-0.55	617.13	571.57	45.56	13.546		
3,200.00	2,956.72	2,900.81	2,900.72	16.87	62.42	-162.93	110.31	-0.55	699.48	655.66	43.82	15.961		
3,300.00	3,005.69	2,949.78	2,949.69	19.00	63.71	-162.84	110.31	-0.55	785.68	743.58	42.10	18.660		
3,358.13	3,031.32	2,975.41	2,975.32	20.30	64.39	-162.55	110.31	-0.55	837.36	796.15	41.22	20.315		
3,358.13	3,031.32	2,975.41	2,975.32	20.30	64.39	-162.55	110.31	-0.55	837.37	796.15	41.22	20.315		
3,400.00	3,047.61	2,991.70	2,991.61	20.96	64.82	-160.34	110.31	-0.55	875.61	835.48	40.13	21.820		
3,450.00	3,063.32	3,007.41	3,007.32	21.44	65.24	-156.16	110.31	-0.55	922.70	881.41	41.29	22.346		
3,500.00	3,074.83	3,018.92	3,018.83	22.01	65.54	-148.64	110.31	-0.55	971.01	922.89	48.12	20.180		
3,550.00	3,082.05	3,026.15	3,026.05	22.66	65.73	-132.96	110.31	-0.55	1,020.16	954.91	65.26	15.633		
3,600.00	3,084.94	3,029.04	3,028.94	23.37	65.81	-97.79	110.31	-0.55	1,069.79	981.43	88.35	12.108		
3,608.13	3,085.00	3,029.09	3,029.00	23.49	65.81	-90.00	110.31	-0.55	1,077.87	988.57	89.30	12.070		
3,700.00	3,085.00	3,029.09	3,029.00	24.97	65.81	-90.00	110.31	-0.55	1,169.30	1,078.51	90.78	12.880		
3,700.00	3,085.00	3,029.09	3,029.00	24.97	65.81	-90.00	110.31	-0.55	1,169.30	1,078.51	90.78	12.880		
3,800.00	3,085.03	3,029.12	3,029.03	26.39	65.81	-99.00	110.31	-0.55	1,269.15	1,178.17	90.98	13.950		
3,900.00	3,085.10	3,029.20	3,029.10	27.65	65.81	90.72	110.31	-0.55	1,369.04	1,275.91	93.13	14.700		
4,000.00	3,085.23	3,029.32	3,029.23	29.10	65.82	90.54	110.31	-0.55	1,468.28	1,374.11	94.17	15.591		
4,100.00	3,085.41	3,029.50	3,029.41	30.70	65.82	90.48	110.31	-0.55	1,566.32	1,471.12	95.20	16.453		
4,200.00	3,085.63	3,029.73	3,029.63	32.38	65.83	90.45	110.31	-0.55	1,662.68	1,566.50	96.18	17.287		
4,300.00	3,085.90	3,030.00	3,029.90	34.13	65.83	90.43	110.31	-0.55	1,756.96	1,659.89	97.08	18.099		
4,400.00	3,086.22	3,030.31	3,030.22	35.89	65.84	90.41	110.31	-0.55	1,848.83	1,750.98	97.85	18.894		
4,500.00	3,086.58	3,030.67	3,030.58	37.65	65.85	90.39	110.31	-0.55	1,937.97	1,839.48	98.48	19.678		
4,600.00	3,086.97	3,031.07	3,030.97	39.36	65.86	90.38	110.31	-0.55	2,024.10	1,925.17	98.94	20.459		
4,700.00	3,087.41	3,031.50	3,031.41	41.02	65.87	90.36	110.31	-0.55	2,106.99	2,007.80	99.19	21.242		
4,800.00	3,087.87	3,031.97	3,031.87	42.61	65.89	90.34	110.31	-0.55	2,186.41	2,087.18	99.23	22.035		
4,900.00	3,088.37	3,032.46	3,032.37	44.10	65.90	90.32	110.31	-0.55	2,262.13	2,163.11	99.03	22.843		
4,912.01	3,088.43	3,032.52	3,032.43	44.28	65.90	90.32	110.31	-0.55	2,270.97	2,171.98	98.99	22.942		
5,000.00	3,088.88	3,032.97	3,032.88	45.55	65.91	90.33	110.31	-0.55	2,336.28	2,235.49	100.80	23.178		

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 100-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.07-T32N-R07W - San Juan 32-7 Unit 041 - Original Hole - Original Hole														
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		
5,100.00	3,089.39	3,033.49	3,033.39	47.04	65.93	90.35	110.31	-0.55	2,412.26	2,309.40	102.86	23.453		
5,200.00	3,089.90	3,034.00	3,033.90	48.58	65.94	90.37	110.31	-0.55	2,489.93	2,385.00	104.94	23.728		
5,300.00	3,090.42	3,034.51	3,034.42	50.18	65.95	90.39	110.31	-0.55	2,569.15	2,462.12	107.03	24.003		
5,400.00	3,090.93	3,035.02	3,034.93	51.83	65.97	90.41	110.31	-0.55	2,649.78	2,540.63	109.15	24.276		
5,500.00	3,091.44	3,035.53	3,035.44	53.52	65.98	90.43	110.31	-0.55	2,731.68	2,620.40	111.28	24.548		
5,609.46	3,092.00	3,036.09	3,036.00	55.43	65.99	90.45	110.31	-0.55	2,822.68	2,709.05	113.63	24.842		



Koltek Energy Services
Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:
Survey Program: 134-INC_ONLY<10														Offset Well Error:
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	-75.92	13.71	-54.64	58.30	55.59	0.71	78.877		
100.00	100.00	84.98	84.98	0.10	0.62	-76.05	13.57	-54.64	56.30	54.14	2.18	25.799		
200.00	200.00	185.01	185.01	0.32	1.86	-75.99	13.64	-54.64	56.32	53.86	2.46	22.910		
214.01	214.01	199.01	199.01	0.35	2.11	-75.99	13.63	-54.64	56.32	52.20	4.15	13.583		
300.00	300.00	284.98	284.97	0.55	3.60	-75.88	13.75	-54.64	56.34	50.25	6.12	9.216		
400.00	400.00	385.00	385.00	0.77	5.35	-75.79	13.83	-54.64	56.37	48.26	8.08	6.970		
500.00	500.00	485.04	485.03	0.99	7.09	-75.89	13.74	-54.64	56.34	45.96	10.30	5.461		
600.00	600.00	585.06	585.05	1.22	9.08	-76.22	13.40	-54.64	56.26	43.65	12.57	4.474		
700.00	700.00	685.04	685.02	1.44	11.12	-76.42	13.20	-54.64	56.21	42.40	13.80	4.072 CC		
754.74	754.74	739.77	739.75	1.57	12.24	-76.46	13.16	-54.64	56.20	41.38	14.83	3.791		
800.00	800.00	785.01	785.00	1.67	13.16	-76.45	13.17	-54.64	56.21	39.15	17.09	3.291		
900.00	900.00	884.98	884.96	1.89	15.19	-76.30	13.32	-54.64	56.24	36.97	19.35	2.910		
1,000.00	1,000.00	984.93	984.92	2.12	17.23	-75.98	13.64	-54.64	56.32	34.21	22.13	2.546		
1,100.00	1,100.00	1,085.02	1,085.00	2.34	19.78	-75.92	13.71	-54.64	56.33	31.34	25.00	2.254		
1,200.00	1,200.00	1,185.02	1,185.00	2.57	22.43	-75.92	13.71	-54.64	56.33	28.47	27.86	2.022		
1,300.00	1,300.00	1,285.03	1,285.00	2.79	25.07	-75.92	13.71	-54.64	56.33	25.61	30.73	1.833		
1,400.00	1,400.00	1,385.03	1,385.00	3.02	27.71	-75.92	13.71	-54.64	56.33	22.74	33.60	1.677		
1,500.00	1,500.00	1,485.04	1,485.00	3.24	30.35	-75.92	13.71	-54.64	56.33	19.87	36.47	1.545		
1,600.00	1,600.00	1,585.04	1,585.00	3.47	32.99	-75.92	13.71	-54.64	56.33	16.99	39.34	1.432 Level 3		
1,700.00	1,700.00	1,685.05	1,685.00	3.69	35.64	-75.92	13.71	-54.64	56.33	16.04	40.29	1.398 Level 3		
1,733.13	1,733.13	1,718.18	1,718.13	3.77	36.52	-75.92	13.71	-54.64	56.33	15.71	42.15	1.373 Level 3, ES, SF		
1,800.00	1,799.98	1,785.03	1,784.98	3.91	38.29	-167.54	13.71	-54.64	57.86	21.10	44.74	1.471 Level 3		
1,900.00	1,899.62	1,884.68	1,884.62	4.11	40.93	-169.01	13.71	-54.64	65.84	33.64	47.06	1.715		
2,000.00	1,998.46	1,983.52	1,983.46	4.34	43.54	-170.96	13.71	-54.64	80.89	53.90	48.57	2.110		
2,100.00	2,096.00	2,081.02	2,080.95	4.61	45.63	-172.60	14.00	-54.64	102.47	81.35	49.65	2.638		
2,200.00	2,191.78	2,176.82	2,176.75	4.94	47.58	-174.00	14.20	-54.64	131.01	115.79	50.38	3.298		
2,300.00	2,285.32	2,270.40	2,270.32	5.38	49.49	-175.13	14.25	-54.64	166.17	157.07	50.73	4.096		
2,400.00	2,376.17	2,361.29	2,361.21	5.95	51.34	-176.02	14.14	-54.64	207.80	205.00	50.68	5.045		
2,500.00	2,463.89	2,449.06	2,448.97	6.67	53.13	-176.70	13.90	-54.64	255.68	259.34	50.24	6.162		
2,600.00	2,548.04	2,533.21	2,533.12	7.58	54.85	-177.22	13.57	-54.64	309.58	319.85	49.39	7.476		
2,700.00	2,628.23	2,613.38	2,613.29	8.67	56.49	-177.60	13.32	-54.64	369.24	386.23	48.14	9.023		
2,800.00	2,704.06	2,689.19	2,689.09	9.95	58.03	-177.85	13.19	-54.64	434.37	458.15	46.49	10.855		
2,900.00	2,775.16	2,760.25	2,760.16	11.41	59.48	-178.03	13.16	-54.64	504.64	535.26	44.45	13.041		
3,000.00	2,841.17	2,826.24	2,826.14	13.06	60.83	-178.13	13.21	-54.64	579.71	617.16	42.40	15.679		
3,100.00	2,901.80	2,886.82	2,886.72	14.89	62.06	-178.18	13.32	-54.64	659.20	703.44	39.29	18.904		
3,200.00	2,956.72	2,941.71	2,941.61	16.87	63.18	-178.18	13.48	-54.64	742.73	793.68	36.22	22.915		
3,300.00	3,005.69	2,990.63	2,990.53	19.00	64.18	-178.13	13.67	-54.64	829.90	847.72	34.34	25.687		
3,358.13	3,031.32	3,016.42	3,016.32	20.30	64.80	-178.08	13.71	-54.64	882.06	847.73	34.34	25.687		
3,358.13	3,031.32	3,016.42	3,016.32	20.30	64.80	-178.08	13.71	-54.64	882.06	890.61	30.01	30.682		
3,400.00	3,047.61	3,032.71	3,032.61	20.96	65.24	-177.81	13.71	-54.64	920.62	943.57	24.50	39.520		
3,450.00	3,063.32	3,048.42	3,048.32	21.44	65.65	-177.29	13.71	-54.64	968.07	1,016.71	19.17	53.027		
3,500.00	3,074.83	3,059.93	3,059.83	22.01	65.96	-176.25	13.71	-54.64	1,016.71	1,049.89	16.28	65.504		
3,550.00	3,082.05	3,067.16	3,067.05	22.66	66.15	-173.38	13.71	-54.64	1,066.16	1,059.93	56.13	19.885		
3,600.00	3,084.94	3,070.04	3,069.94	23.37	66.22	-141.61	13.71	-54.64	1,116.06	1,124.19	49.72	12.530		
3,608.13	3,085.00	3,070.10	3,070.00	23.49	66.23	-90.00	13.71	-54.64	1,124.19	1,124.85	91.20	13.334		
3,700.00	3,085.00	3,070.10	3,070.00	24.97	66.23	-90.00	13.71	-54.64	1,216.05	1,216.05	91.20	13.334		
3,700.00	3,085.00	3,070.10	3,070.00	24.97	66.23	-90.00	13.71	-54.64	1,216.05	1,223.42	92.55	14.219		
3,800.00	3,085.03	3,070.13	3,070.03	26.39	66.23	90.39	13.71	-54.64	1,315.97	1,321.73	93.56	15.128		
3,900.00	3,085.10	3,070.20	3,070.10	27.65	66.23	90.38	13.71	-54.64	1,415.29	1,418.86	94.59	16.000		
4,000.00	3,085.23	3,070.33	3,070.23	29.10	66.23	90.38	13.71	-54.64	1,513.45	1,514.37	95.62	16.837		
4,100.00	3,085.41	3,070.51	3,070.41	30.70	66.24	90.37	13.71	-54.64	1,609.99	1,704.50	96.60	17.645		
4,200.00	3,085.63	3,070.73	3,070.63	32.38	66.24	90.37	13.71	-54.64	1,704.50					

