

Well Name: SAN JUAN 27-5 UNIT NP	Well Location: T27N / R5W / SEC 5 / SWSW / 36.59804 / -107.38657	County or Parish/State: RIO ARRIBA / NM
Well Number: 330	Type of Well: OTHER	Allottee or Tribe Name:
Lease Number: NMSF079393	Unit or CA Name:	Unit or CA Number:
US Well Number: 3003925522	Operator: HILCORP ENERGY COMPANY	

Notice of Intent

Sundry ID: 2822548

Type of Submission: Notice of Intent

Type of Action: Recompletion

Date Sundry Submitted: 11/14/2024

Time Sundry Submitted: 09:52

Date proposed operation will begin: 11/15/2024

Procedure Description: Correction: Hilcorp Energy Company requests permission to sidetrack the subject well into the Mesaverde formation and plugback the existing Fruitland Coal. Please see attached procedure, current/proposed wellbore diagram, plat, natural gas management plan, directional and anti-collision plans. A closed loop system will be used. A pre-reclamation site visit is not required, as the surface is on Fee surface.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

SJ_27_5_Unit_NP_330_Sidetrack_NOI_Final_Revised_20241114095215.pdf

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US Well Number: 3003925522	Operator: HILCORP ENERGY COMPANY	

Operator

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: CHERYLENE WESTON

Signed on: NOV 14, 2024 09:48 AM

Name: HILCORP ENERGY COMPANY

Title: Operations/Regulatory Tech - Sr

Street Address: 1111 TRAVIS STREET

City: HOUSTON

State: TX

Phone: (713) 289-2615

Email address: CWESTON@HILCORP.COM

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:

BLM Point of Contact

BLM POC Name: KENNETH G RENNICK

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5055647742

BLM POC Email Address: krennick@blm.gov

Disposition: Approved

Disposition Date: 11/14/2024

Signature: Kenneth Rennick



Rio Arriba County, New Mexico

San Juan 27-4 Unit NP #330

Hilcorp Energy Company

Technical Drilling Plan (Rev. 0)

Hilcorp Energy Company proposes to deepen and complete the referenced well targeting the Mesa Verde formation.

Note: This technical drilling plan will be adjusted based upon actual conditions.

1. Location

Date:	April 18, 2024	Pool:	MVDK
Well Name:	San Juan 27-4 Unit NP #330	Ground Elevation (ft. MSL):	6,678'
API	30-039-25522		
Surface Hole Location:	36.59811° N, -107.38659° W	Total Measured Depth (ft.)	8,160'
Bottom Hole Location:	36.59962° N, -107.38917° W	County, State:	Rio Arriba, NM

Note: All depths in the directional drilling plan are referenced from an estimated RKB datum of 15' above ground level.

2. Geological Markers

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

Formation	Depth (ft. TVD)	Remarks
Ojo Alamo	2,821'	Water (fresh/useable)
Kirtland	2,958'	None
Fruitland	3,250'	Gas, Water
Pictured Cliffs	3,465'	Gas
Chacra	4,418'	None
Upper Cliff House	5,132'	Gas
Menefee	5,288'	None
Pt. Lookout	5,667'	Gas
Mancos	6,309'	Gas
Gallup	6,806'	Gas
Greenhorn	7,557'	Gas
Graneros	7,609'	Gas
Paguate	7,741'	Gas
Upper Cubero	7,766'	Gas
Lower Cubero	7,804'	Gas
Encinal	7,891'	Water
Burro Canyon	7,922'	None

3. Pressure Control Equipment

See attached BOP equipment and choke manifold schematics for a diagram of pressure control equipment.

- BOP equipment will be nipped up on top of the wellhead after surface casing is set and cemented.
- Pressure control configurations will be designed to meet the minimum 2M standards.
- All equipment will have a minimum of 3M pressure rating and will be rated for 8,000' (TVD).
- A rotating head will be installed on top of the annular as seen in the attached diagram.



Rio Arriba County, New Mexico

San Juan 27-4 Unit NP #330

Hilcorp Energy Company

- BOP Testing: The BOPE will be tested to **250 psi (Low) for 5 minutes and 3,000 psi (High) for 10 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. BOP equipment will be tested upon installation, every 30 days, and after any repairs are made to the BOP equipment. Annular preventors will be functionally tested at least once per week. Pipe and blind rams will be function tested each trip. **The New Mexico Oil & Gas Conservation Division and the BLM will be notified 24 hours in advance of testing BOPE.** All tests and inspections will be recorded and logged with time and results.

4. Casing & Cement Program

1. Proposed/Current Casing Program:

Proposed Casing Design						
Casing String	Hole Size	Casing Size	Weight/Grade	Top Depth (MD/TVD)	Shoe Depth (MD/TVD)	
Surface (existing)	12-1/4"	9-5/8"	36# K55 STC	0'	244' / 244'	
Intermediate (existing)	8-3/4"	7"	20# K55 LTC	0'	3,372' / 3,372'	
Production Casing	6-1/4"	4-1/2"	11.6# J55 (or equiv.) LTC	0'	8,160' / 8,000'	
Proposed Casing Design Safety Factors						
Casing String	Casing Description		Burst Design SF	Collapse Design SF	Joint Tensile Design SF	Connection Tensile Design SF
Surface (existing)	9-5/8" 36# K55 STC		30.8	22.5	64.2	48.2
Intermediate (existing)	7" 23# J55 LTC		1.9	1.4	4.7	3.5
Production	4-1/2" 11.6# J55 LTC		1.2	1.3	1.9	1.7

Notes:

- The 6-1/4" hole will be drilled to the top of the Burro canyon formation and TD will be called onsite by mud loggers.
- If the 6-1/4" hole is not drilled to the total planned measured depth, the production casing setting depth and length will be adjusted accordingly.
- Production casing will be run from surface to TD.
- The existing open hole section from 3,465' to 7" casing shoe will be squeezed off with LCM by a workover rig prior to the drilling rig being moved on.
- Casing Design Parameters – Designed for full evacuation. Mud Weights used for calculations: Surface = 9.0 ppg, Intermediate = 11.5 ppg, Production = 11.0 ppg. Burst: 1.15; Collapse: 1.125; Tensile: 1.6.
 - Burst: (Casing Burst Rating) / (Maximum Burst Load (Max MW x TVD x .052))
 - Collapse: (Full hydrostatic of MW in annulus) – (Hydrostatic of vacated casing, 0.1 psi/ft)
 - Tensile: (Tensile rating) / (measured depth x casing weight)



Rio Arriba County, New Mexico

San Juan 27-4 Unit NP #330

Hilcorp Energy Company

2. Proposed Centralizer Program:

Proposed Centralizer Program	
Interval	Centralizers & Placement
Production	1 centralizer 10' above the shoe with a lock collar. 1 centralizer every other joint on bottom 10 joints. 1 centralizer every 4 joints to inside 7" casing. (~25)

3. Proposed Cement Program:

Proposed Cement Design							
Interval	Depth (ft. MD)	Lead/Tail	Volume (ft ³)	Sacks	Slurry	Density	Planned TOC
Surface	244'				Existing		
Intermediate (Squeeze Open Hole)	3272' – 3465'	Tail	168 ft ³	122	Type III Cement 1% CaCl, 0.50 pps celloflake, 0.2% FL-52 1.38ft ³ /sk – 6.64 gal/sk	14.6 ppg	3,272'
Production	8,160'	Tail	802 ft ³	557	50/50 POZ: Class G cement + 0.25 lb/sx D029 Cellophane Flakes + 3% D020 Bentonite + 1.0 lb/sx D024 Gilsonite Extender + 0.25% D167 Fluid Loss + 0.25% D065 Dispersant + 0.1% D800 Retarder + 0.1% D046 Antifoamer + 3.5 lb/sx Phenoseal 1.44ft ³ /sk – 6.47 gal/sk	13.0 ppg	3,272'

Notes:

- A 2-stage cement job may be required depending on losses. Placement will be determined based from well conditions and zones where losses were incurred.



Rio Arriba County, New Mexico

San Juan 27-4 Unit NP #330

Hilcorp Energy Company

5. Drilling Fluids Program

1. Proposed Drilling Fluids Program:

Proposed Drilling Fluids Program					
Interval	Fluid Type	Density	Fluid Loss	Max Chlorides	Depth
		(ppg)	(mL/30 min)	(mg/L)	(ft. MD)
Production	LSND / Gel System	8.4 – 9.2	6-16	1,000	3,372' – 8,160'

Notes:

- The well will be drilled utilizing a closed-loop circulating system. Drill cuttings will be transported to an approved disposal site.
- Estimated total volume of drill cuttings for disposal: 188 bbls (1,053 ft³).

6. Estimated Pressures & Drilling Hazards

A. Estimated Pressures

- The Mesa Verde and/or Dakota formations will be completed and commingled if both formations are completed.
- No abnormal temperatures or hazards are anticipated.
- Anticipated pore pressures are as follows:
 - Fruitland Coal 1,253 psi
 - Pictured Cliffs 1,610 psi
 - Mesa Verde 2,371 psi
 - Dakota 1,715 psi

B. Water Flows

- No water flows are expected.

C. Lost Circulation

- Lost circulation is possible in the Fruitland Coal & Mesa Verde. Losses will be mitigated by adding LCM to the mud system.

D. Hydrogen Sulfide

- No hydrogen sulfide is expected to be encountered based on nearby well production.

7. Testing, Logging, Coring

A. Mud Logging

- Mud loggers will collect formation samples every 60' from the intermediate casing shoe to TD of the production hole.



Rio Arriba County, New Mexico

San Juan 27-4 Unit NP #330

Hilcorp Energy Company

B. MWD

- Measurement while drilling tools will be utilized from the intermediate casing shoe to TD of the production hole to measure and record inclination.

C. LWD

- There are no planned LWD tools planned.

D. Open Hole Logging

- There are no planned open hole logs post drilling.

E. Coring

- There is no coring or formation testing planned.

8. Directional Drilling Plan

- Directional are plans attached.

9. Pre-Drill Preparation Procedure

1. RU slickline, clear tubing to verify that it free of equipment that could become mobile while pulling. Set a 3-slip stop, if necessary
2. MIRU workover rig and associated equipment; NU and test BOP per HEC, State, and Federal guidelines.
3. TOOH with 2-3/8" tubing
4. TIH with 2-3/8" tubing and spot an LCM plug from TD to 3457'. Load hole with water-based drilling mud and squeeze LCM pill into formation.
5. P/U a 6-1/4" drill bit & clean to original TD @ 3617' using drilling fluid. Circulate hole clean and monitor for losses. If losses are seen, multiple LCM pills or cement plugs may be required to squeeze off zone. If no losses, continue to next step.
6. L/D tubing from well, Nipple down tubing head, Nipple up night cap, RDMO workover rig.

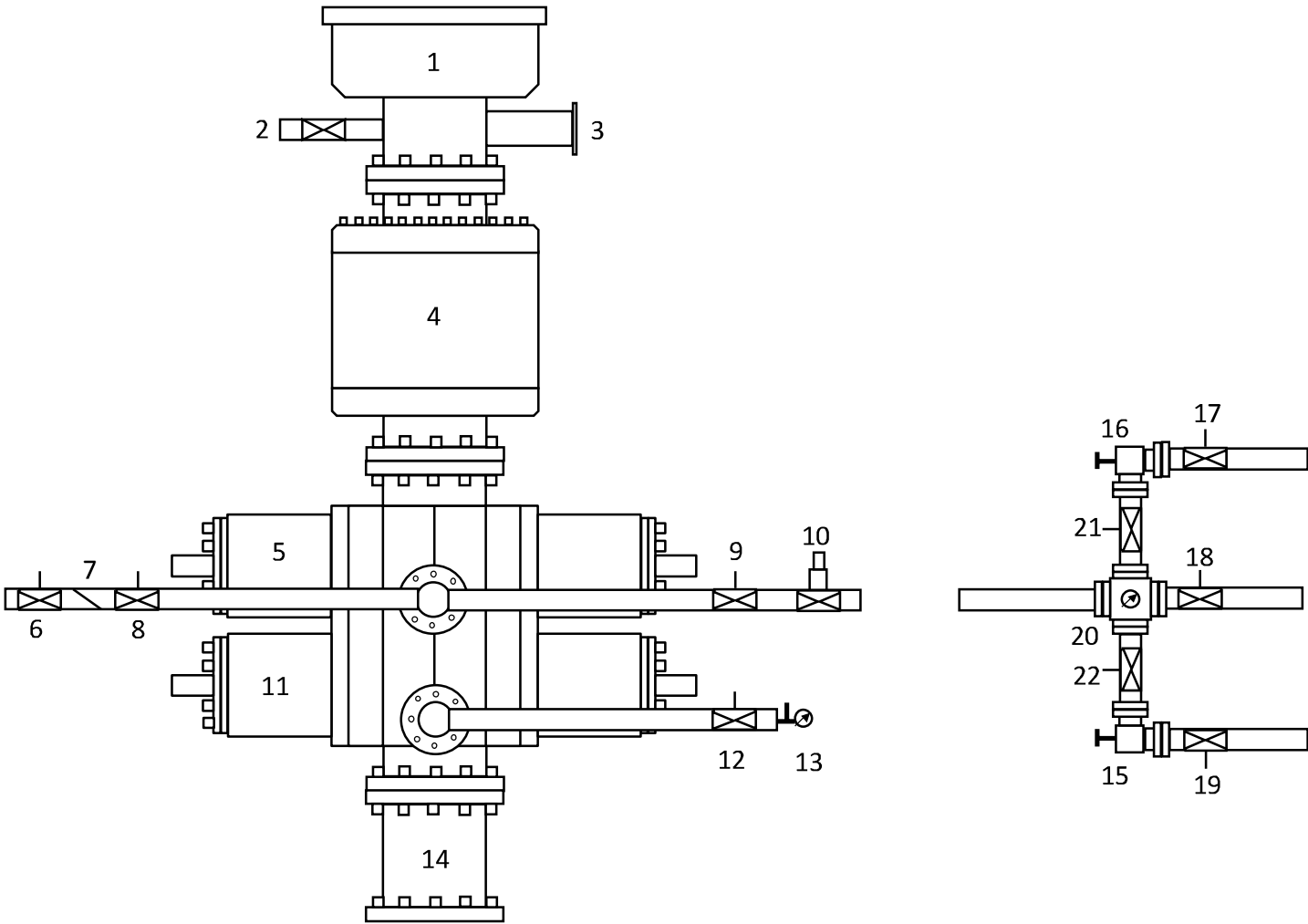
Rio Arriba County, New Mexico

San Juan 27-4 Unit NP #330



Appendix A

Pressure Control Equipment Configuration



1	Rotating Head	12	Manual Isolation Valve
2	Flow Line	13	Needle Valve & Pressure Gauge
3	Fill-Up Line	14	Spacer Spool (if needed)
4	3M Annular Preventer	15	Manual Choke
5	3M Pipe Rams	16	Manual Choke
6	Manual Isolation Valve	17	Manual Isolation Valve
7	Check Valve	18	Manual Isolation Valve
8	Manual Isolation Valve	19	Manual Isolation Valve
9	Manual Isolation Valve	20	Valve Block & Pressure Gauge
10	High Closing Ratio Valve	21	Manual Isolation Valve
11	3M Blind Rams	22	Manual Isolation Valve