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 134-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.07-T32N-R07W - San Juan 32-7 Unit 247H - Original Hole - Original Hole														
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	3,085.90	3,071.00	3,070.90	34.13	66.25	90.37	13.71	-54.64	1,796.64	1,699.15	97.49	18.429		
4,400.00	3,086.22	3,071.32	3,071.22	35.89	66.26	90.36	13.71	-54.64	1,886.11	1,787.84	98.27	19.193		
4,500.00	3,086.58	3,071.68	3,071.58	37.65	66.27	90.35	13.71	-54.64	1,972.63	1,873.73	98.90	19.946		
4,600.00	3,086.97	3,072.07	3,071.97	39.36	66.28	90.34	13.71	-54.64	2,055.97	1,956.62	99.35	20.694		
4,700.00	3,087.41	3,072.51	3,072.41	41.02	66.29	90.32	13.71	-54.64	2,135.89	2,036.28	99.61	21.443		
4,800.00	3,087.87	3,072.97	3,072.87	42.61	66.30	90.31	13.71	-54.64	2,212.19	2,112.55	99.64	22.201		
4,900.00	3,088.37	3,073.47	3,073.37	44.10	66.31	90.29	13.71	-54.64	2,284.68	2,185.23	99.44	22.975		
4,912.01	3,088.43	3,073.53	3,073.43	44.28	66.32	90.29	13.71	-54.64	2,293.12	2,193.71	99.40	23.069		
5,000.00	3,088.88	3,073.98	3,073.88	45.55	66.33	90.30	13.71	-54.64	2,355.59	2,254.37	101.21	23.273		
5,100.00	3,089.39	3,074.49	3,074.39	47.04	66.34	90.32	13.71	-54.64	2,428.50	2,325.23	103.27	23.516		
5,200.00	3,089.90	3,075.00	3,074.90	48.58	66.36	90.34	13.71	-54.64	2,503.29	2,397.94	105.35	23.761		
5,300.00	3,090.42	3,075.52	3,075.42	50.18	66.37	90.36	13.71	-54.64	2,579.78	2,472.33	107.45	24.009		
5,400.00	3,090.93	3,076.03	3,075.93	51.83	66.38	90.38	13.71	-54.64	2,657.84	2,548.27	109.57	24.258		
5,500.00	3,091.44	3,076.54	3,076.44	53.52	66.40	90.39	13.71	-54.64	2,737.32	2,625.63	111.70	24.507		
5,609.46	3,092.00	3,077.10	3,077.00	55.43	66.41	90.41	13.71	-54.64	2,825.82	2,711.78	114.04	24.779		



Koltek Energy Services
Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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, 3358-MWD													Offset Well Error:	0.00 usft					
Reference													Semi Major Axis		Distance			Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)								
3,700.00	3,085.00	3,700.00	3,085.00	0.00	0.00	0.00	-26.12	1,160.76	0.00	0.00	0.00	0.00	Level 1, CC, SF						
3,760.21	3,085.01	3,760.18	3,085.00	0.86	1.08	-89.66	-27.47	1,220.93	1.58	-0.35	1.94	0.817	Level 1, ES						
3,800.00	3,085.03	3,799.87	3,085.00	1.42	1.79	-89.66	-28.36	1,260.61	4.36	1.15	3.21	1.360	Level 3						
3,900.00	3,085.10	3,898.99	3,085.00	2.70	3.73	-89.67	-30.59	1,359.69	17.41	11.04	6.37	2.732							
4,000.00	3,085.23	3,996.58	3,085.00	4.26	5.76	-89.67	-32.78	1,457.27	39.05	29.22	9.62	3.975							
4,100.00	3,085.41	4,091.93	3,085.00	6.10	7.84	-89.68	-34.92	1,552.59	69.11	55.64	13.46	5.133							
4,200.00	3,085.63	4,184.28	3,085.00	8.16	9.93	-89.69	-36.99	1,644.92	107.36	90.21	17.15	6.259							
4,300.00	3,085.90	4,272.96	3,085.00	10.39	11.99	-89.71	-38.98	1,733.57	153.52	132.79	20.73	7.405							
4,400.00	3,086.22	4,357.27	3,085.00	12.70	13.99	-89.72	-40.87	1,817.86	207.24	183.20	24.04	8.621							
4,500.00	3,086.58	4,436.58	3,085.00	15.05	15.91	-89.74	-42.65	1,897.15	268.09	241.16	26.93	9.955							
4,600.00	3,086.97	4,510.28	3,085.00	17.40	17.71	-89.76	-44.30	1,970.84	335.63	306.34	29.29	11.459							
4,700.00	3,087.41	4,577.82	3,085.00	19.71	19.39	-89.78	-45.82	2,038.36	409.34	378.31	31.03	13.193							
4,800.00	3,087.87	4,638.68	3,085.00	21.95	20.91	-89.81	-47.18	2,099.20	488.65	456.58	32.07	15.238							
4,900.00	3,088.37	4,692.39	3,085.00	24.11	22.26	-89.83	-48.39	2,152.90	572.96	540.59	32.37	17.702							
4,912.01	3,088.43	4,698.34	3,085.00	24.36	22.41	-89.83	-48.52	2,158.85	583.39	551.04	32.35	18.032							
5,000.00	3,088.88	4,741.54	3,085.00	26.18	23.51	-89.83	-49.49	2,202.03	660.05	625.27	34.78	18.980							
5,100.00	3,089.39	4,790.63	3,085.00	28.24	24.76	-89.83	-50.59	2,251.11	747.17	709.65	37.52	19.916							
5,200.00	3,089.90	4,839.71	3,085.00	30.31	26.01	-89.83	-51.69	2,300.19	834.29	794.02	40.27	20.715							
5,300.00	3,090.42	4,888.80	3,085.00	32.39	27.27	-89.83	-52.80	2,349.26	921.41	878.37	43.04	21.406							
5,400.00	3,090.93	4,937.89	3,085.00	34.48	28.54	-89.83	-53.90	2,398.34	1,008.54	962.71	45.83	22.008							
5,500.00	3,091.44	4,986.98	3,085.00	36.58	29.81	-89.83	-55.00	2,447.42	1,095.66	1,047.04	48.62	22.535							
5,609.46	3,092.00	5,040.72	3,085.00	38.89	31.21	-89.83	-56.20	2,501.14	1,191.02	1,139.33	51.69	23.042							

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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													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								
3,358.13	3,031.32	3,358.13	3,031.32	0.00	0.00	0.00	-18.62	826.83	0.00	0.00	0.00	0.000	Level 1, CC, ES, SF							
3,380.31	3,040.30	3,380.31	3,040.69	0.35	0.51	179.99	-19.07	846.93	0.43	0.17	0.26	1.659								
3,400.00	3,047.61	3,399.96	3,049.00	0.66	0.95	179.99	-19.47	864.73	1.53	1.05	0.47	3.222								
3,450.00	3,063.32	3,449.61	3,069.98	1.14	2.10	179.99	-20.49	909.72	7.35	6.58	0.77	9.517								
3,500.00	3,074.83	3,498.55	3,090.67	1.71	3.22	179.99	-21.48	954.07	17.47	16.43	1.04	16.749								
3,550.00	3,082.05	3,546.43	3,110.90	2.36	4.33	179.99	-22.46	997.45	31.83	30.56	1.27	25.111								
3,600.00	3,084.94	3,592.88	3,130.53	3.07	5.41	179.99	-23.41	1,039.53	50.30	48.85	1.45	34.703								
3,608.13	3,085.00	3,600.27	3,133.65	3.19	5.58	179.99	-23.56	1,046.23	53.68	52.20	1.48	36.279								
3,700.00	3,085.00	3,683.53	3,168.84	4.67	7.53	179.99	-25.26	1,121.67	92.51	90.29	2.22	41.620								
3,700.00	3,085.00	3,683.53	3,168.84	4.67	7.53	179.99	-25.26	1,121.67	92.51	90.29	2.22	41.620								
3,800.00	3,085.03	3,774.06	3,207.10	6.10	9.65	179.70	-27.11	1,203.70	134.76	131.82	2.94	45.841								
3,900.00	3,085.10	3,863.92	3,245.08	7.36	11.77	-178.51	-28.94	1,285.12	177.36	173.77	3.59	49.361								
4,000.00	3,085.23	3,927.63	3,272.00	8.83	13.28	-177.53	-30.24	1,342.84	222.50	218.27	4.23	52.623								
4,100.00	3,085.41	3,927.63	3,272.00	10.50	13.28	177.90	-30.24	1,342.84	289.14	284.60	4.54	63.690								
4,200.00	3,085.63	3,927.63	3,272.00	12.36	13.28	170.77	-30.24	1,342.84	370.88	364.55	6.33	58.616								
4,300.00	3,085.90	3,927.63	3,272.00	14.36	13.28	161.55	-30.24	1,342.84	459.28	449.52	9.76	47.051								
4,400.00	3,086.22	3,927.63	3,272.00	16.46	13.28	151.27	-30.24	1,342.84	550.64	536.53	14.11	39.012								
4,500.00	3,086.58	3,927.63	3,272.00	18.62	13.28	141.17	-30.24	1,342.84	643.16	624.71	18.45	34.857								
4,600.00	3,086.97	3,927.63	3,272.00	20.80	13.28	132.24	-30.24	1,342.84	735.82	713.73	22.10	33.302								
4,700.00	3,087.41	3,927.63	3,272.00	22.94	13.28	124.87	-30.24	1,342.84	828.00	803.21	24.79	33.398								
4,800.00	3,087.87	3,927.63	3,272.00	25.03	13.28	119.00	-30.24	1,342.84	919.24	892.68	26.56	34.612								
4,900.00	3,088.37	3,927.63	3,272.00	27.04	13.28	114.38	-30.24	1,342.84	1,009.20	981.70	27.50	36.697								
4,912.01	3,088.43	3,927.63	3,272.00	27.28	13.28	113.90	-30.24	1,342.84	1,019.90	992.34	27.56	37.001								
5,000.00	3,088.88	3,927.63	3,272.00	28.99	13.28	113.90	-30.24	1,342.84	1,098.96	1,069.69	29.27	37.540								
5,100.00	3,089.39	3,927.63	3,272.00	30.93	13.28	113.90	-30.24	1,342.84	1,190.34	1,159.13	31.21	38.138								
5,200.00	3,089.90	3,927.63	3,272.00	32.91	13.28	113.90	-30.24	1,342.84	1,283.00	1,249.84	33.16	38.688								
5,300.00	3,090.42	3,927.63	3,272.00	34.90	13.28	113.90	-30.24	1,342.84	1,376.69	1,341.57	35.13	39.191								
5,400.00	3,090.93	3,927.63	3,272.00	36.92	13.28	113.90	-30.24	1,342.84	1,471.22	1,434.11	37.10	39.651								
5,500.00	3,091.44	3,927.63	3,272.00	38.95	13.28	113.90	-30.24	1,342.84	1,566.42	1,527.33	39.09	40.071								
5,609.46	3,092.00	3,927.63	3,272.00	41.19	13.28	113.90	-30.24	1,342.84	1,671.27	1,629.99	41.28	40.491								

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 280-INC_ONLY<10													Offset Well Error:	0.00 usft					
Reference													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	0.00	0.00	84.98	426.19	4,853.34	4,875.57										
100.00	100.00	0.00	0.00	0.10	0.00	84.98	426.19	4,853.34	4,872.78	4,872.68	0.10	N/A							
200.00	200.00	15.65	15.65	0.32	0.11	84.98	426.13	4,853.34	4,872.01	4,871.58	0.43	N/A							
300.00	300.00	114.34	114.34	0.55	0.83	84.98	425.90	4,853.34	4,871.99	4,870.61	1.38	3,538.425							
326.00	326.00	140.00	140.00	0.60	1.02	84.99	425.89	4,853.34	4,871.99	4,870.37	1.62	3,003.788							
400.00	400.00	213.03	213.03	0.77	1.55	84.98	425.97	4,853.34	4,872.00	4,869.68	2.32	2,100.539							
500.00	500.00	315.70	315.70	0.99	2.76	84.98	426.04	4,853.34	4,872.00	4,868.25	3.76	1,296.167							
600.00	600.00	415.27	415.26	1.22	4.79	84.99	425.70	4,853.34	4,871.97	4,865.96	6.01	810.331							
700.00	700.00	514.83	514.82	1.44	6.82	84.99	425.46	4,853.34	4,871.95	4,863.69	8.27	589.411							
800.00	800.00	614.38	614.38	1.67	8.85	84.99	425.32	4,853.34	4,871.94	4,861.42	10.52	463.148							
881.01	881.01	695.03	695.02	1.85	10.49	84.99	425.29	4,853.34	4,871.94	4,859.59	12.34	394.665							
900.00	900.00	713.94	713.93	1.89	10.88	84.99	425.29	4,853.34	4,871.94	4,859.17	12.77	381.440							
1,000.00	1,000.00	813.48	813.47	2.12	12.91	84.99	425.36	4,853.34	4,871.94	4,856.92	15.03	324.241							
1,100.00	1,100.00	913.02	913.01	2.34	14.94	84.99	425.54	4,853.34	4,871.96	4,854.68	17.28	281.962							
1,200.00	1,200.00	1,012.56	1,012.55	2.57	16.96	84.99	425.82	4,853.34	4,871.98	4,852.45	19.53	249.439							
1,300.00	1,300.00	1,110.00	1,109.99	2.79	18.95	84.98	426.19	4,853.34	4,872.02	4,850.28	21.74	224.083							
1,400.00	1,400.00	1,214.02	1,214.00	3.02	21.70	84.98	426.19	4,853.34	4,872.02	4,847.30	24.72	197.109							
1,500.00	1,500.00	1,314.02	1,314.00	3.24	24.34	84.98	426.19	4,853.34	4,872.02	4,844.43	27.59	176.607							
1,600.00	1,600.00	1,414.03	1,414.00	3.47	26.99	84.98	426.19	4,853.34	4,872.02	4,841.56	30.46	159.969							
1,700.00	1,700.00	1,514.03	1,514.00	3.69	29.63	84.98	426.19	4,853.34	4,872.02	4,838.69	33.33	146.195							
1,733.13	1,733.13	1,547.16	1,547.13	3.77	30.51	84.98	426.19	4,853.34	4,872.02	4,837.74	34.28	142.141							
1,800.00	1,799.98	1,614.01	1,613.98	3.91	32.28	-6.32	426.19	4,853.34	4,870.47	4,834.30	36.16	134.681							
1,900.00	1,899.62	1,713.66	1,713.62	4.11	34.91	-6.36	426.19	4,853.34	4,862.37	4,823.56	38.81	125.290							
2,000.00	1,998.46	1,812.50	1,812.46	4.34	37.53	-6.45	426.19	4,853.34	4,847.38	4,806.16	41.22	117.607							
2,100.00	2,096.00	1,908.13	1,908.08	4.61	39.53	-6.59	426.51	4,853.34	4,825.61	4,782.82	42.78	112.792							
2,200.00	2,191.78	2,005.37	2,005.32	4.94	41.22	-6.77	426.78	4,853.34	4,797.12	4,753.32	43.80	109.521							
2,300.00	2,285.32	2,100.37	2,100.31	5.38	42.86	-7.00	426.72	4,853.34	4,762.04	4,717.51	44.53	106.950							
2,400.00	2,376.17	2,192.65	2,192.59	5.95	44.47	-7.28	426.36	4,853.34	4,720.53	4,675.59	44.94	105.030							
2,500.00	2,463.89	2,278.82	2,278.75	6.67	45.61	-7.64	426.07	4,853.34	4,672.85	4,628.13	44.71	104.508							
2,600.00	2,548.04	2,362.88	2,362.81	7.58	46.58	-8.07	425.91	4,853.34	4,619.21	4,575.11	44.10	104.742							
2,700.00	2,628.23	2,442.97	2,442.90	8.67	47.49	-8.61	425.78	4,853.34	4,559.89	4,516.64	43.25	105.433							
2,800.00	2,704.06	2,518.70	2,518.63	9.95	48.36	-9.26	425.67	4,853.34	4,495.18	4,452.99	42.18	106.561							
2,900.00	2,775.16	2,589.71	2,589.64	11.41	49.18	-10.06	425.59	4,853.34	4,425.38	4,384.44	40.95	108.081							
3,000.00	2,841.17	2,655.65	2,655.58	13.06	49.93	-11.06	425.52	4,853.34	4,350.85	4,311.26	39.60	109.879							
3,100.00	2,901.80	2,716.19	2,716.12	14.89	50.62	-12.31	425.47	4,853.34	4,271.96	4,233.71	38.24	111.709							
3,200.00	2,956.72	2,771.05	2,770.98	16.87	51.25	-13.90	425.44	4,853.34	4,189.08	4,152.03	37.05	113.068							
3,300.00	3,005.69	2,819.96	2,819.89	19.00	51.81	-15.98	425.41	4,853.34	4,102.64	4,066.34	36.30	113.013							
3,358.13	3,031.32	2,845.55	2,845.48	20.30	52.11	-17.49	425.40	4,853.34	4,050.92	4,014.67	36.25	111.746							
3,358.13	3,031.32	2,845.55	2,845.48	20.30	52.11	-17.49	425.40	4,853.34	4,050.92	4,014.67	36.25	111.746							
3,400.00	3,047.61	2,861.83	2,861.75	20.96	52.29	-20.72	425.40	4,853.34	4,012.70	3,976.48	36.22	110.802							
3,450.00	3,063.32	2,877.51	2,877.44	21.44	52.47	-26.53	425.39	4,853.34	3,965.67	3,926.74	38.93	101.863							
3,500.00	3,074.83	2,889.01	2,888.93	22.01	52.60	-36.28	425.39	4,853.34	3,917.48	3,870.46	47.03	83.306							
3,550.00	3,082.05	2,896.22	2,896.15	22.66	52.69	-54.02	425.39	4,853.34	3,868.49	3,806.37	62.12	62.276							
3,600.00	3,084.94	2,899.11	2,899.04	23.37	52.72	-84.28	425.39	4,853.34	3,819.07	3,743.24	75.83	50.362							
3,608.13	3,085.00	2,899.17	2,899.09	23.49	52.72	-90.01	425.39	4,853.34	3,811.02	3,734.81	76.21	50.005							
3,700.00	3,085.00	2,899.17	2,899.10	24.97	52.72	-90.01	425.39	4,853.34	3,720.08	3,642.39	77.69	47.882							
3,700.00	3,085.00	2,899.17	2,899.10	24.97	52.72	-90.01	425.39	4,853.34	3,720.08	3,642.39	77.69	47.882							
3,800.00	3,085.03	2,899.19	2,899.12	26.39	52.72	-89.88	425.39	4,853.34	3,621.92	3,542.89	79.03	45.828							
3,900.00	3,085.10	2,899.27	2,899.20	27.65	52.72	-89.84	425.39	4,853.34	3,525.96	3,445.92	80.04	44.052							
4,000.00	3,085.23	2,899.40	2,899.33	29.10	52.72	-89.81	425.39	4,853.34	3,433.14	3,352.07	81.08	42.345							
4,100.00	3,085.41	2,899.59	2,899.52	30.70	52.72	-89.81	425.39	4,853.34	3,344.47	3,262.37	82.10	40.737							
4,200.00	3,085.63	2,899.82	2,899.75	32.38	52.73	-89.81	425.39	4,853.34	3,260.98	3,177.91	83.07	39.254							