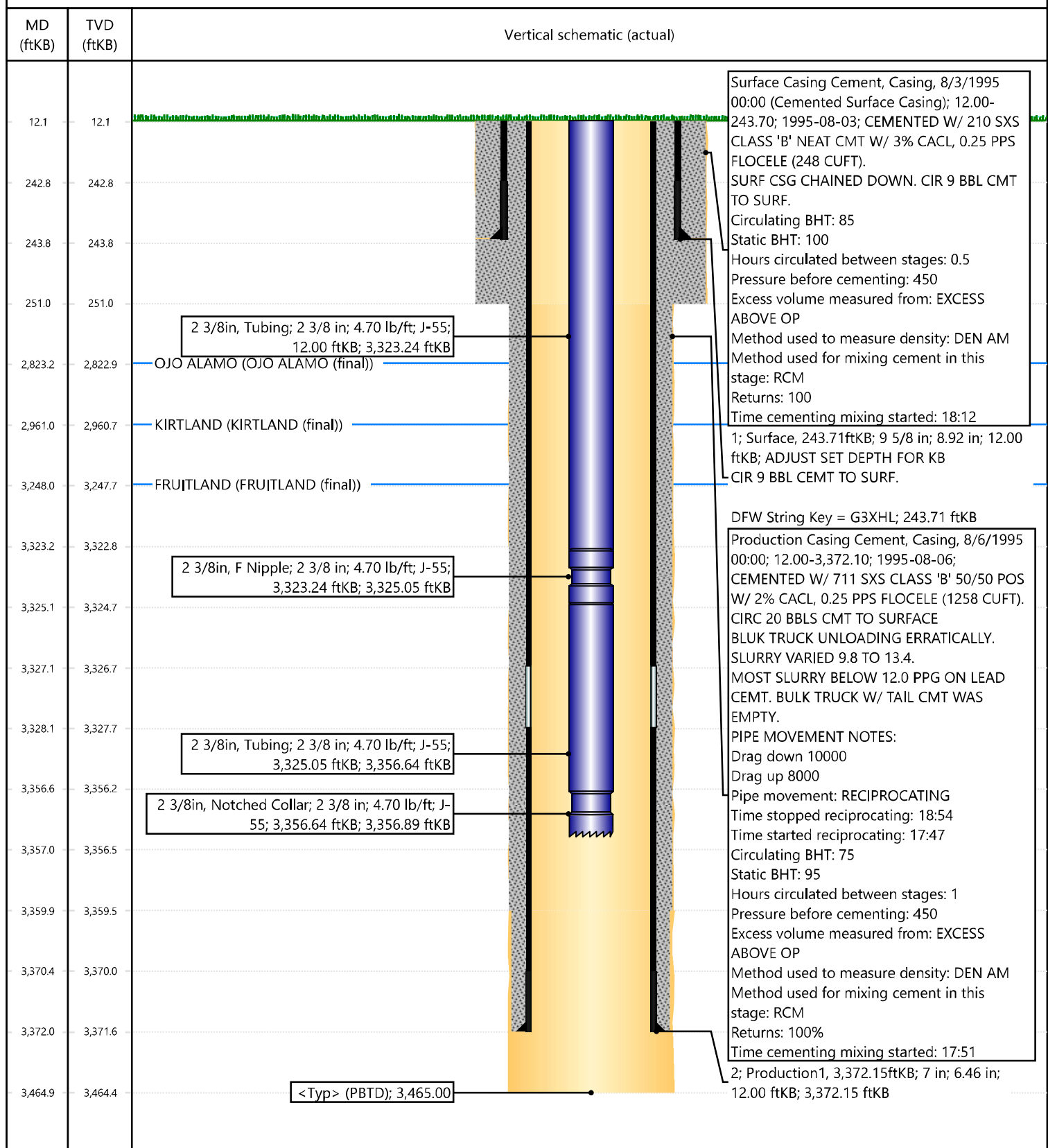


Current Schematic - Version 3

Well Name: SAN JUAN 27-5 UNIT NP #330

API / UWI 3003925522	Surface Legal Location 005-027N-005W-M	Field Name BSN (FTLD COAL) #3046	Route 1312	State/Province NEW MEXICO	Well Configuration Type VERTICAL
Ground Elevation (ft) 6,666.00	Original KB/RT Elevation (ft) 6,678.00	Tubing Hanger Elevation (ft)	RKB to GL (ft) 12.00	KB-Casing Flange Distance (ft)	KB-Tubing Hanger Distance (ft)

Original Hole [VERTICAL]



San Juan 27-5 Unit NP 330 Proposed Wellbore Diagram

sand/casing	MD	TVD	PP						Hole size	MW
									12.25	water
									Existing	
	9.625	244	244						8.75	
OJO_ALAMO_TOP	2821	2821								
KIRTLAND	2958	2958	8.8							
FRUITLAND	3250	3250	8.8						Existing	
	7	3372							6.125	8.4
Pictured Cliffs	3465	3465								
Chacra	4451	4418								
Upper Cliff House	5218	5132								
Mefee	5386	5288								
Pt Lookout	5794	5667								
Mancos	6468	6309								
EL_VADO	6967	6806								
JUANA_LOPEZ	7427	7266								
GREENHORN	7718	7557								
GRANEROS	7770	7609								
TWO_WELLS	7808	7647								
PAUGATE	7902	7741								
CUBERO	7927	7766								
CUBERO_LWR	7965	7804								
ENCINAL_CANYON	8052	7891								
BURRO_CANYON	8083	7922								
	4.5	8160	8000							9.2

TOC = 3272

557 sxs at 13.0 ppg 1.44 ft^3/sx

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All depth are from KB

OD	\$/ft	Depth	Cxn	Wt	Grade	ID	Drift	Capacity	Displacement	
									Closed	Open
9.625	na	244	STC	36	H40	8.921	8.765	0.077311	0.089995	0.01268349
7	na	3372	LTC	23	J55	6.366	6.241	0.039369	0.047601	0.00823202
4.5		8160	LTC	11.6	J55	4	3.875	0.015543	0.019672	0.00412862

OD	Burst	SF	Collapse	SF	Tension			
					Body	SF	jt	SF
9.625	2550	1.6	1720	18.3	410	3.8	294	2.7
7	4350	1.4	3270	1.9	366	2.0	313	1.7
4.5	5350	2.4	4960	1.3	184	1.3	180	1.3

C-102 Submit Electronically Via OCD Permitting	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	Revised July 9, 2024	
		Submittal Type	☐ Initial Submittal
			☐ Amended Report
		☒ As Drilled	

WELL LOCATION INFORMATION

API Number 30-039-25522	Pool Code 72319	Pool Name BLANCO MESAVERDE
Property Code 318702	Property Name SAN JUAN 27-5 UNIT NP	Well Number 330
OGRID No. 372171	Operator Name HILCORP ENERGY COMPANY	Ground Level Elevation 6665'
Surface Owner: ☐ State ☒ Fee ☐ Tribal ☐ Federal		Mineral Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal

Surface Location

UL M	Section 5	Township 27N	Range 5W	Lot	Feet from N/S Line 790' SOUTH	Feet from E/W Line 1136' WEST	Latitude 36.598158 °N	Longitude -107.387026 °W	County RIO ARRIBA
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Bottom Hole Location

UL M	Section 5	Township 27N	Range 5W	Lot	Feet from N/S Line 1256' SOUTH	Feet from E/W Line 381' WEST	Latitude 36.599492 °N	Longitude -107.389583 °W	County RIO ARRIBA
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Dedicated Acres 319.81	Penetrated Spacing Unit: W/2 - Section 5, T27N, R5W	Infill or Defining Well Infill	Defining Well API 30-039-07158	Overlapping Spacing Unit ☐ Yes ☒ No	Consolidation Code Unit
Order Numbers			Well setbacks are under Common Ownership: ☐ Yes ☐ No		

Kick Off Point (KOP)

UL M	Section 5	Township 27N	Range 5W	Lot	Feet from N/S Line 775' SOUTH	Feet from E/W Line 1047' WEST	Latitude 36.598123 °N	Longitude -107.387331 °W	County RIO ARRIBA
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First Take Point (FTP)

UL M	Section 5	Township 27N	Range 5W	Lot	Feet from N/S Line 1011' SOUTH	Feet from E/W Line 732' WEST	Latitude 36.598794 °N	Longitude -107.388395 °W	County RIO ARRIBA
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Last Take Point (LTP)

UL M	Section 5	Township 27N	Range 5W	Lot	Feet from N/S Line 1212' SOUTH	Feet from E/W Line 428' WEST	Latitude 36.599366 °N	Longitude -107.389424 °W	County RIO ARRIBA
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Unitized Area or Area of Uniform Interest Unitized	Spacing Unit Type ☐ Horizontal ☐ Vertical ☒ Directional	Ground Floor Elevation 6665'
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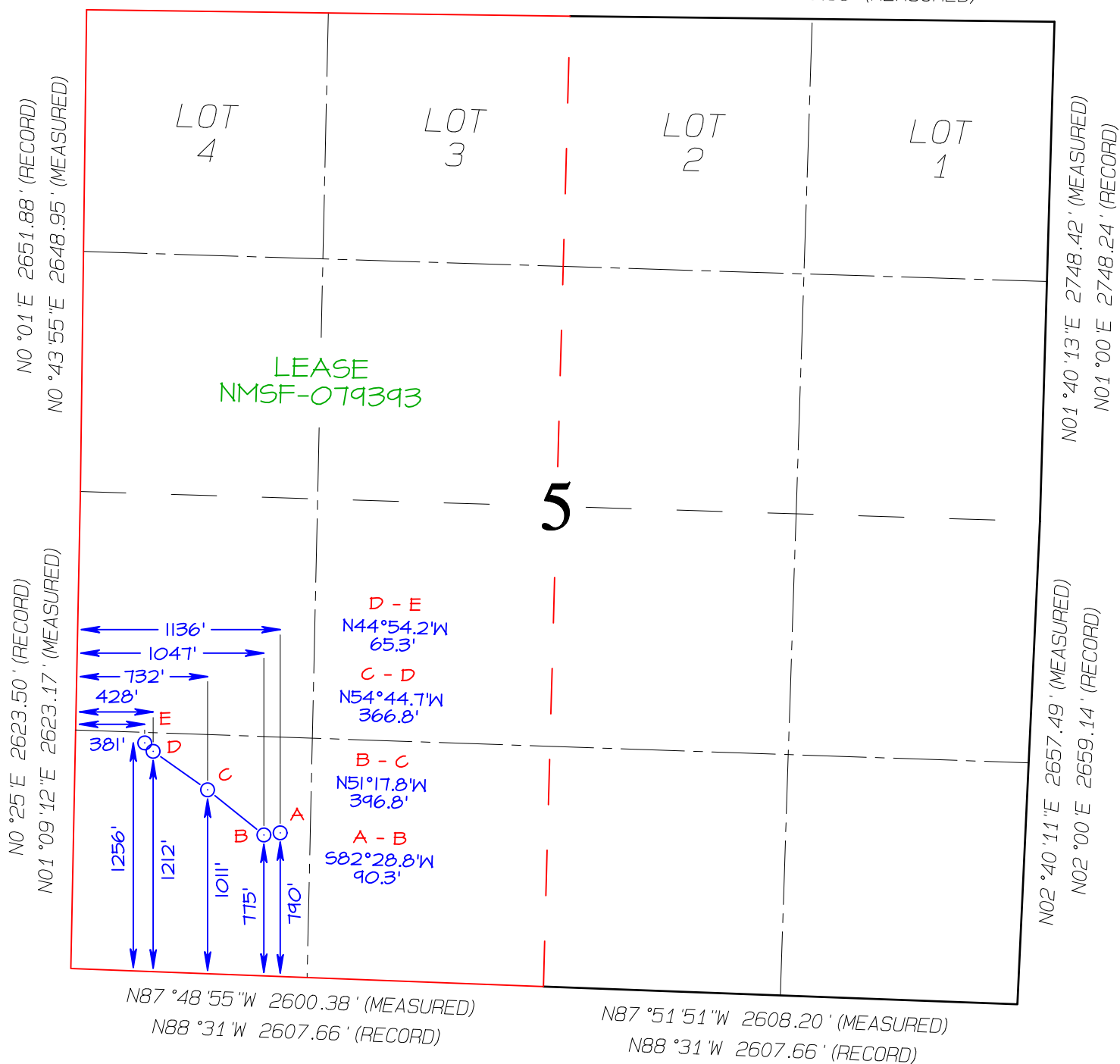
OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division. Cherylene Weston 9/26/2024 SignatureDate Cherylene Weston, Operations/Regulatory Tech-Sr. Printed Name cweston@hilcorp.com E-mail Address	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.  JASON C. EDWARDS Signature and Seal of Professional Surveyor Certificate Number15269Date of SurveyMAY 17, 2024
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N89°57'W 2662.44' (RECORD)