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 280-INC_ONLY<10													Offset Well Error:	0.00 usft					
Reference													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	3,085.90	2,900.10	2,900.03	34.13	52.73	-89.82	425.39	4,853.34	3,183.74	3,099.77	83.97	37.917							
4,400.00	3,086.22	2,900.42	2,900.35	35.89	52.73	-89.83	425.39	4,853.34	3,113.82	3,029.08	84.74	36.746							
4,500.00	3,086.58	2,900.79	2,900.72	37.65	52.74	-89.85	425.39	4,853.34	3,052.28	2,966.92	85.36	35.757							
4,600.00	3,086.97	2,901.20	2,901.13	39.36	52.74	-89.88	425.39	4,853.34	3,000.11	2,914.30	85.81	34.962							
4,700.00	3,087.41	2,901.65	2,901.58	41.02	52.75	-89.90	425.39	4,853.34	2,958.22	2,872.16	86.06	34.374							
4,800.00	3,087.87	2,902.13	2,902.06	42.61	52.75	-89.93	425.39	4,853.34	2,927.37	2,841.28	86.09	34.004							
4,900.00	3,088.37	2,902.64	2,902.57	44.10	52.76	-89.96	425.39	4,853.34	2,908.14	2,822.26	85.88	33.861							
4,912.01	3,088.43	2,902.70	2,902.63	44.28	52.76	-89.97	425.39	4,853.34	2,906.64	2,820.80	85.84	33.860							
5,000.00	3,088.88	2,903.17	2,903.09	45.55	52.77	-89.98	425.39	4,853.34	2,897.56	2,809.91	87.65	33.059							
5,100.00	3,089.39	2,903.69	2,903.62	47.04	52.77	-89.99	425.39	4,853.34	2,890.46	2,800.76	89.70	32.224							
5,200.00	3,089.90	2,904.22	2,904.15	48.58	52.78	-90.00	425.39	4,853.34	2,886.81	2,795.03	91.77	31.456							
5,255.50	3,090.19	2,904.51	2,904.44	49.46	52.78	-90.00	425.39	4,853.34	2,886.27	2,793.34	92.93	31.058	CC						
5,300.00	3,090.42	2,904.74	2,904.67	50.18	52.78	-90.01	425.39	4,853.34	2,886.61	2,792.75	93.86	30.753	ES						
5,400.00	3,090.93	2,905.27	2,905.20	51.83	52.79	-90.02	425.38	4,853.34	2,889.89	2,793.91	95.97	30.112							
5,500.00	3,091.44	2,905.79	2,905.72	53.52	52.80	-90.03	425.38	4,853.34	2,896.61	2,798.51	98.09	29.529							
5,609.46	3,092.00	2,906.37	2,906.30	55.43	52.80	-90.04	425.38	4,853.34	2,907.89	2,807.46	100.43	28.954	SF						