N89°57'W 2662.44' (RECORD)

N89°14'29"W 2658.98' (MEASURED)

N89°20'27"W 2663.58' (MEASURED)



SURFACE LOCATION (A)
790' FSL 1136' FWL
LAT 36.598150°N
LONG -107.386424°W
DATUM: NAD1927

KICK OFF POINT (B)
775' FSL 1047' FWL
LAT 36.598114°N
LONG -107.386729°W
DATUM: NAD1927

FIRST TAKE POINT (C)
1011' FSL 732' FWL
LAT 36.598786°N
LONG -107.387793°W
DATUM: NAD1927

LAT 36.598158°N
LONG -107.387026°W
DATUM: NAD1983

LAT 36.598123°N
LONG -107.387331°W
DATUM: NAD1983

LAT 36.598794°N
LONG -107.388395°W
DATUM: NAD1983

LAST TAKE POINT (D)
1212' FSL 428' FWL
LAT 36.599357°N
LONG -107.388822°W
DATUM: NAD1927

BOTTOM HOLE LOCATION (E)
1256' FSL 381' FWL
LAT 36.599483°N
LONG -107.388981°W
DATUM: NAD1927

LAT 36.599366°N
LONG -107.389424°W
DATUM: NAD1983

LAT 36.599492°N
LONG -107.389583°W
DATUM: NAD1983

State of New Mexico
Energy, Minerals and Natural Resources DepartmentSubmit Electronically
Via E-permittingOil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505**NATURAL GAS MANAGEMENT PLAN**

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description**Effective May 25, 2021****I. Operator:** Hilcorp Energy Company **OGRID:** 372171 **Date:** 5/24/2024**II. Type:** ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
San Juan 27-5 Unit NP	3003925522	M-5-27N-5W	790' FSL 1136' FWL	3.94	1011	1.5

IV. Central Delivery Point Name: Ignacio Processing Plant [See 19.15.27.9(D)(1) NMAC]**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
<u>San Juan 27-5 Unit NP 330</u>	<u>3003925522</u>	<u>2024-2025</u>				<u>2024-2025</u>

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.**VII. Operational Practices:** ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.**VIII. Best Management Practices:** ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: <i>Cherylene Weston</i>
Printed Name: Cherylene Weston
Title: Operations Regulatory Tech-Sr.
E-mail Address: cweston@hilcorp.com
Date: 5/24/2024
Phone: 713-289-2615
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)
Approved By:
Title:
Approval Date:
Conditions of Approval:

Hilcorp Energy Natural Gas Management Plan Attachments

VI. Separation Equipment

The operator will select separation equipment for the maximum anticipated throughput and pressure to optimize gas capture. Separation equipment is sized according to manufacturer's design specifications. Separation vessels are built following the A.S.M.E. section VIII division 1 codes for pressure vessel design, fabrication, inspection, testing and certification. Anticipated well pressures and production rates are evaluated to select separation equipment according to the equipment's designed operating pressure and throughput.

After completion, the operator utilizes flowback equipment, including separators, to manage wellbore fluids and solids during the initial separation period. After the initial flowback period is complete the operator utilizes iterative facility separation equipment to ensure that optimal separation is achieved.

VII. Operational Practices 19.15.27.8 NMAC A through F

- A. The operator will maximize the recovery of natural gas and minimize the amount of gas vented or flared when technically and safely feasible as further described and detailed within the following subsections (B-F of 19.15.27.8). In all cases where natural gas venting and flaring requires regulatory reporting, reporting will be submitted accurately and within the required time frames.
- B. Venting and flaring during drilling operations:
 - a. New Drill HZ Gas Wells: The operator drills wells in the area by utilizing a balanced mud to safely drill the wellbore. This technique prevents gas from coming to surface during the drilling process. If there is an emergency or malfunction and natural gas does come to surface the natural gas will be captured and routed to sales if technically and safely feasible.
- C. Venting and flaring during completion or recompletion operations:
 - a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.
- D. Venting and flaring during production operations:
 - a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

- (a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
- (b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
- (c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low pressure vessel. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
- (d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.
- (e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
- (f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
- (g) No dehydration or amine units are anticipated to be set on location.
- (h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
- (i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
- (j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
- (k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:

- a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.
 - b. All tanks that are routed to a control device that is installed after 5/25/2021 will have an automatic gauging system to minimize the amount of vented natural gas.
 - c. If a flare stack is installed or replaced after 5/25/2021 it will be equipped with an automatic ignitor or continuous pilot. The flare stack will be properly sized and designed to ensure proper combustion efficiency. The flare stack will be located 100 feet away from the nearest wellhead or storage tank.
 - d. AVO inspections will be conducted weekly for the year after completion and for all wells producing greater than 60,000 cubic feet of natural gas daily. The AVO inspection will include all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated pipeline to identify any leaks and releases by comprehensive auditory, visual, and olfactory inspection. The AVO inspection records will be maintained for 5 years which will be available at the department's request. Identified leaks will be repaired as soon as feasible to minimize the amount of vented natural gas.
- F. Measurement or estimation of vented and flared natural gas.
- a. The volume of natural gas that is vented, flared or consumed for beneficial use will be measured when possible, or estimated, during drilling, completions, or production operations.
 - b. Equipment will be installed to measure the volume of natural gas flared for all APD's issued after 5/25/2021 on facilities that will have an average daily gas rate greater than 60,000 cubic feet of natural gas. Measurement equipment will conform to API MPMS Chapter 14.10 regulations. The measurement equipment will not have a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment. If metering is not practical then the volume of gas will be estimated.



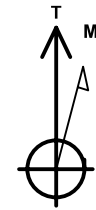
Company: Hilcorp Energy Corp.
 Project: Rio Arriba, NM NAD27
 Site: San Juan 27-5 Unit NP 330
 Well: San Juan 27-5 Unit NP 330
 Wellbore: OH
 Design: Plan #1



Well Details: San Juan 27-5 Unit NP 330

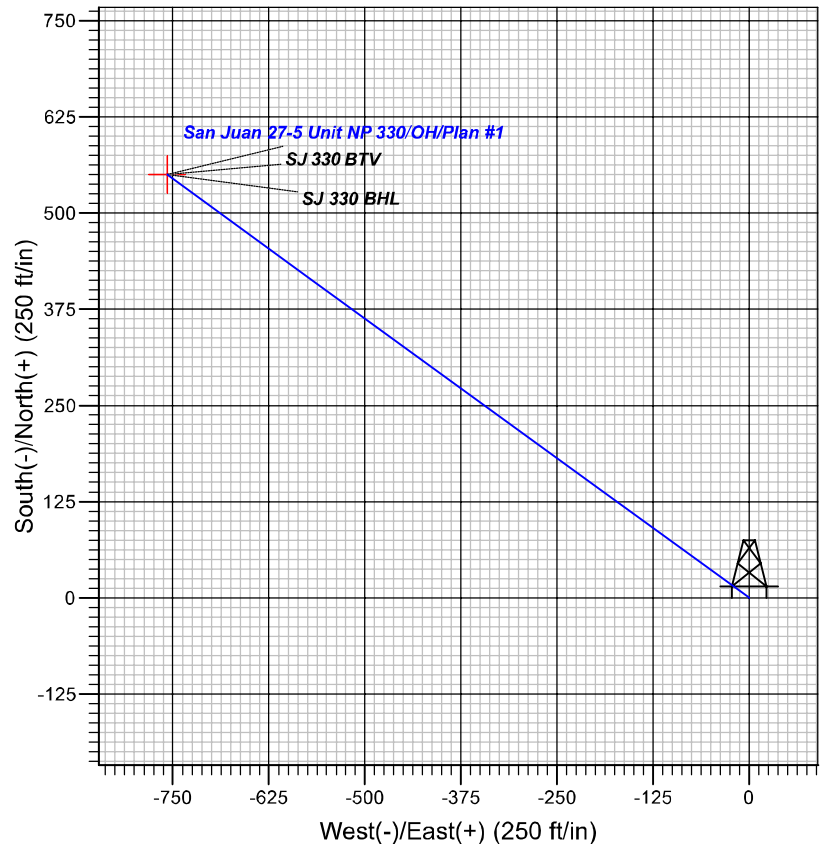
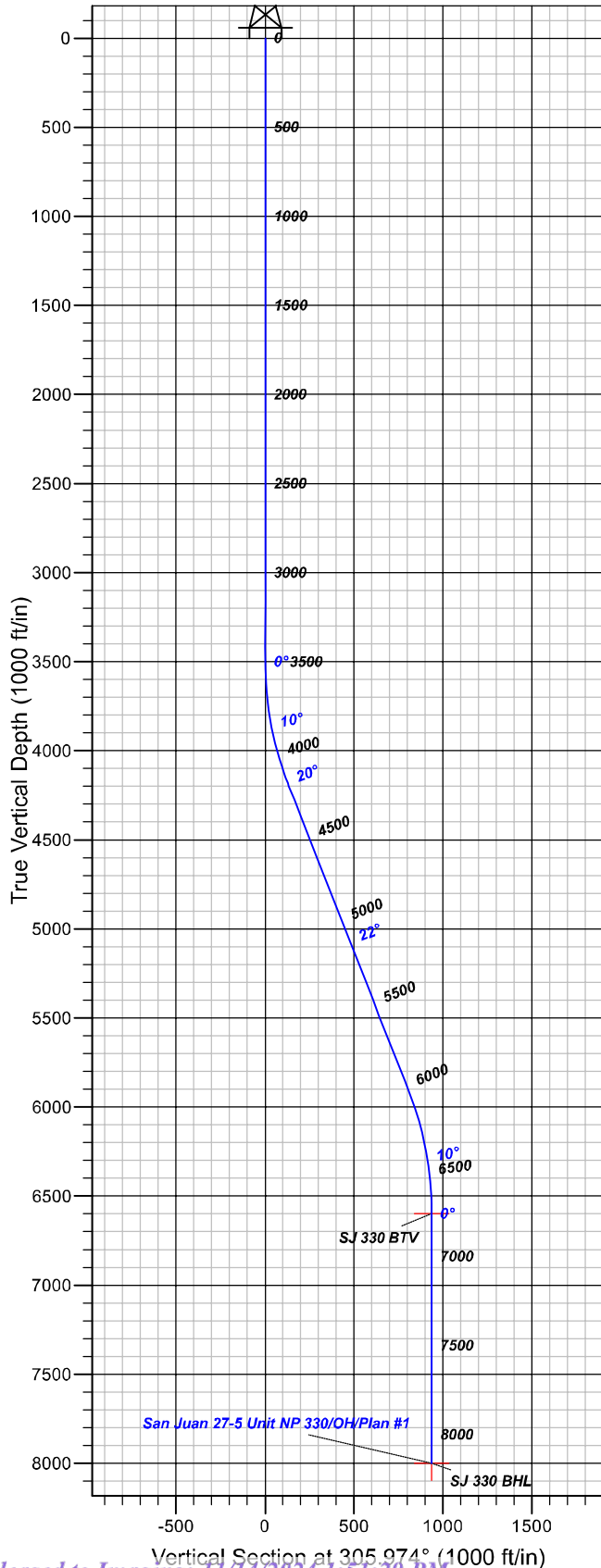
GL 6678' @ 6678.00ft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	2037267.32	631139.59	36.5981100	-107.3865900	



Azimuths to True North
 Magnetic North: 8.52°

Magnetic Field
 Strength: 49434.2nT
 Dip Angle: 63.08°
 Date: 12/31/2021
 Model: HDGM2021_FILE



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2821.00	2821.00	OJO_ALAMO_TOP
2958.00	2958.00	KIRTLAND
3250.00	3250.00	FRUITLAND *
3465.00	3465.00	PICTURED_CLIFFS
4418.00	4451.02	CHACRA
5132.00	5218.48	CLIFF_HOUSE
5288.00	5386.16	MENEFFEE
5667.00	5793.53	POINT_LOOKOUT
6309.00	6468.54	MANCOS_MKR
6806.00	6966.68	EL_VADO
7266.00	7426.68	JUANA_LOPEZ
7557.00	7717.68	GREENHORN
7609.00	7769.68	GRANEROS
7647.00	7807.68	TWO_WELLS
7741.00	7901.68	PAUGATE
7766.00	7926.68	CUBERO
7804.00	7964.68	CUBERO_LWR
7891.00	8051.68	ENCINAL_CANYON
7922.00	8082.68	BURRO_CANYON

Plan: Plan #1

9:47, April 30 2024
 Created By: Janie Collins

PROJECT DETAILS: Rio Arriba, NM NAD27

Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico West 3003

System Datum: Mean Sea Level

CASING DETAILS

No casing data is available

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00
3500.00	0.00	0.000	3500.00	0.00	0.00	0.00	0.00	0.00
4217.02	21.51	305.974	4200.29	78.14	-107.65	3.00	305.97	133.02
6043.66	21.51	305.974	5899.71	471.58	-649.69	0.00	0.00	802.80
6760.68	0.00	0.000	6600.00	549.72	-757.35	3.00	180.00	935.82
8160.68	0.00	0.000	8000.00	549.72	-757.35	0.00	0.00	935.82

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SJ 330 BTV	6600.00	549.72	-757.35	2037813.50	630379.69	36.5996200	-107.3891700
- plan hits target center							
SJ 330 BHL	8000.00	549.72	-757.35	2037813.50	630379.69	36.5996200	-107.3891700
- plan hits target center							



Hilcorp Energy Corp.

Rio Arriba, NM NAD27

San Juan 27-5 Unit NP 330

San Juan 27-5 Unit NP 330

Released to Imaging: 11/14/2024 1:51:29 PM

OH

Plan: Plan #1

Standard Planning Report

30 April, 2024





Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6678' @ 6678.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6678' @ 6678.00ft
Site:	San Juan 27-5 Unit NP 330	North Reference:	True
Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Rio Arriba, 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	San Juan 27-5 Unit NP 330			
Site Position:		Northing:	2,037,267.31 usft	Latitude: 36.5981100
From:	Lat/Long	Easting:	631,139.59 usft	Longitude: -107.3865900
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence: 0.27 °

Well	San Juan 27-5 Unit NP 330			
Well Position	+N/-S	0.00 ft	Northing:	2,037,267.31 usft
	+E/-W	0.00 ft	Easting:	631,139.59 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 36.5981100
				Longitude: -107.3865900
				Ground Level: 6,678.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	12/31/2021	8.52	63.08	49,434.20000000

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	305.974

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,500.00	0.00	0.000	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,217.02	21.51	305.974	4,200.29	78.14	-107.65	3.00	3.00	0.00	305.97	
6,043.66	21.51	305.974	5,899.71	471.58	-649.69	0.00	0.00	0.00	0.00	
6,760.68	0.00	0.000	6,600.00	549.72	-757.35	3.00	-3.00	0.00	180.00	SJ 330 BTV
8,160.68	0.00	0.000	8,000.00	549.72	-757.35	0.00	0.00	0.00	0.00	SJ 330 BHL



Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6678' @ 6678.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6678' @ 6678.00ft
Site:	San Juan 27-5 Unit NP 330	North Reference:	True
Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.000	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.000	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.000	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.000	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.000	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.000	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.000	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.000	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.000	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.000	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.000	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.000	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.000	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.000	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.000	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.000	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.000	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.000	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.000	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.000	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.000	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.000	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	3.00	305.974	3,599.95	1.54	-2.12	2.62	3.00	3.00	0.00
3,700.00	6.00	305.974	3,699.63	6.15	-8.47	10.46	3.00	3.00	0.00
3,800.00	9.00	305.974	3,798.77	13.81	-19.03	23.51	3.00	3.00	0.00
3,900.00	12.00	305.974	3,897.08	24.52	-33.78	41.73	3.00	3.00	0.00
4,000.00	15.00	305.974	3,994.31	38.23	-52.67	65.08	3.00	3.00	0.00
4,100.00	18.00	305.974	4,090.18	54.91	-75.65	93.47	3.00	3.00	0.00
4,200.00	21.00	305.974	4,184.43	74.51	-102.66	126.85	3.00	3.00	0.00
4,217.02	21.51	305.974	4,200.29	78.14	-107.65	133.02	3.00	3.00	0.00
4,300.00	21.51	305.974	4,277.50	96.01	-132.28	163.45	0.00	0.00	0.00
4,400.00	21.51	305.974	4,370.53	117.55	-161.95	200.12	0.00	0.00	0.00
4,500.00	21.51	305.974	4,463.57	139.09	-191.63	236.78	0.00	0.00	0.00
4,600.00	21.51	305.974	4,556.60	160.63	-221.30	273.45	0.00	0.00	0.00
4,700.00	21.51	305.974	4,649.64	182.17	-250.97	310.12	0.00	0.00	0.00
4,800.00	21.51	305.974	4,742.67	203.71	-280.65	346.78	0.00	0.00	0.00
4,900.00	21.51	305.974	4,835.71	225.25	-310.32	383.45	0.00	0.00	0.00
5,000.00	21.51	305.974	4,928.74	246.78	-340.00	420.12	0.00	0.00	0.00
5,100.00	21.51	305.974	5,021.78	268.32	-369.67	456.79	0.00	0.00	0.00
5,200.00	21.51	305.974	5,114.81	289.86	-399.35	493.45	0.00	0.00	0.00

Released to Imaging: 11/14/2024 1:51:29 PM



Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6678' @ 6678.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6678' @ 6678.00ft
Site:	San Juan 27-5 Unit NP 330	North Reference:	True
Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	21.51	305.974	5,207.85	311.40	-429.02	530.12	0.00	0.00	0.00
5,400.00	21.51	305.974	5,300.88	332.94	-458.69	566.79	0.00	0.00	0.00
5,500.00	21.51	305.974	5,393.92	354.48	-488.37	603.46	0.00	0.00	0.00
5,600.00	21.51	305.974	5,486.95	376.02	-518.04	640.12	0.00	0.00	0.00
5,700.00	21.51	305.974	5,579.99	397.56	-547.72	676.79	0.00	0.00	0.00
5,800.00	21.51	305.974	5,673.02	419.10	-577.39	713.46	0.00	0.00	0.00
5,900.00	21.51	305.974	5,766.06	440.63	-607.07	750.12	0.00	0.00	0.00
6,000.00	21.51	305.974	5,859.09	462.17	-636.74	786.79	0.00	0.00	0.00
6,043.66	21.51	305.974	5,899.71	471.58	-649.69	802.80	0.00	0.00	0.00
6,100.00	19.82	305.974	5,952.42	483.26	-665.79	822.68	3.00	-3.00	0.00
6,200.00	16.82	305.974	6,047.34	501.72	-691.22	854.11	3.00	-3.00	0.00
6,300.00	13.82	305.974	6,143.78	517.24	-712.60	880.53	3.00	-3.00	0.00
6,400.00	10.82	305.974	6,241.46	529.77	-729.87	901.87	3.00	-3.00	0.00
6,500.00	7.82	305.974	6,340.13	539.28	-742.97	918.06	3.00	-3.00	0.00
6,600.00	4.82	305.974	6,439.51	545.75	-751.88	929.07	3.00	-3.00	0.00
6,700.00	1.82	305.974	6,539.33	549.15	-756.57	934.86	3.00	-3.00	0.00
6,760.68	0.00	0.000	6,600.00	549.72	-757.35	935.82	3.00	-3.00	0.00
6,800.00	0.00	0.000	6,639.32	549.72	-757.35	935.82	0.00	0.00	0.00
6,900.00	0.00	0.000	6,739.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,000.00	0.00	0.000	6,839.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,100.00	0.00	0.000	6,939.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,200.00	0.00	0.000	7,039.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,300.00	0.00	0.000	7,139.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,400.00	0.00	0.000	7,239.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,500.00	0.00	0.000	7,339.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,600.00	0.00	0.000	7,439.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,700.00	0.00	0.000	7,539.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,800.00	0.00	0.000	7,639.32	549.72	-757.35	935.82	0.00	0.00	0.00
7,900.00	0.00	0.000	7,739.32	549.72	-757.35	935.82	0.00	0.00	0.00
8,000.00	0.00	0.000	7,839.32	549.72	-757.35	935.82	0.00	0.00	0.00
8,100.00	0.00	0.000	7,939.32	549.72	-757.35	935.82	0.00	0.00	0.00
8,160.68	0.00	0.000	8,000.00	549.72	-757.35	935.82	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SJ 330 BTV	0.00	0.000	6,600.00	549.72	-757.35	2,037,813.50	630,379.70	36.5996200	-107.3891700
- plan hits target center									
- Point									
SJ 330 BHL	0.00	0.000	8,000.00	549.72	-757.35	2,037,813.50	630,379.70	36.5996200	-107.3891700
- plan hits target center									
- Point									



Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6678' @ 6678.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6678' @ 6678.00ft
Site:	San Juan 27-5 Unit NP 330	North Reference:	True
Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,821.00	2,821.00	OJO_ALAMO_TOP		0.00	0.000	
2,958.00	2,958.00	KIRTLAND		0.00	0.000	
3,250.00	3,250.00	FRUITLAND *		0.00	0.000	
3,465.00	3,465.00	PICTURED_CLIFFS		0.00	0.000	
4,451.02	4,418.00	CHACRA		0.00	0.000	
5,218.48	5,132.00	CLIFF_HOUSE		0.00	0.000	
5,386.16	5,288.00	MENEFEE		0.00	0.000	
5,793.53	5,667.00	POINT_LOOKOUT		0.00	0.000	
6,468.54	6,309.00	MANCOS_MKR		0.00	0.000	
6,966.68	6,806.00	EL_VADO		0.00	0.000	
7,426.68	7,266.00	JUANA_LOPEZ		0.00	0.000	
7,717.68	7,557.00	GREENHORN		0.00	0.000	
7,769.68	7,609.00	GRANEROS		0.00	0.000	
7,807.68	7,647.00	TWO_WELLS		0.00	0.000	
7,901.68	7,741.00	PAUGATE		0.00	0.000	
7,926.68	7,766.00	CUBERO		0.00	0.000	
7,964.68	7,804.00	CUBERO_LWR		0.00	0.000	
8,051.68	7,891.00	ENCINAL_CANYON		0.00	0.000	
8,082.68	7,922.00	BURRO_CANYON		0.00	0.000	



Hilcorp Energy Corp.

Rio Arriba, NM NAD27

San Juan 27-5 Unit NP 330

San Juan 27-5 Unit NP 330

OH

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Plan #1

Anticollision Report

07 May, 2024





Scientific Drilling

Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.00 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	5/7/2024		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	8,160.68	Plan #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
San Juan 27-5 Unit NP 330						
San Juan 27-5 UN 053 - OH - OH	4,030.37	4,003.58	44.11	-130.47	0.253	Level 1, CC, ES, SF
San Juan 27-5 UN 059B - OH - OH	6,500.00	5,883.00	2,597.55	2,340.34	10.099	ES, SF
San Juan 27-5 UN 059B - OH - OH	6,514.95	5,883.00	2,597.45	2,340.35	10.103	CC
San Juan 27-5 UN 059G - OH - OH	7,453.65	7,122.31	1,906.86	1,871.54	53.986	CC, ES
San Juan 27-5 UN 059G - OH - OH	7,800.00	7,190.58	1,931.10	1,894.34	52.529	SF
San Juan 27-5 UN 059M - OH - OH	8,009.19	7,711.51	1,201.26	864.07	3.563	CC
San Juan 27-5 UN 059M - OH - OH	8,100.00	7,784.00	1,201.40	861.00	3.529	ES, SF
San Juan 27-5 UN 069 - OH - OH	5,577.62	5,415.12	2,752.72	2,513.92	11.527	CC
San Juan 27-5 UN 069 - OH - OH	8,160.68	7,900.00	2,769.87	2,421.44	7.949	ES, SF
San Juan 27-5 UN 076 - OH - OH	3,654.20	3,536.00	3,038.97	2,884.47	19.669	CC, ES
San Juan 27-5 UN 076 - OH - OH	3,800.00	3,536.00	3,041.13	2,886.43	19.658	SF
San Juan 27-5 UN 085 - OH - OH	4,800.00	4,692.67	1,043.34	837.74	5.075	CC
San Juan 27-5 UN 085 - OH - OH	5,100.00	4,971.78	1,049.05	830.73	4.805	ES
San Juan 27-5 UN 085 - OH - OH	8,160.68	7,920.00	1,198.19	849.97	3.441	SF
San Juan 27-5 UN 112M - OH - OH	3,500.00	3,455.00	1,556.91	1,406.16	10.328	CC
San Juan 27-5 UN 112M - OH - OH	3,600.00	3,554.95	1,559.06	1,403.96	10.052	ES
San Juan 27-5 UN 112M - OH - OH	8,100.00	7,852.00	2,385.83	2,042.52	6.949	SF
San Juan 27-5 UN 149 - OH - OH	8,160.68	7,880.00	1,969.36	1,624.89	5.717	CC, ES, SF
San Juan 27-5 UN 150 - OH - OH	3,500.00	3,441.00	2,509.09	2,358.90	16.706	CC
San Juan 27-5 UN 150 - OH - OH	3,600.00	3,504.00	2,510.95	2,357.91	16.407	ES, SF
San Juan 27-5 UN 150R - OH - OH	3,500.00	3,437.00	2,541.45	2,391.43	16.940	CC
San Juan 27-5 UN 150R - OH - OH	3,600.00	3,536.95	2,543.03	2,388.65	16.473	ES
San Juan 27-5 UN 150R - OH - OH	3,700.00	3,611.00	2,547.90	2,390.21	16.158	SF
San Juan 27-5 UN 901 - OH - OH	3,636.03	3,753.00	1,725.01	1,703.15	78.912	CC, ES
San Juan 27-5 UN 901 - OH - OH	8,100.00	7,931.00	2,312.27	2,262.67	46.612	SF
San Juan 27-5 UN 902 - OH - OH	736.93	700.00	1,472.98	1,469.07	376.047	CC, ES
San Juan 27-5 UN 902 - OH - OH	8,160.68	8,021.00	2,993.89	2,948.79	66.386	SF
San Juan 27-5 UN 904 - OH - OH	458.97	400.00	2,577.27	2,574.86	1,065.451	CC, ES
San Juan 27-5 UN 904 - OH - OH	8,160.68	7,942.00	3,682.22	3,635.66	79.088	SF
San Juan 27-5 UN 905 - OH - OH	1,088.35	1,037.59	2,474.11	2,468.05	408.631	CC
San Juan 27-5 UN 905 - OH - OH	3,532.13	3,571.03	2,488.56	2,466.68	113.752	ES
San Juan 27-5 UN 905 - OH - OH	8,160.68	7,911.00	3,211.92	3,164.46	67.675	SF