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 154-INC_ONLY<10														Offset Well Error:	0.00 usft						
Reference														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	0.00	0.00	102.88	-1,045.34	4,570.87	4,693.27												
100.00	100.00	0.00	0.00	0.10	0.00	102.88	-1,045.34	4,570.87	4,690.01	4,689.92	0.10	N/A									
200.00	200.00	0.00	0.00	0.32	0.00	102.88	-1,045.34	4,570.87	4,688.88	4,688.56	0.32	N/A									
205.55	205.55	0.00	0.00	0.33	0.00	102.88	-1,045.34	4,570.87	4,688.88	4,688.55	0.33	N/A									
300.00	300.00	98.95	98.95	0.55	1.01	102.88	-1,045.57	4,570.87	4,688.93	4,687.38	1.55	3,016.273									
382.34	382.34	177.64	177.64	0.73	2.12	102.88	-1,045.38	4,570.87	4,688.89	4,686.04	2.86	1,642.323									
400.00	400.00	195.76	195.76	0.77	2.55	102.88	-1,045.41	4,570.87	4,688.90	4,685.58	3.32	1,412.691									
500.00	500.00	298.30	298.29	0.99	4.95	102.88	-1,045.41	4,570.87	4,688.90	4,682.95	5.95	788.545									
517.67	517.67	316.42	316.41	1.03	5.38	102.88	-1,045.38	4,570.87	4,688.89	4,682.48	6.41	731.446									
600.00	600.00	392.05	392.03	1.22	7.82	102.89	-1,045.64	4,570.87	4,688.95	4,679.92	9.03	518.978									
700.00	700.00	495.63	495.61	1.44	11.52	102.89	-1,045.96	4,570.87	4,689.02	4,676.05	12.97	361.638									
800.00	800.00	599.18	599.16	1.67	15.23	102.89	-1,045.92	4,570.87	4,689.01	4,672.12	16.90	277.519									
900.00	900.00	702.71	702.69	1.89	18.93	102.88	-1,045.53	4,570.87	4,688.93	4,668.10	20.83	225.156									
1,000.00	1,000.00	799.28	799.25	2.12	22.59	102.88	-1,045.13	4,570.87	4,688.84	4,664.13	24.71	189.754									
1,065.45	1,065.45	862.48	862.44	2.27	25.05	102.88	-1,045.06	4,570.87	4,688.82	4,661.50	27.32	171.628									
1,100.00	1,100.00	895.85	895.81	2.34	26.35	102.88	-1,045.08	4,570.87	4,688.82	4,660.13	28.70	163.388									
1,200.00	1,200.00	990.24	990.17	2.57	30.03	102.88	-1,045.34	4,570.87	4,688.89	4,656.29	32.60	143.828									
1,300.00	1,300.00	1,094.17	1,094.10	2.79	34.41	102.89	-1,045.82	4,570.87	4,688.99	4,651.79	37.20	126.039									
1,400.00	1,400.00	1,198.08	1,197.99	3.02	38.79	102.89	-1,045.92	4,570.87	4,689.01	4,647.21	41.80	112.168									
1,500.00	1,500.00	1,301.94	1,301.85	3.24	43.16	102.89	-1,045.63	4,570.87	4,688.95	4,642.55	46.40	101.049									
1,600.00	1,600.00	1,397.10	1,397.00	3.47	47.58	102.88	-1,045.34	4,570.87	4,688.88	4,637.84	51.04	91.863									
1,700.00	1,700.00	1,497.12	1,497.00	3.69	52.73	102.88	-1,045.34	4,570.87	4,688.88	4,632.46	56.42	83.100									
1,733.13	1,733.13	1,530.26	1,530.13	3.77	54.44	102.88	-1,045.34	4,570.87	4,688.88	4,630.67	58.21	80.554									
1,800.00	1,799.98	1,597.12	1,596.98	3.91	57.89	11.61	-1,045.34	4,570.87	4,687.35	4,625.60	61.75	75.908									
1,900.00	1,899.62	1,696.79	1,696.62	4.11	63.03	11.69	-1,045.34	4,570.87	4,679.37	4,612.62	66.75	70.104									
2,000.00	1,998.46	1,802.48	1,802.29	4.34	67.89	11.85	-1,044.98	4,570.87	4,664.53	4,593.42	71.10	65.603									
2,100.00	2,096.00	1,895.50	1,895.30	4.61	71.52	12.08	-1,044.57	4,570.87	4,642.95	4,569.12	73.82	62.893									
2,200.00	2,191.78	1,986.88	1,986.66	4.94	75.08	12.40	-1,044.56	4,570.87	4,614.86	4,538.81	76.05	60.685									
2,300.00	2,285.32	2,076.16	2,075.93	5.38	78.57	12.82	-1,044.93	4,570.87	4,580.39	4,502.66	77.73	58.924									
2,400.00	2,376.17	2,173.42	2,173.17	5.95	81.83	13.36	-1,045.34	4,570.87	4,539.64	4,460.89	78.76	57.641									
2,500.00	2,463.89	2,261.15	2,260.89	6.67	84.14	14.00	-1,045.34	4,570.87	4,492.72	4,414.22	78.51	57.227									
2,600.00	2,548.04	2,345.31	2,345.04	7.58	86.37	14.79	-1,045.34	4,570.87	4,439.96	4,362.15	77.81	57.062									
2,700.00	2,628.23	2,425.50	2,425.23	8.67	88.48	15.75	-1,045.34	4,570.87	4,381.63	4,304.90	76.72	57.111									
2,800.00	2,704.06	2,501.33	2,501.06	9.95	90.49	16.91	-1,045.34	4,570.87	4,318.01	4,242.67	75.34	57.315									
2,900.00	2,775.16	2,568.67	2,568.39	11.41	92.48	18.32	-1,045.47	4,570.87	4,249.47	4,175.58	73.89	57.513									
3,000.00	2,841.17	2,636.21	2,635.93	13.06	94.69	20.07	-1,045.67	4,570.87	4,176.34	4,103.57	72.77	57.389									
3,100.00	2,901.80	2,698.21	2,697.93	14.89	96.72	22.22	-1,045.76	4,570.87	4,098.95	4,026.91	72.03	56.903									
3,200.00	2,956.72	2,754.38	2,754.09	16.87	98.55	24.91	-1,045.78	4,570.87	4,017.70	3,945.52	72.18	55.662									
3,300.00	3,005.69	2,804.45	2,804.16	19.00	100.19	28.29	-1,045.73	4,570.87	3,933.00	3,859.11	73.90	53.222									
3,358.13	3,031.32	2,830.65	2,830.36	20.30	101.05	30.66	-1,045.69	4,570.87	3,882.36	3,806.42	75.95	51.119									
3,358.13	3,031.32	2,830.65	2,830.36	20.30	101.05	30.66	-1,045.69	4,570.87	3,882.36	3,806.41	75.95	51.118									
3,400.00	3,047.61	2,847.30	2,847.01	20.96	101.59	35.48	-1,045.65	4,570.87	3,844.96	3,765.00	79.95	48.089									
3,450.00	3,063.32	2,863.36	2,863.07	21.44	102.12	43.30	-1,045.61	4,570.87	3,798.96	3,709.96	89.00	42.684									
3,500.00	3,074.83	2,875.12	2,874.83	22.01	102.50	54.26	-1,045.58	4,570.87	3,751.85	3,649.11	102.74	36.520									
3,550.00	3,082.05	2,882.50	2,882.21	22.66	102.75	69.12	-1,045.56	4,570.87	3,703.99	3,586.28	117.71	31.468									
3,600.00	3,084.94	2,885.45	2,885.16	23.37	102.84	87.15	-1,045.55	4,570.87	3,655.75	3,529.62	126.14	28.983									
3,608.13	3,085.00	2,885.51	2,885.22	23.49	102.84	90.20	-1,045.55	4,570.87	3,647.90	3,521.54	126.36	28.869									
3,700.00	3,085.00	2,885.50	2,885.21	24.97	102.84	90.20	-1,045.55	4,570.87	3,559.23	3,431.39	127.84	27.841									
3,700.00	3,085.00	2,885.50	2,885.21	24.97	102.84	90.20	-1,045.55	4,570.87	3,559.23	3,431.39	127.84	27.841									
3,800.00	3,085.03	2,885.51	2,885.22	26.39	102.84	90.13	-1,045.55	4,570.87	3,461.84	3,332.66	129.18	26.798									
3,900.00	3,085.10	2,885.54	2,885.25	27.65	102.85	89.96	-1,045.55	4,570.87	3,362.93	3,232.74	130.19	25.831									
4,000.00	3,085.23	2,885.59	2,885.30	29.10	102.85	88.23	-1,045.55	4,570.87	3,263.15	3,131.96	131.19	24.874									

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 154-INC_ONLY<10													Offset Well Error:	0.00 usft
Sec.08-T32N-R07W - San Juan 32-7 Unit 036A - Original Hole - Original Hole														
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 +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,100.00	3,085.41	2,885.67	2,885.37	30.70	102.85	-89.12	-1,045.55	4,570.87	3,163.21	3,031.00	132.21	23.925		
4,200.00	3,085.63	2,885.76	2,885.47	32.38	102.85	-89.45	-1,045.55	4,570.87	3,063.90	2,930.71	133.20	23.003		
4,300.00	3,085.90	2,885.89	2,885.59	34.13	102.86	-89.56	-1,045.55	4,570.87	2,966.07	2,831.98	134.09	22.120		
4,400.00	3,086.22	2,886.03	2,885.74	35.89	102.86	-89.62	-1,045.54	4,570.87	2,870.66	2,735.80	134.86	21.286		
4,500.00	3,086.58	2,886.19	2,885.90	37.65	102.87	-89.66	-1,045.54	4,570.87	2,778.67	2,643.18	135.49	20.508		
4,600.00	3,086.97	2,886.37	2,886.08	39.36	102.87	-89.70	-1,045.54	4,570.87	2,691.20	2,555.26	135.94	19.797		
4,700.00	3,087.41	2,886.56	2,886.27	41.02	102.88	-89.74	-1,045.54	4,570.87	2,609.39	2,473.20	136.19	19.160		
4,800.00	3,087.87	2,886.77	2,886.48	42.61	102.89	-89.77	-1,045.54	4,570.87	2,534.45	2,398.23	136.22	18.605		
4,900.00	3,088.37	2,887.00	2,886.71	44.10	102.89	-89.81	-1,045.54	4,570.87	2,467.59	2,331.57	136.02	18.142		
4,912.01	3,088.43	2,887.03	2,886.73	44.28	102.89	-89.81	-1,045.54	4,570.87	2,460.16	2,324.19	135.98	18.092		
5,000.00	3,088.88	2,887.23	2,886.94	45.55	102.90	-89.82	-1,045.54	4,570.87	2,407.24	2,269.46	137.78	17.471		
5,100.00	3,089.39	2,887.46	2,887.17	47.04	102.91	-89.82	-1,045.54	4,570.87	2,349.65	2,209.82	139.84	16.803		
5,200.00	3,089.90	2,887.69	2,887.40	48.58	102.92	-89.83	-1,045.54	4,570.87	2,294.97	2,153.06	141.91	16.172		
5,300.00	3,090.42	2,887.92	2,887.63	50.18	102.92	-89.84	-1,045.54	4,570.87	2,243.43	2,099.42	144.00	15.579		
5,400.00	3,090.93	2,888.14	2,887.85	51.83	102.93	-89.84	-1,045.54	4,570.87	2,195.22	2,049.11	146.11	15.024		
5,500.00	3,091.44	2,888.37	2,888.08	53.52	102.94	-89.85	-1,045.54	4,570.87	2,150.80	2,002.36	148.24	14.508		
5,609.46	3,092.00	2,888.62	2,888.33	55.43	102.95	-89.86	-1,045.54	4,570.87	2,106.11	1,955.53	150.58	13.987	CC, ES, SF	