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												San Juan 27-5 Unit NP 330 - San Juan 27-5 UN 053 - OH - OH		Offset Site Error:		0.00 ft
Survey Program: 100-UNKNOWN														Offset Well Error:		0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
0.00	0.00	0.00	0.00	0.00	0.00	-85.11	7.28	-85.13	87.75							
100.00	100.00	80.00	80.00	0.36	3.20	-85.11	7.28	-85.13	85.44	81.88	3.56	24.010				
200.00	200.00	180.00	180.00	0.72	7.20	-85.11	7.28	-85.13	85.44	77.52	7.92	10.792				
300.00	300.00	280.00	280.00	1.08	11.20	-85.11	7.28	-85.13	85.44	73.17	12.28	6.960				
400.00	400.00	380.00	380.00	1.43	15.20	-85.11	7.28	-85.13	85.44	68.81	16.63	5.137				
500.00	500.00	480.00	480.00	1.79	19.20	-85.11	7.28	-85.13	85.44	64.45	20.99	4.070				
600.00	600.00	580.00	580.00	2.15	23.20	-85.11	7.28	-85.13	85.44	60.09	25.35	3.370				
700.00	700.00	680.00	680.00	2.51	27.20	-85.11	7.28	-85.13	85.44	55.73	29.71	2.876				
800.00	800.00	780.00	780.00	2.87	31.20	-85.11	7.28	-85.13	85.44	51.37	34.07	2.508				
900.00	900.00	880.00	880.00	3.23	35.20	-85.11	7.28	-85.13	85.44	47.01	38.43	2.223				
1,000.00	1,000.00	980.00	980.00	3.58	39.20	-85.11	7.28	-85.13	85.44	42.66	42.78	1.997				
1,100.00	1,100.00	1,080.00	1,080.00	3.94	43.20	-85.11	7.28	-85.13	85.44	38.30	47.14	1.812				
1,200.00	1,200.00	1,180.00	1,180.00	4.30	47.20	-85.11	7.28	-85.13	85.44	33.94	51.50	1.659				
1,300.00	1,300.00	1,280.00	1,280.00	4.66	51.20	-85.11	7.28	-85.13	85.44	29.58	55.86	1.530				
1,400.00	1,400.00	1,380.00	1,380.00	5.02	55.20	-85.11	7.28	-85.13	85.44	25.22	60.22	1.419 Level 3				
1,500.00	1,500.00	1,480.00	1,480.00	5.38	59.20	-85.11	7.28	-85.13	85.44	20.86	64.58	1.323 Level 3				
1,600.00	1,600.00	1,580.00	1,580.00	5.74	63.20	-85.11	7.28	-85.13	85.44	16.51	68.94	1.239 Level 2				
1,700.00	1,700.00	1,680.00	1,680.00	6.09	67.20	-85.11	7.28	-85.13	85.44	12.15	73.29	1.166 Level 2				
1,800.00	1,800.00	1,780.00	1,780.00	6.45	71.20	-85.11	7.28	-85.13	85.44	7.79	77.65	1.100 Level 2				
1,900.00	1,900.00	1,880.00	1,880.00	6.81	75.20	-85.11	7.28	-85.13	85.44	3.43	82.01	1.042 Level 2				
2,000.00	2,000.00	1,980.00	1,980.00	7.17	79.20	-85.11	7.28	-85.13	85.44	-0.93	86.37	0.989 Level 1				
2,100.00	2,100.00	2,080.00	2,080.00	7.53	83.20	-85.11	7.28	-85.13	85.44	-5.29	90.73	0.942 Level 1				
2,200.00	2,200.00	2,180.00	2,180.00	7.89	87.20	-85.11	7.28	-85.13	85.44	-9.65	95.09	0.899 Level 1				
2,300.00	2,300.00	2,280.00	2,280.00	8.24	91.20	-85.11	7.28	-85.13	85.44	-14.00	99.44	0.859 Level 1				
2,400.00	2,400.00	2,380.00	2,380.00	8.60	95.20	-85.11	7.28	-85.13	85.44	-18.36	103.80	0.823 Level 1				
2,500.00	2,500.00	2,480.00	2,480.00	8.96	99.20	-85.11	7.28	-85.13	85.44	-22.72	108.16	0.790 Level 1				
2,600.00	2,600.00	2,580.00	2,580.00	9.32	103.20	-85.11	7.28	-85.13	85.44	-27.08	112.52	0.759 Level 1				
2,700.00	2,700.00	2,680.00	2,680.00	9.68	107.20	-85.11	7.28	-85.13	85.44	-31.44	116.88	0.731 Level 1				
2,800.00	2,800.00	2,780.00	2,780.00	10.04	111.20	-85.11	7.28	-85.13	85.44	-35.80	121.24	0.705 Level 1				
2,900.00	2,900.00	2,880.00	2,880.00	10.40	115.20	-85.11	7.28	-85.13	85.44	-40.16	125.60	0.680 Level 1				
3,000.00	3,000.00	2,980.00	2,980.00	10.75	119.20	-85.11	7.28	-85.13	85.44	-44.51	129.95	0.657 Level 1				
3,100.00	3,100.00	3,080.00	3,080.00	11.11	123.20	-85.11	7.28	-85.13	85.44	-48.87	134.31	0.636 Level 1				
3,200.00	3,200.00	3,180.00	3,180.00	11.47	127.20	-85.11	7.28	-85.13	85.44	-53.23	138.67	0.616 Level 1				
3,300.00	3,300.00	3,280.00	3,280.00	11.83	131.20	-85.11	7.28	-85.13	85.44	-57.59	143.03	0.597 Level 1				
3,400.00	3,400.00	3,380.00	3,380.00	12.19	135.20	-85.11	7.28	-85.13	85.44	-61.95	147.39	0.580 Level 1				
3,500.00	3,500.00	3,480.00	3,480.00	12.55	139.20	-85.11	7.28	-85.13	85.44	-66.31	151.75	0.563 Level 1				
3,600.00	3,599.95	3,579.95	3,579.95	12.90	143.20	-32.05	7.28	-85.13	83.21	-72.89	156.10	0.533 Level 1				
3,700.00	3,699.63	3,679.63	3,679.63	13.25	147.19	-35.27	7.28	-85.13	76.67	-83.76	160.44	0.478 Level 1				
3,800.00	3,798.77	3,778.77	3,778.77	13.61	151.15	-41.97	7.28	-85.13	66.42	-98.33	164.75	0.403 Level 1				
3,900.00	3,897.08	3,877.08	3,877.08	13.97	155.08	-55.12	7.28	-85.13	54.17	-114.87	169.04	0.320 Level 1				
4,000.00	3,994.31	3,974.31	3,974.31	14.33	158.97	-79.95	7.28	-85.13	44.85	-128.45	173.30	0.259 Level 1				
4,030.37	4,023.58	4,003.58	4,003.58	14.45	160.14	-90.00	7.28	-85.13	44.11	-130.47	174.59	0.253 Level 1, CC, ES, SF				
4,100.00	4,090.18	4,070.18	4,070.18	14.71	162.81	-113.64	7.28	-85.13	48.56	-128.95	177.51	0.274 Level 1				
4,200.00	4,184.43	4,164.43	4,164.43	15.10	166.58	-138.64	7.28	-85.13	69.48	-112.13	181.61	0.383 Level 1				
4,217.02	4,200.29	4,180.29	4,180.29	15.17	167.21	-141.61	7.28	-85.13	74.35	-107.95	182.30	0.408 Level 1				
4,300.00	4,277.50	4,257.50	4,257.50	15.52	170.30	-152.29	7.28	-85.13	100.48	-85.18	185.65	0.541 Level 1				
4,400.00	4,370.53	4,350.53	4,350.53	15.96	174.02	-159.52	7.28	-85.13	134.39	-55.31	189.70	0.708 Level 1				
4,500.00	4,463.57	4,443.57	4,443.57	16.42	177.74	-163.84	7.28	-85.13	169.45	-24.29	193.75	0.875 Level 1				
4,600.00	4,556.60	4,536.60	4,536.60	16.90	181.46	-166.68	7.28	-85.13	205.08	7.28	197.80	1.037 Level 2				
4,700.00	4,649.64	4,629.64	4,629.64	17.39	185.19	-168.68	7.28	-85.13	241.02	39.16	201.86	1.194 Level 2				
4,800.00	4,742.67	4,722.67	4,722.67	17.89	188.91	-170.17	7.28	-85.13	277.15	71.22	205.92	1.346 Level 3				
4,900.00	4,835.71	4,815.71	4,815.71	18.41	192.63	-171.31	7.28	-85.13	313.40	103.41	209.99	1.492 Level 3				