Koltek Energy Services
Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:
Sec.08-T32N-R07W - San Juan 32-7 Unit 036F - Original Hole - Original Hole														0.00 usft
Survey Program: 229-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	0.00	0.00	82.00	547.57	3,898.11	3,941.98					
100.00	100.00	0.00	0.00	0.10	0.00	82.00	547.57	3,898.11	3,937.92	3,937.82	0.10	N/A		
200.00	200.00	0.00	0.00	0.32	0.00	82.00	547.57	3,898.11	3,936.39	3,936.07	0.32	N/A		
300.00	300.00	90.99	90.99	0.55	1.21	82.01	547.09	3,898.11	3,936.32	3,934.56	1.75	2,247.898		
324.50	324.50	114.51	114.51	0.60	1.52	82.01	547.07	3,898.11	3,936.31	3,934.19	2.12	1,858.569		
400.00	400.00	186.97	186.97	0.77	2.48	82.01	547.27	3,898.11	3,936.34	3,933.09	3.25	1,211.953		
500.00	500.00	290.00	290.00	0.99	4.65	82.00	547.57	3,898.11	3,936.38	3,930.74	5.65	697.111		
600.00	600.00	390.01	390.00	1.22	7.30	82.00	547.57	3,898.11	3,936.38	3,927.86	8.52	461.892		
700.00	700.00	490.01	490.00	1.44	9.95	82.00	547.57	3,898.11	3,936.38	3,924.98	11.40	345.360		
800.00	800.00	590.02	590.00	1.67	12.60	82.00	547.57	3,898.11	3,936.38	3,922.11	14.27	275.783		
900.00	900.00	690.02	690.00	1.89	15.26	82.00	547.57	3,898.11	3,936.38	3,919.23	17.15	229.539		
1,000.00	1,000.00	790.03	790.00	2.12	17.91	82.00	547.57	3,898.11	3,936.38	3,916.36	20.02	196.577		
1,100.00	1,100.00	890.03	890.00	2.34	20.56	82.00	547.57	3,898.11	3,936.38	3,913.48	22.90	171.892		
1,200.00	1,200.00	990.04	990.00	2.57	23.21	82.00	547.57	3,898.11	3,936.38	3,910.61	25.78	152.716		
1,300.00	1,300.00	1,090.04	1,090.00	2.79	25.86	82.00	547.57	3,898.11	3,936.38	3,907.73	28.65	137.389		
1,400.00	1,400.00	1,190.05	1,190.00	3.02	28.51	82.00	547.57	3,898.11	3,936.38	3,904.85	31.53	124.857		
1,500.00	1,500.00	1,290.05	1,290.00	3.24	31.16	82.00	547.57	3,898.11	3,936.38	3,901.98	34.40	114.421		
1,600.00	1,600.00	1,390.06	1,390.00	3.47	33.81	82.00	547.57	3,898.11	3,936.38	3,899.10	37.28	105.595		
1,700.00	1,700.00	1,490.06	1,490.00	3.69	36.46	82.00	547.57	3,898.11	3,936.38	3,896.23	40.15	98.033		
1,733.13	1,733.13	1,523.20	1,523.13	3.77	37.34	82.00	547.57	3,898.11	3,936.38	3,895.28	41.11	95.761		
1,800.00	1,799.98	1,590.04	1,589.98	3.91	39.11	-9.30	547.57	3,898.11	3,934.84	3,891.85	42.99	91.530		
1,900.00	1,899.62	1,689.70	1,689.62	4.11	41.75	-9.37	547.57	3,898.11	3,926.80	3,881.19	45.61	86.103		
2,000.00	1,998.46	1,788.54	1,788.46	4.34	44.37	-9.51	547.57	3,898.11	3,911.92	3,863.96	47.96	81.572		
2,100.00	2,096.00	1,886.09	1,886.00	4.61	46.96	-9.71	547.57	3,898.11	3,890.28	3,840.28	50.00	77.808		
2,200.00	2,191.78	1,981.87	1,981.78	4.94	49.50	-9.98	547.57	3,898.11	3,861.98	3,810.28	51.70	74.703		
2,300.00	2,285.32	2,075.41	2,075.32	5.38	51.98	-10.34	547.57	3,898.11	3,827.16	3,774.14	53.02	72.177		
2,400.00	2,376.17	2,166.27	2,166.17	5.95	54.39	-10.78	547.57	3,898.11	3,786.01	3,732.05	53.96	70.164		
2,500.00	2,463.89	2,253.99	2,253.89	6.67	56.71	-11.33	547.57	3,898.11	3,738.72	3,684.23	54.49	68.609		
2,600.00	2,548.04	2,338.15	2,338.04	7.58	58.94	-12.01	547.57	3,898.11	3,685.54	3,630.91	54.63	67.459		
2,700.00	2,628.23	2,418.34	2,418.23	8.67	61.07	-12.84	547.57	3,898.11	3,626.74	3,572.33	54.41	66.660		
2,800.00	2,704.06	2,494.17	2,494.06	9.95	63.08	-13.84	547.57	3,898.11	3,562.60	3,508.73	53.87	66.133		
2,900.00	2,775.16	2,565.27	2,565.16	11.41	64.96	-15.08	547.57	3,898.11	3,493.45	3,440.34	53.11	65.777		
3,000.00	2,841.17	2,631.30	2,631.17	13.06	66.71	-16.61	547.57	3,898.11	3,419.65	3,367.37	52.27	65.418		
3,100.00	2,901.80	2,691.92	2,691.80	14.89	68.32	-18.51	547.57	3,898.11	3,341.56	3,289.97	51.59	64.769		
3,200.00	2,956.72	2,746.85	2,746.72	16.87	69.78	-20.91	547.57	3,898.11	3,259.58	3,208.16	51.42	63.388		
3,300.00	3,005.69	2,795.82	2,795.69	19.00	71.07	-23.99	547.57	3,898.11	3,174.13	3,121.83	52.30	60.692		
3,358.13	3,031.32	2,821.45	2,821.32	20.30	71.75	-26.18	547.57	3,898.11	3,123.04	3,069.46	53.57	58.297		
3,358.13	3,031.32	2,821.45	2,821.32	20.30	71.75	-26.18	547.57	3,898.11	3,123.03	3,069.46	53.57	58.297		
3,400.00	3,047.61	2,837.74	2,837.61	20.96	72.18	-30.63	547.57	3,898.11	3,085.29	3,029.32	55.97	55.123		
3,450.00	3,063.32	2,853.45	2,853.32	21.44	72.60	-38.11	547.57	3,898.11	3,038.87	2,976.41	62.46	48.654		
3,500.00	3,074.83	2,864.96	2,864.83	22.01	72.91	-49.19	547.57	3,898.11	2,991.32	2,917.56	73.76	40.556		
3,550.00	3,082.05	2,872.19	2,872.05	22.66	73.10	-65.38	547.57	3,898.11	2,943.01	2,855.28	87.73	33.547		
3,600.00	3,084.94	2,875.08	2,874.94	23.37	73.17	-86.39	547.57	3,898.11	2,894.30	2,797.89	96.41	30.020		
3,608.13	3,085.00	2,875.14	2,875.00	23.49	73.18	-90.00	547.57	3,898.11	2,886.37	2,789.70	96.67	29.858		
3,700.00	3,085.00	2,875.14	2,875.00	24.97	73.18	-90.00	547.57	3,898.11	2,796.82	2,698.67	98.15	28.496		
3,700.00	3,085.00	2,875.14	2,875.00	24.97	73.18	-90.00	547.57	3,898.11	2,796.82	2,698.67	98.15	28.496		
3,800.00	3,085.03	2,875.16	2,875.03	26.39	73.18	-89.91	547.57	3,898.11	2,700.88	2,601.19	99.49	27.145		
3,900.00	3,085.10	2,875.24	2,875.10	27.65	73.18	-89.87	547.57	3,898.11	2,607.73	2,507.23	100.50	25.948		
4,000.00	3,085.23	2,875.36	2,875.23	29.10	73.18	-89.85	547.57	3,898.11	2,519.05	2,417.52	101.53	24.810		
4,100.00	3,085.41	2,875.54	2,875.41	30.70	73.19	-89.85	547.57	3,898.11	2,435.84	2,333.28	102.56	23.750		
4,200.00	3,085.63	2,875.77	2,875.63	32.38	73.19	-89.85	547.57	3,898.11	2,359.33	2,255.79	103.54	22.787		
4,300.00	3,085.90	2,876.04	2,875.90	34.13	73.20	-89.86	547.57	3,898.11	2,290.81	2,186.37	104.43	21.935		

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 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	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: 229-INC_ONLY<10													Offset Well Error:	0.00 usft	
Sec.08-T32N-R07W - San Juan 32-7 Unit 036F - Original Hole - Original Hole															
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
4,400.00	3,086.22	2,876.35	2,876.22	35.89	73.21	-89.88	547.57	3,898.11	2,231.55	2,126.34	105.21	21.210			
4,500.00	3,086.58	2,876.71	2,876.58	37.65	73.22	-89.90	547.57	3,898.11	2,182.78	2,076.94	105.84	20.623			
4,600.00	3,086.97	2,877.11	2,876.97	39.36	73.23	-89.92	547.57	3,898.11	2,145.59	2,039.29	106.30	20.185			
4,700.00	3,087.41	2,877.54	2,877.41	41.02	73.24	-89.95	547.57	3,898.11	2,120.89	2,014.33	106.55	19.905			
4,800.00	3,087.87	2,878.01	2,877.87	42.61	73.25	-89.99	547.57	3,898.11	2,109.29	2,002.71	106.59	19.789			
4,836.45	3,088.05	2,878.18	2,878.05	43.14	73.26	-90.00	547.57	3,898.11	2,108.40	2,001.86	106.53	19.791	CC, ES		
4,900.00	3,088.37	2,878.50	2,878.37	44.10	73.27	-90.03	547.57	3,898.11	2,111.11	2,004.73	106.39	19.843			
4,912.01	3,088.43	2,878.56	2,878.43	44.28	73.27	-90.03	547.57	3,898.11	2,112.24	2,005.89	106.35	19.861			
5,000.00	3,088.88	2,879.01	2,878.88	45.55	73.28	-90.04	547.57	3,898.11	2,122.97	2,014.81	108.16	19.628			
5,100.00	3,089.39	2,879.53	2,879.39	47.04	73.29	-90.06	547.57	3,898.11	2,139.51	2,029.29	110.22	19.412			
5,200.00	3,089.90	2,880.04	2,879.90	48.58	73.31	-90.07	547.57	3,898.11	2,160.55	2,048.25	112.30	19.239			
5,300.00	3,090.42	2,880.55	2,880.42	50.18	73.32	-90.08	547.57	3,898.11	2,185.97	2,071.57	114.40	19.108			
5,400.00	3,090.93	2,881.06	2,880.93	51.83	73.33	-90.10	547.57	3,898.11	2,215.61	2,099.10	116.51	19.016			
5,500.00	3,091.44	2,881.57	2,881.44	53.52	73.35	-90.11	547.57	3,898.11	2,249.31	2,130.67	118.64	18.958			
5,609.46	3,092.00	2,882.13	2,882.00	55.43	73.36	-90.13	547.57	3,898.11	2,290.64	2,169.65	120.99	18.932	SF		