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	4,908.74	4,908.74	18.94	196.35	-172.22	7.28	-85.13	349.74	135.68	214.06	1.634	
5,100.00	5,021.78	5,001.78	5,001.78	19.48	200.07	-172.95	7.28	-85.13	386.14	168.01	218.13	1.770	
5,200.00	5,114.81	5,094.81	5,094.81	20.03	203.79	-173.56	7.28	-85.13	422.59	200.38	222.21	1.902	
5,300.00	5,207.85	5,187.85	5,187.85	20.60	207.51	-174.08	7.28	-85.13	459.07	232.78	226.29	2.029	
5,400.00	5,300.88	5,280.88	5,280.88	21.17	211.24	-174.51	7.28	-85.13	495.58	265.21	230.37	2.151	
5,500.00	5,393.92	5,373.92	5,373.92	21.74	214.96	-174.89	7.28	-85.13	532.12	297.66	234.46	2.270	
5,600.00	5,486.95	5,466.95	5,466.95	22.33	218.68	-175.22	7.28	-85.13	568.67	330.12	238.54	2.384	
5,700.00	5,579.99	5,559.99	5,559.99	22.92	222.40	-175.51	7.28	-85.13	605.23	362.60	242.63	2.494	
5,800.00	5,673.02	5,653.02	5,653.02	23.52	226.12	-175.76	7.28	-85.13	641.80	395.08	246.72	2.601	
5,900.00	5,766.06	5,746.06	5,746.06	24.12	229.84	-175.99	7.28	-85.13	678.39	427.57	250.81	2.705	
6,000.00	5,859.09	5,839.09	5,839.09	24.73	233.56	-176.20	7.28	-85.13	714.98	460.07	254.91	2.805	
6,043.66	5,899.71	5,840.00	5,840.00	25.00	233.60	-176.20	7.28	-85.13	732.04	477.44	254.60	2.875	
6,100.00	5,952.42	5,840.00	5,840.00	25.34	233.60	-176.25	7.28	-85.13	756.48	503.36	253.12	2.989	
6,200.00	6,047.34	5,840.00	5,840.00	25.90	233.60	-176.36	7.28	-85.13	804.31	556.17	248.14	3.241	
6,300.00	6,143.78	5,840.00	5,840.00	26.41	233.60	-176.48	7.28	-85.13	856.92	615.98	240.93	3.557	
6,400.00	6,241.46	5,840.00	5,840.00	26.88	233.60	-176.60	7.28	-85.13	913.34	681.12	232.22	3.933	
6,500.00	6,340.13	5,840.00	5,840.00	27.30	233.60	-176.73	7.28	-85.13	972.78	750.25	222.53	4.371	
6,600.00	6,439.51	5,840.00	5,840.00	27.68	233.60	-176.86	7.28	-85.13	1,034.57	822.32	212.25	4.874	
6,700.00	6,539.33	5,840.00	5,840.00	28.01	233.60	-176.99	7.28	-85.13	1,098.16	896.50	201.65	5.446	
6,760.68	6,600.00	5,840.00	5,840.00	28.20	233.60	128.90	7.28	-85.13	1,137.41	942.27	195.14	5.829	
6,800.00	6,639.32	5,840.00	5,840.00	28.32	233.60	128.90	7.28	-85.13	1,163.38	972.44	190.94	6.093	
6,900.00	6,739.32	5,840.00	5,840.00	28.62	233.60	128.90	7.28	-85.13	1,232.61	1,051.95	180.66	6.823	
7,000.00	6,839.32	5,840.00	5,840.00	28.92	233.60	128.90	7.28	-85.13	1,305.83	1,134.82	171.01	7.636	
7,100.00	6,939.32	5,840.00	5,840.00	29.23	233.60	128.90	7.28	-85.13	1,382.41	1,220.36	162.05	8.531	
7,200.00	7,039.32	5,840.00	5,840.00	29.53	233.60	128.90	7.28	-85.13	1,461.82	1,308.03	153.79	9.506	
7,300.00	7,139.32	5,840.00	5,840.00	29.84	233.60	128.90	7.28	-85.13	1,543.63	1,397.42	146.21	10.558	
7,400.00	7,239.32	5,840.00	5,840.00	30.14	233.60	128.90	7.28	-85.13	1,627.47	1,488.20	139.27	11.686	
7,500.00	7,339.32	5,840.00	5,840.00	30.45	233.60	128.90	7.28	-85.13	1,713.04	1,580.12	132.92	12.888	
7,600.00	7,439.32	5,840.00	5,840.00	30.76	233.60	128.90	7.28	-85.13	1,800.10	1,672.98	127.12	14.160	
7,700.00	7,539.32	5,840.00	5,840.00	31.07	233.60	128.90	7.28	-85.13	1,888.45	1,766.63	121.82	15.502	
7,800.00	7,639.32	5,840.00	5,840.00	31.38	233.60	128.90	7.28	-85.13	1,977.90	1,860.94	116.97	16.910	
7,900.00	7,739.32	5,840.00	5,840.00	31.69	233.60	128.90	7.28	-85.13	2,068.33	1,955.81	112.52	18.382	
8,000.00	7,839.32	5,840.00	5,840.00	32.01	233.60	128.90	7.28	-85.13	2,159.59	2,051.15	108.44	19.915	
8,100.00	7,939.32	5,840.00	5,840.00	32.32	233.60	128.90	7.28	-85.13	2,251.60	2,146.91	104.69	21.507	
8,160.68	8,000.00	5,840.00	5,840.00	32.51	233.60	128.90	7.28	-85.13	2,307.75	2,205.19	102.56	22.500	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-64.25	1,510.95	-3,132.02	3,480.58				
100.00	100.00	0.00	0.00	0.36	0.00	-64.25	1,510.95	-3,132.02	3,477.76	3,477.40	0.36	9,659.397	
164.10	164.10	16.10	16.10	0.59	0.64	-64.25	1,510.95	-3,132.02	3,477.43	3,476.20	1.23	2,821.281	
200.00	200.00	52.00	52.00	0.72	2.08	-64.25	1,510.95	-3,132.02	3,477.43	3,474.64	2.80	1,243.255	
300.00	300.00	152.00	152.00	1.08	6.08	-64.25	1,510.95	-3,132.02	3,477.43	3,470.28	7.16	485.986	
400.00	400.00	252.00	252.00	1.43	10.08	-64.25	1,510.95	-3,132.02	3,477.43	3,465.92	11.51	302.021	
500.00	500.00	352.00	352.00	1.79	14.08	-64.25	1,510.95	-3,132.02	3,477.43	3,461.56	15.87	219.087	
600.00	600.00	452.00	452.00	2.15	18.08	-64.25	1,510.95	-3,132.02	3,477.43	3,457.20	20.23	171.888	
700.00	700.00	552.00	552.00	2.51	22.08	-64.25	1,510.95	-3,132.02	3,477.43	3,452.84	24.59	141.421	
800.00	800.00	652.00	652.00	2.87	26.08	-64.25	1,510.95	-3,132.02	3,477.43	3,448.49	28.95	120.128	
900.00	900.00	752.00	752.00	3.23	30.08	-64.25	1,510.95	-3,132.02	3,477.43	3,444.13	33.31	104.408	
1,000.00	1,000.00	852.00	852.00	3.58	34.08	-64.25	1,510.95	-3,132.02	3,477.43	3,439.77	37.66	92.326	
1,100.00	1,100.00	952.00	952.00	3.94	38.08	-64.25	1,510.95	-3,132.02	3,477.43	3,435.41	42.02	82.750	
1,200.00	1,200.00	1,052.00	1,052.00	4.30	42.08	-64.25	1,510.95	-3,132.02	3,477.43	3,431.05	46.38	74.974	
1,300.00	1,300.00	1,152.00	1,152.00	4.66	46.08	-64.25	1,510.95	-3,132.02	3,477.43	3,426.69	50.74	68.534	
1,400.00	1,400.00	1,252.00	1,252.00	5.02	50.08	-64.25	1,510.95	-3,132.02	3,477.43	3,422.33	55.10	63.113	
1,500.00	1,500.00	1,352.00	1,352.00	5.38	54.08	-64.25	1,510.95	-3,132.02	3,477.43	3,417.98	59.46	58.486	
1,600.00	1,600.00	1,452.00	1,452.00	5.74	58.08	-64.25	1,510.95	-3,132.02	3,477.43	3,413.62	63.82	54.492	
1,700.00	1,700.00	1,552.00	1,552.00	6.09	62.08	-64.25	1,510.95	-3,132.02	3,477.43	3,409.26	68.17	51.008	
1,800.00	1,800.00	1,652.00	1,652.00	6.45	66.08	-64.25	1,510.95	-3,132.02	3,477.43	3,404.90	72.53	47.943	
1,900.00	1,900.00	1,752.00	1,752.00	6.81	70.08	-64.25	1,510.95	-3,132.02	3,477.43	3,400.54	76.89	45.226	
2,000.00	2,000.00	1,852.00	1,852.00	7.17	74.08	-64.25	1,510.95	-3,132.02	3,477.43	3,396.18	81.25	42.799	
2,100.00	2,100.00	1,952.00	1,952.00	7.53	78.08	-64.25	1,510.95	-3,132.02	3,477.43	3,391.83	85.61	40.620	
2,200.00	2,200.00	2,052.00	2,052.00	7.89	82.08	-64.25	1,510.95	-3,132.02	3,477.43	3,387.47	89.97	38.653	
2,300.00	2,300.00	2,152.00	2,152.00	8.24	86.08	-64.25	1,510.95	-3,132.02	3,477.43	3,383.11	94.32	36.867	
2,400.00	2,400.00	2,252.00	2,252.00	8.60	90.08	-64.25	1,510.95	-3,132.02	3,477.43	3,378.75	98.68	35.238	
2,500.00	2,500.00	2,352.00	2,352.00	8.96	94.08	-64.25	1,510.95	-3,132.02	3,477.43	3,374.39	103.04	33.748	
2,600.00	2,600.00	2,452.00	2,452.00	9.32	98.08	-64.25	1,510.95	-3,132.02	3,477.43	3,370.03	107.40	32.378	
2,700.00	2,700.00	2,552.00	2,552.00	9.68	102.08	-64.25	1,510.95	-3,132.02	3,477.43	3,365.67	111.76	31.116	
2,800.00	2,800.00	2,652.00	2,652.00	10.04	106.08	-64.25	1,510.95	-3,132.02	3,477.43	3,361.32	116.12	29.948	
2,900.00	2,900.00	2,752.00	2,752.00	10.40	110.08	-64.25	1,510.95	-3,132.02	3,477.43	3,356.96	120.48	28.864	
3,000.00	3,000.00	2,852.00	2,852.00	10.75	114.08	-64.25	1,510.95	-3,132.02	3,477.43	3,352.60	124.83	27.856	
3,100.00	3,100.00	2,952.00	2,952.00	11.11	118.08	-64.25	1,510.95	-3,132.02	3,477.43	3,348.24	129.19	26.917	
3,200.00	3,200.00	3,052.00	3,052.00	11.47	122.08	-64.25	1,510.95	-3,132.02	3,477.43	3,343.88	133.55	26.038	
3,300.00	3,300.00	3,152.00	3,152.00	11.83	126.08	-64.25	1,510.95	-3,132.02	3,477.43	3,339.52	137.91	25.215	
3,400.00	3,400.00	3,252.00	3,252.00	12.19	130.08	-64.25	1,510.95	-3,132.02	3,477.43	3,335.17	142.27	24.443	
3,500.00	3,500.00	3,352.00	3,352.00	12.55	134.08	-64.25	1,510.95	-3,132.02	3,477.43	3,330.81	146.63	23.716	
3,600.00	3,599.95	3,451.95	3,451.95	12.90	138.08	-10.24	1,510.95	-3,132.02	3,474.86	3,323.88	150.98	23.015	
3,700.00	3,699.63	3,551.63	3,551.63	13.25	142.07	-10.31	1,510.95	-3,132.02	3,467.14	3,311.82	155.32	22.323	
3,800.00	3,798.77	3,650.77	3,650.77	13.61	146.03	-10.41	1,510.95	-3,132.02	3,454.30	3,294.67	159.63	21.639	
3,900.00	3,897.08	3,749.08	3,749.08	13.97	149.96	-10.57	1,510.95	-3,132.02	3,436.37	3,272.46	163.91	20.965	
4,000.00	3,994.31	3,846.31	3,846.31	14.33	153.85	-10.77	1,510.95	-3,132.02	3,413.41	3,245.27	168.14	20.301	
4,100.00	4,090.18	3,942.18	3,942.18	14.71	157.69	-11.03	1,510.95	-3,132.02	3,385.48	3,213.17	172.31	19.647	
4,200.00	4,184.43	4,036.43	4,036.43	15.10	161.46	-11.34	1,510.95	-3,132.02	3,352.67	3,176.25	176.42	19.004	
4,217.02	4,200.29	4,052.29	4,052.29	15.17	162.09	-11.40	1,510.95	-3,132.02	3,346.61	3,169.50	177.11	18.896	
4,300.00	4,277.50	4,129.50	4,129.50	15.52	165.18	-11.50	1,510.95	-3,132.02	3,316.70	3,136.24	180.47	18.378	
4,400.00	4,370.53	4,222.53	4,222.53	15.96	168.90	-11.63	1,510.95	-3,132.02	3,280.68	3,096.16	184.52	17.779	
4,500.00	4,463.57	4,315.57	4,315.57	16.42	172.62	-11.76	1,510.95	-3,132.02	3,244.68	3,056.10	188.58	17.206	
4,600.00	4,556.60	4,408.60	4,408.60	16.90	176.34	-11.89	1,510.95	-3,132.02	3,208.69	3,016.05	192.64	16.656	
4,700.00	4,649.64	4,501.64	4,501.64	17.39	180.07	-12.03	1,510.95	-3,132.02	3,172.71	2,976.01	196.71	16.129	
4,800.00	4,742.67	4,594.67	4,594.67	17.89	183.79	-12.17	1,510.95	-3,132.02	3,136.75	2,935.98	200.78	15.623	
4,900.00	4,835.71	4,687.71	4,687.71	18.41	187.51	-12.31	1,510.95	-3,132.02	3,100.81	2,895.96	204.85	15.137	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	4,780.74	4,780.74	18.94	191.23	-12.46	1,510.95	-3,132.02	3,064.89	2,855.96	208.93	14.669	
5,100.00	5,021.78	4,873.78	4,873.78	19.48	194.95	-12.61	1,510.95	-3,132.02	3,028.98	2,815.97	213.01	14.220	
5,200.00	5,114.81	4,966.81	4,966.81	20.03	198.67	-12.76	1,510.95	-3,132.02	2,993.09	2,775.99	217.10	13.787	
5,300.00	5,207.85	5,059.85	5,059.85	20.60	202.39	-12.92	1,510.95	-3,132.02	2,957.22	2,736.03	221.19	13.370	
5,400.00	5,300.88	5,152.88	5,152.88	21.17	206.12	-13.08	1,510.95	-3,132.02	2,921.37	2,696.09	225.28	12.968	
5,500.00	5,393.92	5,245.92	5,245.92	21.74	209.84	-13.24	1,510.95	-3,132.02	2,885.54	2,656.17	229.37	12.580	
5,600.00	5,486.95	5,338.95	5,338.95	22.33	213.56	-13.41	1,510.95	-3,132.02	2,849.73	2,616.26	233.47	12.206	
5,700.00	5,579.99	5,431.99	5,431.99	22.92	217.28	-13.58	1,510.95	-3,132.02	2,813.94	2,576.37	237.57	11.845	
5,800.00	5,673.02	5,525.02	5,525.02	23.52	221.00	-13.76	1,510.95	-3,132.02	2,778.18	2,536.51	241.68	11.495	
5,900.00	5,766.06	5,618.06	5,618.06	24.12	224.72	-13.94	1,510.95	-3,132.02	2,742.44	2,496.66	245.78	11.158	
6,000.00	5,859.09	5,711.09	5,711.09	24.73	228.44	-14.12	1,510.95	-3,132.02	2,706.73	2,456.83	249.89	10.832	
6,043.66	5,899.71	5,751.71	5,751.71	25.00	230.07	-14.21	1,510.95	-3,132.02	2,691.14	2,439.46	251.69	10.692	
6,100.00	5,952.42	5,804.42	5,804.42	25.34	232.18	-14.16	1,510.95	-3,132.02	2,671.79	2,417.78	254.02	10.518	
6,200.00	6,047.34	5,893.00	5,893.00	25.90	235.32	-14.06	1,510.95	-3,132.02	2,641.27	2,383.72	257.56	10.255	
6,300.00	6,143.78	5,883.00	5,883.00	26.41	235.32	-13.89	1,510.95	-3,132.02	2,617.97	2,360.16	257.81	10.155	
6,400.00	6,241.46	5,883.00	5,883.00	26.88	235.32	-13.78	1,510.95	-3,132.02	2,603.34	2,345.63	257.70	10.102	
6,500.00	6,340.13	5,883.00	5,883.00	27.30	235.32	-13.74	1,510.95	-3,132.02	2,597.55	2,340.34	257.21	10.099 ES, SF	
6,514.95	6,354.95	5,883.00	5,883.00	27.36	235.32	-13.74	1,510.95	-3,132.02	2,597.45	2,340.35	257.10	10.103 CC	
6,600.00	6,439.51	5,883.00	5,883.00	27.68	235.32	-13.76	1,510.95	-3,132.02	2,600.69	2,344.36	256.33	10.146	
6,700.00	6,539.33	5,883.00	5,883.00	28.01	235.32	-13.85	1,510.95	-3,132.02	2,612.71	2,357.63	255.08	10.243	
6,760.68	6,600.00	5,883.00	5,883.00	28.20	235.32	-67.96	1,510.95	-3,132.02	2,624.28	2,370.12	254.16	10.325	
6,800.00	6,639.32	5,883.00	5,883.00	28.32	235.32	-67.96	1,510.95	-3,132.02	2,633.08	2,379.59	253.50	10.387	
6,900.00	6,739.32	5,883.00	5,883.00	28.62	235.32	-67.96	1,510.95	-3,132.02	2,657.97	2,406.37	251.60	10.564	
7,000.00	6,839.32	5,883.00	5,883.00	28.92	235.32	-67.96	1,510.95	-3,132.02	2,686.34	2,436.92	249.42	10.770	
7,100.00	6,939.32	5,883.00	5,883.00	29.23	235.32	-67.96	1,510.95	-3,132.02	2,718.11	2,471.12	246.99	11.005	
7,200.00	7,039.32	5,883.00	5,883.00	29.53	235.32	-67.96	1,510.95	-3,132.02	2,753.14	2,508.81	244.33	11.268	
7,300.00	7,139.32	5,883.00	5,883.00	29.84	235.32	-67.96	1,510.95	-3,132.02	2,791.32	2,549.83	241.48	11.559	
7,400.00	7,239.32	5,883.00	5,883.00	30.14	235.32	-67.96	1,510.95	-3,132.02	2,832.51	2,594.05	238.46	11.878	
7,500.00	7,339.32	5,883.00	5,883.00	30.45	235.32	-67.96	1,510.95	-3,132.02	2,876.59	2,641.29	235.30	12.225	
7,600.00	7,439.32	5,883.00	5,883.00	30.76	235.32	-67.96	1,510.95	-3,132.02	2,923.43	2,691.40	232.03	12.600	
7,700.00	7,539.32	5,883.00	5,883.00	31.07	235.32	-67.96	1,510.95	-3,132.02	2,972.89	2,744.23	228.67	13.001	
7,800.00	7,639.32	5,883.00	5,883.00	31.38	235.32	-67.96	1,510.95	-3,132.02	3,024.86	2,799.62	225.24	13.430	
7,900.00	7,739.32	5,883.00	5,883.00	31.69	235.32	-67.96	1,510.95	-3,132.02	3,079.19	2,857.43	221.77	13.885	
8,000.00	7,839.32	5,883.00	5,883.00	32.01	235.32	-67.96	1,510.95	-3,132.02	3,135.78	2,917.50	218.27	14.366	
8,100.00	7,939.32	5,883.00	5,883.00	32.32	235.32	-67.96	1,510.95	-3,132.02	3,194.49	2,979.72	214.77	14.874	
8,160.68	8,000.00	5,883.00	5,883.00	32.51	235.32	-67.96	1,510.95	-3,132.02	3,231.10	3,018.45	212.65	15.195	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
San Juan 27-5 Unit NP 330 - San Juan 27-5 UN 059G - OH - OH												Offset Well Error:	0.00 ft
Survey Program: 100-Standard Keeper, 3570-MWD SDI													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-42.34	2,067.83	-1,884.46	2,803.29				
100.00	100.00	0.00	0.00	0.36	0.00	-42.34	2,067.83	-1,884.46	2,798.76	2,798.39	0.36	7,687.270	
200.00	200.00	25.28	25.28	0.72	0.02	-42.34	2,067.81	-1,884.46	2,797.69	2,796.95	0.74	3,794.944	
300.00	300.00	128.26	128.26	1.08	0.12	-42.35	2,067.47	-1,884.51	2,797.47	2,796.29	1.18	2,375.616	
344.95	344.95	167.94	167.94	1.24	0.17	-42.35	2,067.30	-1,884.64	2,797.43	2,796.06	1.37	2,044.973	
400.00	400.00	218.36	218.36	1.43	0.23	-42.36	2,067.10	-1,884.94	2,797.48	2,795.88	1.60	1,749.252	
500.00	500.00	315.56	315.55	1.79	0.34	-42.38	2,066.59	-1,885.79	2,797.69	2,795.67	2.02	1,387.407	
600.00	600.00	408.74	408.72	2.15	0.46	-42.41	2,066.05	-1,886.92	2,798.08	2,795.64	2.44	1,148.232	
700.00	700.00	505.24	505.21	2.51	0.58	-42.44	2,065.46	-1,888.39	2,798.66	2,795.79	2.86	977.278	
800.00	800.00	600.00	599.96	2.87	0.70	-42.47	2,064.85	-1,889.97	2,799.30	2,796.01	3.29	850.205	
900.00	900.00	694.58	694.52	3.23	0.82	-42.50	2,064.26	-1,891.78	2,800.14	2,796.42	3.72	751.880	
1,000.00	1,000.00	783.82	783.73	3.58	0.93	-42.54	2,063.69	-1,894.00	2,801.35	2,797.20	4.15	674.257	
1,100.00	1,100.00	863.33	863.19	3.94	1.03	-42.59	2,063.18	-1,896.58	2,803.09	2,798.51	4.58	611.998	
1,200.00	1,200.00	949.73	949.53	4.30	1.14	-42.65	2,062.89	-1,900.04	2,805.54	2,800.53	5.02	559.420	
1,300.00	1,300.00	1,036.66	1,036.38	4.66	1.24	-42.70	2,062.79	-1,903.69	2,808.32	2,802.87	5.45	514.908	
1,400.00	1,400.00	1,115.81	1,115.43	5.02	1.34	-42.76	2,063.03	-1,907.49	2,811.79	2,805.90	5.89	477.514	
1,500.00	1,500.00	1,200.00	1,199.51	5.38	1.44	-42.81	2,063.84	-1,911.72	2,815.91	2,809.58	6.33	444.724	
1,600.00	1,600.00	1,284.60	1,283.99	5.74	1.53	-42.86	2,065.08	-1,916.21	2,820.59	2,813.81	6.78	416.027	
1,700.00	1,700.00	1,360.79	1,360.03	6.09	1.62	-42.90	2,066.51	-1,920.60	2,825.91	2,818.69	7.22	391.399	
1,800.00	1,800.00	1,435.78	1,434.85	6.45	1.70	-42.95	2,068.53	-1,925.28	2,832.12	2,824.46	7.66	369.739	
1,900.00	1,900.00	1,516.63	1,515.46	6.81	1.79	-42.99	2,071.14	-1,930.86	2,839.17	2,831.06	8.11	350.182	
2,000.00	2,000.00	1,644.35	1,642.81	7.17	1.93	-43.07	2,075.21	-1,939.66	2,846.27	2,837.65	8.62	330.255	
2,100.00	2,100.00	1,813.01	1,811.23	7.53	2.13	-43.14	2,079.04	-1,948.00	2,851.25	2,842.06	9.18	310.524	
2,200.00	2,200.00	1,936.60	1,934.72	7.89	2.28	-43.17	2,081.03	-1,952.21	2,854.75	2,845.06	9.69	294.592	
2,300.00	2,300.00	2,043.91	2,041.98	8.24	2.41	-43.20	2,082.21	-1,955.45	2,857.62	2,847.44	10.18	280.821	
2,400.00	2,400.00	2,139.19	2,137.21	8.60	2.53	-43.23	2,083.21	-1,958.46	2,860.54	2,849.89	10.65	268.612	
2,500.00	2,500.00	2,235.82	2,233.77	8.96	2.65	-43.27	2,084.20	-1,961.74	2,863.61	2,852.49	11.11	257.688	
2,600.00	2,600.00	2,337.05	2,334.94	9.32	2.78	-43.30	2,085.25	-1,965.22	2,866.73	2,855.14	11.59	247.318	
2,700.00	2,700.00	2,438.42	2,436.25	9.68	2.91	-43.34	2,086.22	-1,968.64	2,869.73	2,857.66	12.07	237.798	
2,800.00	2,800.00	2,539.04	2,536.80	10.04	3.03	-43.38	2,087.16	-1,972.14	2,872.81	2,860.26	12.54	229.042	
2,900.00	2,900.00	2,649.33	2,647.02	10.40	3.18	-43.42	2,087.88	-1,975.90	2,875.62	2,862.59	13.03	220.744	
3,000.00	3,000.00	2,748.77	2,746.41	10.75	3.30	-43.46	2,088.41	-1,979.05	2,878.19	2,864.69	13.50	213.242	
3,100.00	3,100.00	2,836.70	2,834.30	11.11	3.42	-43.49	2,089.06	-1,982.00	2,881.03	2,867.08	13.96	206.443	
3,200.00	3,200.00	2,920.27	2,917.80	11.47	3.52	-43.52	2,090.05	-1,985.02	2,884.39	2,869.98	14.41	200.157	
3,300.00	3,300.00	3,000.00	2,997.46	11.83	3.62	-43.55	2,091.32	-1,988.28	2,888.36	2,873.50	14.86	194.343	
3,400.00	3,400.00	3,088.13	3,085.49	12.19	3.73	-43.58	2,093.18	-1,992.09	2,892.88	2,877.55	15.33	188.748	
3,500.00	3,500.00	3,176.40	3,173.63	12.55	3.84	-43.61	2,095.55	-1,995.95	2,897.84	2,882.04	15.79	183.492	
3,600.00	3,599.95	3,269.56	3,266.66	12.90	3.94	10.40	2,098.49	-2,000.02	2,900.56	2,884.29	16.26	178.358	
3,700.00	3,699.63	3,362.13	3,359.09	13.25	4.05	10.43	2,101.99	-2,003.72	2,898.34	2,881.61	16.73	173.260	
3,800.00	3,798.77	3,500.74	3,497.51	13.61	4.20	10.54	2,107.39	-2,008.54	2,890.79	2,873.52	17.26	167.473	
3,900.00	3,897.08	3,596.98	3,593.65	13.97	4.23	10.69	2,110.59	-2,011.39	2,877.27	2,859.63	17.64	163.120	
4,000.00	3,994.31	3,720.87	3,717.45	14.33	4.24	10.91	2,114.28	-2,014.63	2,858.19	2,840.19	18.01	158.740	
4,100.00	4,090.18	3,821.82	3,818.34	14.71	4.27	11.17	2,116.62	-2,017.00	2,833.46	2,815.08	18.38	154.199	
4,200.00	4,184.43	4,119.46	4,115.86	15.10	4.41	11.87	2,119.94	-2,015.76	2,802.76	2,783.92	18.84	148.776	
4,217.02	4,200.29	4,139.17	4,135.55	15.17	4.42	11.96	2,119.76	-2,014.82	2,796.08	2,777.17	18.91	147.861	
4,300.00	4,277.50	4,211.96	4,208.25	15.52	4.47	12.14	2,119.01	-2,011.26	2,763.10	2,743.87	19.23	143.663	
4,400.00	4,370.53	4,294.00	4,290.20	15.96	4.52	12.33	2,118.09	-2,007.65	2,723.62	2,703.99	19.63	138.760	
4,500.00	4,463.57	4,374.66	4,370.79	16.42	4.58	12.51	2,117.27	-2,004.41	2,684.49	2,664.45	20.04	133.987	
4,600.00	4,556.60	4,463.24	4,459.32	16.90	4.66	12.71	2,116.33	-2,001.54	2,645.82	2,625.36	20.46	129.323	
4,700.00	4,649.64	4,543.00	4,539.04	17.39	4.73	12.90	2,115.48	-1,999.18	2,607.36	2,586.47	20.89	124.814	
4,800.00	4,742.67	4,683.45	4,679.34	17.89	4.87	13.25	2,113.67	-1,993.11	2,567.76	2,546.39	21.37	120.163	
4,900.00	4,835.71	4,767.36	4,763.15	18.41	4.96	13.48	2,112.19	-1,989.17	2,527.85	2,506.02	21.83	115.812	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
San Juan 27-5 Unit NP 330 - San Juan 27-5 UN 059G - OH - OH												Offset Well Error:	0.00 ft
Survey Program: 100-Standard Keeper, 3570-MWD SDI													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.00	4,928.74	4,846.13	4,841.85	18.94	5.05	13.69	2,111.07	-1,985.93	2,488.52	2,466.23	22.29	111.651	
5,100.00	5,021.78	4,984.76	4,980.30	19.48	5.21	14.08	2,108.75	-1,979.58	2,448.95	2,426.15	22.80	107.432	
5,200.00	5,114.81	5,074.17	5,069.55	20.03	5.32	14.36	2,107.01	-1,974.42	2,408.37	2,385.08	23.29	103.428	
5,300.00	5,207.85	5,182.78	5,177.93	20.60	5.47	14.69	2,103.82	-1,968.17	2,367.14	2,343.35	23.79	99.487	
5,400.00	5,300.88	5,255.96	5,250.97	21.17	5.57	14.91	2,101.37	-1,964.40	2,326.08	2,301.79	24.29	95.758	