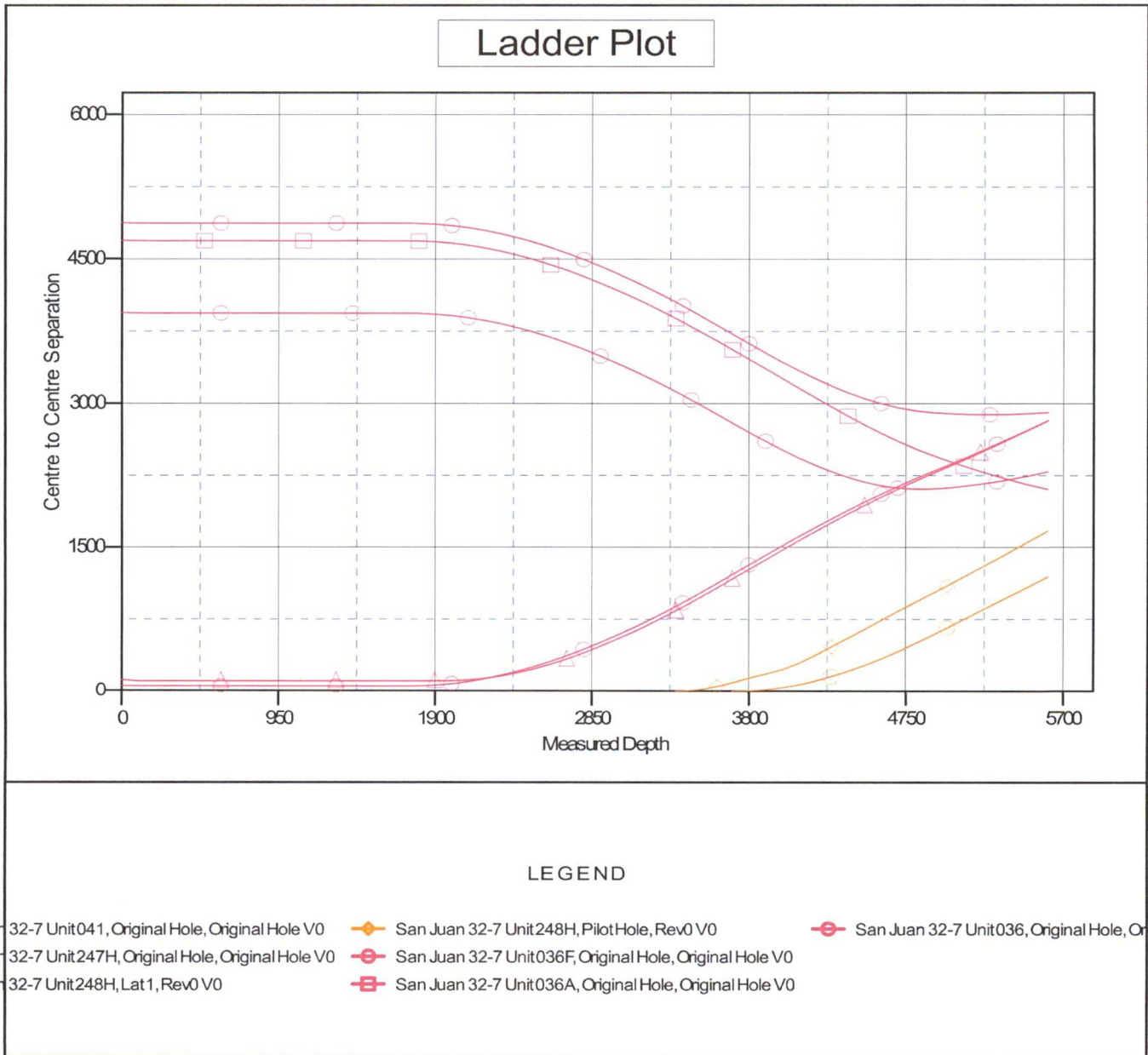
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 6433.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 248H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°



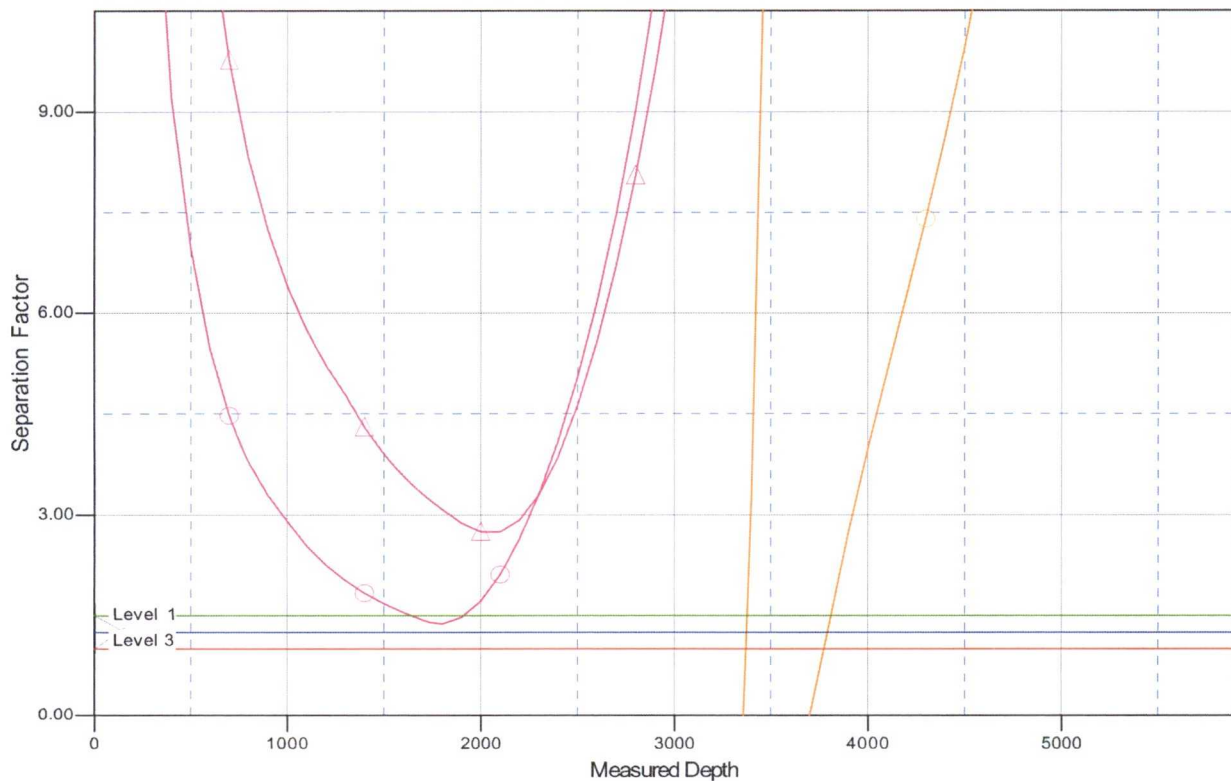


Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well San Juan 32-7 Unit 248H
Project:	San Juan Co., NM (NAD27)	TVD Reference:	KB @ 6433.00usft
Reference Site:	Sec.07-T32N-R07W	MD Reference:	KB @ 6433.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	San Juan 32-7 Unit 248H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lat 1 ST01	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 6433.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.833334°W

Coordinates are relative to: San Juan 32-7 Unit 248H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.14°

Separation Factor Plot

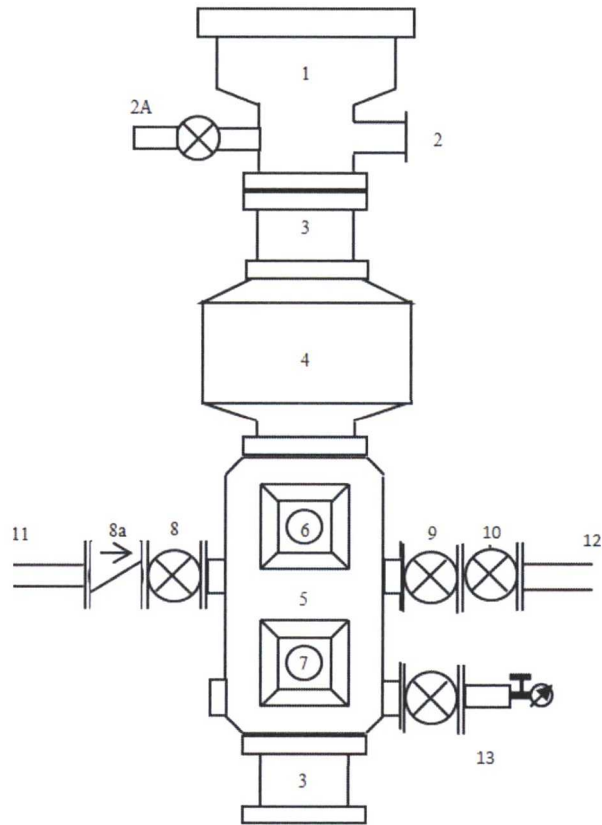


LEGEND

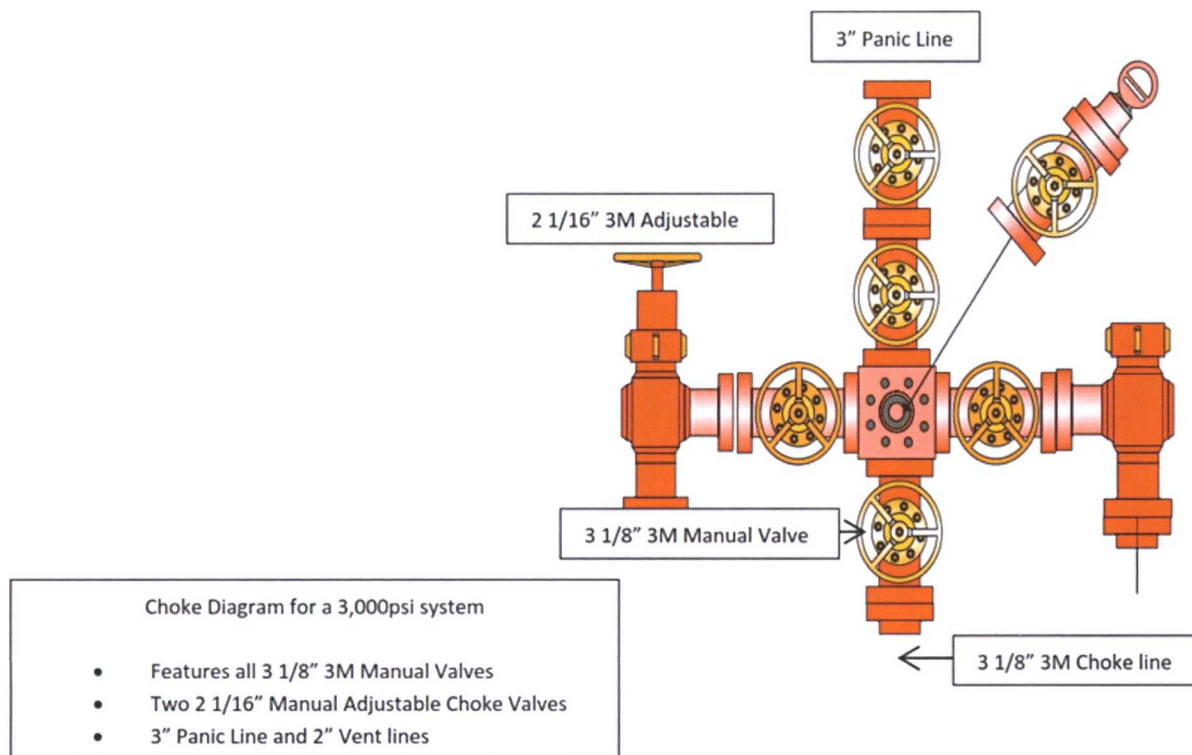
- ar 32-7 Unit041, Original Hole, Original Hole V0
- ar 32-7 Unit247H, Original Hole, Original Hole V0
- ar 32-7 Unit248H, Lat1, Rev0 V0
- San Juan 32-7 Unit248H, Pilot Hole, Rev0 V0
- San Juan 32-7 Unit036F, Original Hole, Original Hole V0
- San Juan 32-7 Unit036A, Original Hole, Original Hole V0
- San Juan 32-7 Unit036, Original Hole, Original Hole V0

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

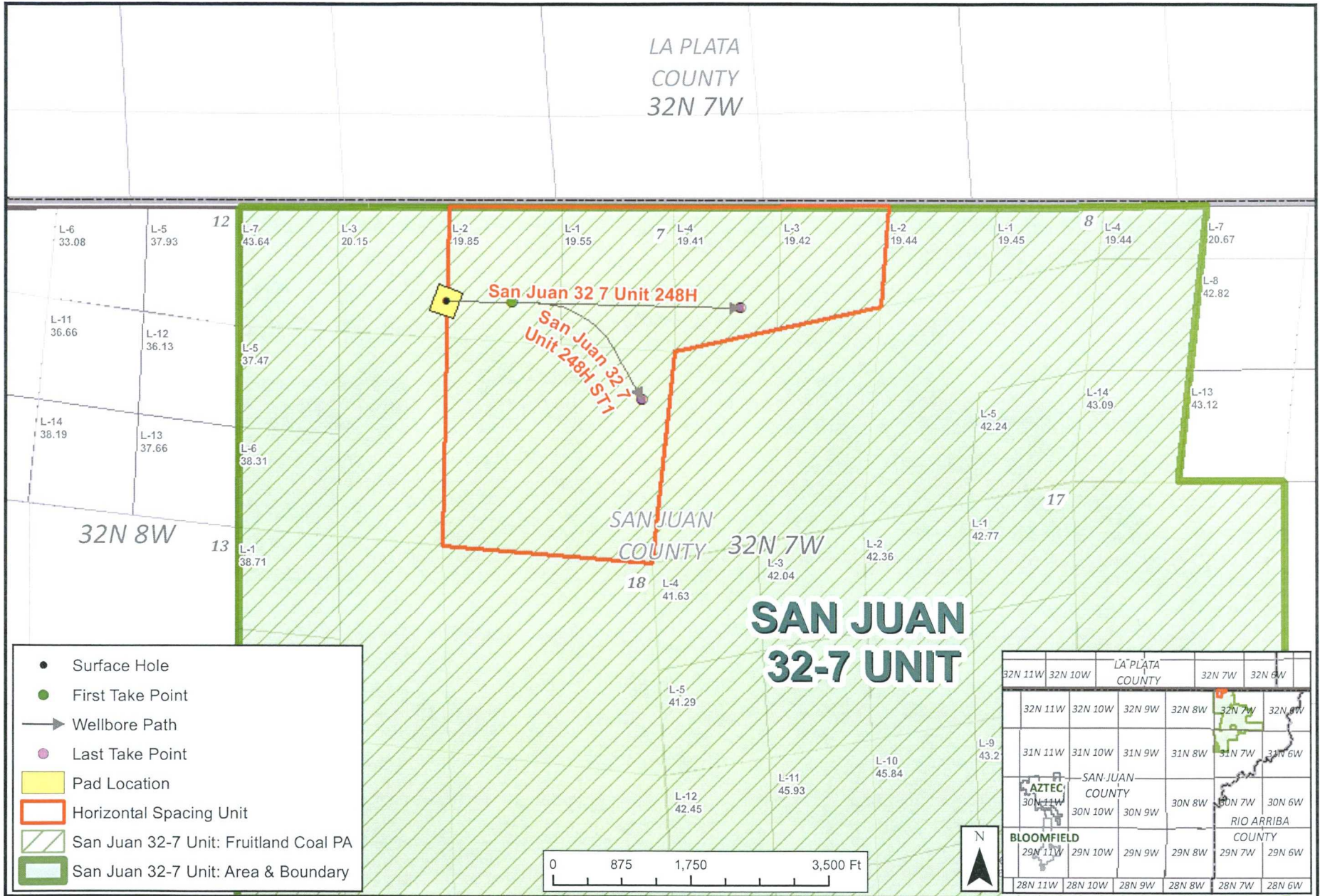


Choke Manifold Schematic – Aztec 777

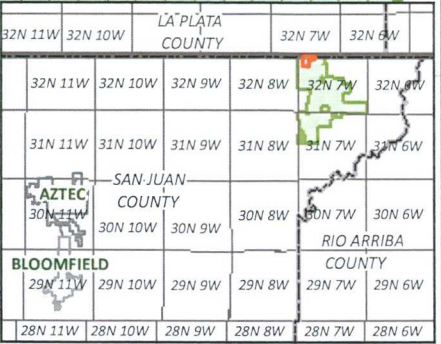
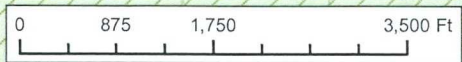


Fruitland Coal HSU Reference Map

San Juan 32-7 Unit 248H



- Surface Hole
- First Take Point
- Wellbore Path
- Last Take Point
- Pad Location
- ▭ Horizontal Spacing Unit
- ▨ San Juan 32-7 Unit: Fruitland Coal PA
- ▭ San Juan 32-7 Unit: Area & Boundary



Scale 1:20,000



Directions from the Intersection of US Hwy 550 & State Hwy 173

in Aztec, NM to Hilcorp Energy Company San Juan 32-7 Unit #248H

1193' FNL & 2650' FWL, Section 7, T32N, R7W, N.M.P.M., San Juan County, NM

Latitude: 36.996686°N Longitude: 107.609014°W Datum: NAD1983

From the intersection of US Hwy 550 & State Hwy 173 in Aztec, NM, travel Easterly on State Hwy 173 for 1.0 mile to fork in roadway;

Go Left (Easterly) remaining on State Hwy 173 for 17.0 miles to T-intersection;

Go Left (North-easterly) exiting State Hwy 173 onto State Hwy 511 for 23.5 miles to 4-Way intersection @ Mile marker 31.7;

Go Left (North-westerly) exiting State Hwy #511 onto existing roadway for 0.3 miles to fork in roadway;

Go Right (Northerly) on existing roadway for 330' to existing Hilcorp San Juan 32-7 Unit #247H location, with the Hilcorp San Juan 32-7 Unit #248H wellflag staked offset #247H wellhead.

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: 10/22/18

Well information:

Operator Hilcorp, Well Name and Number San Juan 32-7 Unit #248H

API# 30-045-35900, Section 7, Township 32N/S, Range 7 E/W

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.