5,500.00	5,393.92	5,332.57	5,327.46	21.74	5.67	15.16	2,099.65	-1,960.44	2,285.79	2,260.99	24.80	92.174	
5,600.00	5,486.95	5,423.80	5,418.56	22.33	5.80	15.45	2,097.43	-1,956.24	2,245.76	2,220.44	25.32	88.691	
5,700.00	5,579.99	5,504.08	5,498.75	22.92	5.92	15.71	2,095.41	-1,953.01	2,206.07	2,180.22	25.85	85.354	
5,800.00	5,673.02	5,606.47	5,601.01	23.52	6.07	16.07	2,093.44	-1,948.13	2,166.42	2,140.04	26.39	82.101	
5,900.00	5,766.06	5,677.82	5,672.26	24.12	6.18	16.34	2,092.29	-1,944.59	2,126.94	2,100.01	26.93	78.987	
6,000.00	5,859.09	5,751.59	5,745.96	24.73	6.29	16.62	2,091.51	-1,941.51	2,088.36	2,060.89	27.47	76.011	
6,043.66	5,899.71	5,786.24	5,780.59	25.00	6.35	16.75	2,091.13	-1,940.37	2,071.75	2,044.03	27.72	74.749	
6,100.00	5,952.42	5,848.16	5,842.48	25.34	6.45	16.78	2,090.29	-1,938.46	2,051.04	2,023.00	28.03	73.164	
6,200.00	6,047.34	5,938.80	5,933.06	25.90	6.59	16.76	2,088.85	-1,935.55	2,017.74	1,989.15	28.59	70.565	
6,300.00	6,143.78	6,029.06	6,023.27	26.41	6.74	16.74	2,087.47	-1,932.94	1,989.49	1,960.33	29.15	68.239	
6,400.00	6,241.46	6,121.48	6,115.65	26.88	6.89	16.74	2,086.22	-1,930.52	1,966.40	1,936.69	29.71	66.179	
6,500.00	6,340.13	6,226.98	6,221.11	27.30	7.07	16.75	2,084.36	-1,928.06	1,948.09	1,917.82	30.27	64.364	
6,600.00	6,439.51	6,313.25	6,307.34	27.68	7.22	16.76	2,083.38	-1,925.73	1,935.01	1,904.20	30.81	62.804	
6,700.00	6,539.33	6,413.20	6,407.23	28.01	7.39	16.79	2,082.28	-1,922.76	1,926.79	1,895.44	31.35	61.468	
6,760.68	6,600.00	6,492.70	6,486.70	28.20	7.53	-37.21	2,081.35	-1,920.50	1,924.29	1,892.62	31.67	60.766	
6,800.00	6,639.32	6,528.36	6,522.34	28.32	7.59	-37.20	2,080.82	-1,919.33	1,923.04	1,891.17	31.87	60.334	
6,900.00	6,739.32	6,635.74	6,629.65	28.62	7.78	-37.14	2,079.09	-1,915.73	1,919.73	1,887.33	32.40	59.251	
7,000.00	6,839.32	6,726.80	6,720.63	28.92	7.94	-37.09	2,077.74	-1,912.49	1,916.40	1,883.48	32.93	58.202	
7,100.00	6,939.32	6,818.72	6,812.50	29.23	8.11	-37.04	2,076.69	-1,909.60	1,913.60	1,880.14	33.46	57.198	
7,200.00	7,039.32	6,908.91	6,902.66	29.53	8.27	-37.00	2,075.80	-1,907.13	1,911.17	1,877.18	33.99	56.234	
7,300.00	7,139.32	7,006.50	7,000.21	29.84	8.45	-36.96	2,074.91	-1,905.03	1,909.14	1,874.62	34.52	55.310	
7,400.00	7,239.32	7,097.29	7,090.99	30.14	8.62	-36.93	2,074.15	-1,903.28	1,907.32	1,872.28	35.05	54.421	
7,453.65	7,292.97	7,122.31	7,116.00	30.31	8.66	-36.92	2,074.16	-1,902.85	1,906.86	1,871.54	35.32	53.986 CC, ES	
7,500.00	7,339.32	7,142.00	7,135.69	30.45	8.70	-36.92	2,074.36	-1,902.92	1,907.24	1,871.69	35.55	53.647	
7,600.00	7,439.32	7,157.61	7,151.29	30.76	8.73	-36.93	2,074.72	-1,903.46	1,910.90	1,874.90	36.00	53.077	
7,700.00	7,539.32	7,174.00	7,167.62	31.07	8.76	-36.94	2,075.39	-1,904.68	1,918.85	1,882.44	36.41	52.706	
7,800.00	7,639.32	7,190.58	7,184.05	31.38	8.78	-36.97	2,076.43	-1,906.64	1,931.10	1,894.34	36.76	52.529 SF	
7,900.00	7,739.32	7,205.00	7,198.23	31.69	8.81	-37.00	2,077.65	-1,908.94	1,947.65	1,910.58	37.07	52.545	
8,000.00	7,839.32	7,220.15	7,212.99	32.01	8.83	-37.05	2,079.26	-1,911.97	1,968.39	1,931.07	37.33	52.736	
8,100.00	7,939.32	7,236.00	7,228.21	32.32	8.86	-37.10	2,081.28	-1,915.85	1,993.27	1,955.72	37.54	53.092	
8,160.68	8,000.00	7,236.00	7,228.21	32.51	8.86	-37.10	2,081.28	-1,915.85	2,010.37	1,972.75	37.62	53.439	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-65.16	884.69	-1,910.96	2,110.26				
100.00	100.00	0.00	0.00	0.36	0.00	-65.16	884.69	-1,910.96	2,106.14	2,105.77	0.36	5,836.025	
152.91	152.91	15.91	15.91	0.55	0.64	-65.16	884.69	-1,910.96	2,105.81	2,104.63	1.18	1,777.439	
200.00	200.00	63.00	63.00	0.72	2.52	-65.16	884.69	-1,910.96	2,105.81	2,102.57	3.24	650.540	
300.00	300.00	163.00	163.00	1.08	6.52	-65.16	884.69	-1,910.96	2,105.81	2,098.21	7.60	277.248	
400.00	400.00	263.00	263.00	1.43	10.52	-65.16	884.69	-1,910.96	2,105.81	2,093.86	11.95	176.161	
500.00	500.00	363.00	363.00	1.79	14.52	-65.16	884.69	-1,910.96	2,105.81	2,089.50	16.31	129.093	
600.00	600.00	463.00	463.00	2.15	18.52	-65.16	884.69	-1,910.96	2,105.81	2,085.14	20.67	101.874	
700.00	700.00	563.00	563.00	2.51	22.52	-65.16	884.69	-1,910.96	2,105.81	2,080.78	25.03	84.134	
800.00	800.00	663.00	663.00	2.87	26.52	-65.16	884.69	-1,910.96	2,105.81	2,076.42	29.39	71.656	
900.00	900.00	763.00	763.00	3.23	30.52	-65.16	884.69	-1,910.96	2,105.81	2,072.06	33.75	62.401	
1,000.00	1,000.00	863.00	863.00	3.58	34.52	-65.16	884.69	-1,910.96	2,105.81	2,067.71	38.10	55.264	
1,100.00	1,100.00	963.00	963.00	3.94	38.52	-65.16	884.69	-1,910.96	2,105.81	2,063.35	42.46	49.591	
1,200.00	1,200.00	1,063.00	1,063.00	4.30	42.52	-65.16	884.69	-1,910.96	2,105.81	2,058.99	46.82	44.975	
1,300.00	1,300.00	1,163.00	1,163.00	4.66	46.52	-65.16	884.69	-1,910.96	2,105.81	2,054.63	51.18	41.145	
1,400.00	1,400.00	1,263.00	1,263.00	5.02	50.52	-65.16	884.69	-1,910.96	2,105.81	2,050.27	55.54	37.916	
1,500.00	1,500.00	1,363.00	1,363.00	5.38	54.52	-65.16	884.69	-1,910.96	2,105.81	2,045.91	59.90	35.157	
1,600.00	1,600.00	1,463.00	1,463.00	5.74	58.52	-65.16	884.69	-1,910.96	2,105.81	2,041.55	64.26	32.772	
1,700.00	1,700.00	1,563.00	1,563.00	6.09	62.52	-65.16	884.69	-1,910.96	2,105.81	2,037.20	68.61	30.691	
1,800.00	1,800.00	1,663.00	1,663.00	6.45	66.52	-65.16	884.69	-1,910.96	2,105.81	2,032.84	72.97	28.858	
1,900.00	1,900.00	1,763.00	1,763.00	6.81	70.52	-65.16	884.69	-1,910.96	2,105.81	2,028.48	77.33	27.231	
2,000.00	2,000.00	1,863.00	1,863.00	7.17	74.52	-65.16	884.69	-1,910.96	2,105.81	2,024.12	81.69	25.778	
2,100.00	2,100.00	1,963.00	1,963.00	7.53	78.52	-65.16	884.69	-1,910.96	2,105.81	2,019.76	86.05	24.473	
2,200.00	2,200.00	2,063.00	2,063.00	7.89	82.52	-65.16	884.69	-1,910.96	2,105.81	2,015.40	90.41	23.293	
2,300.00	2,300.00	2,163.00	2,163.00	8.24	86.52	-65.16	884.69	-1,910.96	2,105.81	2,011.05	94.76	22.221	
2,400.00	2,400.00	2,263.00	2,263.00	8.60	90.52	-65.16	884.69	-1,910.96	2,105.81	2,006.69	99.12	21.244	
2,500.00	2,500.00	2,363.00	2,363.00	8.96	94.52	-65.16	884.69	-1,910.96	2,105.81	2,002.33	103.48	20.350	
2,600.00	2,600.00	2,463.00	2,463.00	9.32	98.52	-65.16	884.69	-1,910.96	2,105.81	1,997.97	107.84	19.527	
2,700.00	2,700.00	2,563.00	2,563.00	9.68	102.52	-65.16	884.69	-1,910.96	2,105.81	1,993.61	112.20	18.769	
2,800.00	2,800.00	2,663.00	2,663.00	10.04	106.52	-65.16	884.69	-1,910.96	2,105.81	1,989.25	116.56	18.067	
2,900.00	2,900.00	2,763.00	2,763.00	10.40	110.52	-65.16	884.69	-1,910.96	2,105.81	1,984.89	120.92	17.416	
3,000.00	3,000.00	2,863.00	2,863.00	10.75	114.52	-65.16	884.69	-1,910.96	2,105.81	1,980.54	125.27	16.810	
3,100.00	3,100.00	2,963.00	2,963.00	11.11	118.52	-65.16	884.69	-1,910.96	2,105.81	1,976.18	129.63	16.244	
3,200.00	3,200.00	3,063.00	3,063.00	11.47	122.52	-65.16	884.69	-1,910.96	2,105.81	1,971.82	133.99	15.716	
3,300.00	3,300.00	3,163.00	3,163.00	11.83	126.52	-65.16	884.69	-1,910.96	2,105.81	1,967.46	138.35	15.221	
3,400.00	3,400.00	3,263.00	3,263.00	12.19	130.52	-65.16	884.69	-1,910.96	2,105.81	1,963.10	142.71	14.756	
3,500.00	3,500.00	3,363.00	3,363.00	12.55	134.52	-65.16	884.69	-1,910.96	2,105.81	1,958.74	147.07	14.319	
3,600.00	3,599.95	3,462.95	3,462.95	12.90	138.52	-11.16	884.69	-1,910.96	2,103.24	1,951.82	151.42	13.890	
3,700.00	3,699.63	3,562.63	3,562.63	13.25	142.51	-11.25	884.69	-1,910.96	2,095.55	1,939.79	155.76	13.454	
3,800.00	3,798.77	3,661.77	3,661.77	13.61	146.47	-11.39	884.69	-1,910.96	2,082.74	1,922.67	160.07	13.011	
3,900.00	3,897.08	3,760.08	3,760.08	13.97	150.40	-11.60	884.69	-1,910.96	2,064.88	1,900.53	164.35	12.564	
4,000.00	3,994.31	3,857.31	3,857.31	14.33	154.29	-11.88	884.69	-1,910.96	2,042.00	1,873.42	168.58	12.113	
4,100.00	4,090.18	3,953.18	3,953.18	14.71	158.13	-12.23	884.69	-1,910.96	2,014.17	1,841.42	172.75	11.659	
4,200.00	4,184.43	4,047.43	4,047.43	15.10	161.90	-12.66	884.69	-1,910.96	1,981.50	1,804.64	176.86	11.204	
4,217.02	4,200.29	4,063.29	4,063.29	15.17	162.53	-12.74	884.69	-1,910.96	1,975.46	1,797.91	177.55	11.126	
4,300.00	4,277.50	4,140.50	4,140.50	15.52	165.62	-12.93	884.69	-1,910.96	1,945.69	1,764.78	180.91	10.755	
4,400.00	4,370.53	4,233.53	4,233.53	15.96	169.34	-13.18	884.69	-1,910.96	1,909.85	1,724.89	184.96	10.326	
4,500.00	4,463.57	4,326.57	4,326.57	16.42	173.06	-13.43	884.69	-1,910.96	1,874.04	1,685.02	189.02	9.914	
4,600.00	4,556.60	4,419.60	4,419.60	16.90	176.78	-13.70	884.69	-1,910.96	1,838.26	1,645.18	193.09	9.520	
4,700.00	4,649.64	4,512.64	4,512.64	17.39	180.51	-13.97	884.69	-1,910.96	1,802.52	1,605.37	197.15	9.143	
4,800.00	4,742.67	4,605.67	4,605.67	17.89	184.23	-14.26	884.69	-1,910.96	1,766.82	1,565.59	201.23	8.780	
4,900.00	4,835.71	4,698.71	4,698.71	18.41	187.95	-14.56	884.69	-1,910.96	1,731.16	1,525.85	205.31	8.432	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	4,791.74	4,791.74	18.94	191.67	-14.87	884.69	-1,910.96	1,695.54	1,486.15	209.39	8.098	
5,100.00	5,021.78	4,884.78	4,884.78	19.48	195.39	-15.19	884.69	-1,910.96	1,659.96	1,446.49	213.47	7.776	
5,200.00	5,114.81	4,977.81	4,977.81	20.03	199.11	-15.53	884.69	-1,910.96	1,624.44	1,406.87	217.57	7.466	
5,300.00	5,207.85	5,070.85	5,070.85	20.60	202.83	-15.88	884.69	-1,910.96	1,588.96	1,367.30	221.66	7.168	
5,400.00	5,300.88	5,163.88	5,163.88	21.17	206.56	-16.25	884.69	-1,910.96	1,553.54	1,327.78	225.76	6.881	
5,500.00	5,393.92	5,256.92	5,256.92	21.74	210.28	-16.63	884.69	-1,910.96	1,518.18	1,288.32	229.87	6.605	
5,600.00	5,486.95	5,349.95	5,349.95	22.33	214.00	-17.04	884.69	-1,910.96	1,482.89	1,248.91	233.97	6.338	
5,700.00	5,579.99	5,442.99	5,442.99	22.92	217.72	-17.46	884.69	-1,910.96	1,447.66	1,209.57	238.09	6.080	
5,800.00	5,673.02	5,536.02	5,536.02	23.52	221.44	-17.90	884.69	-1,910.96	1,412.51	1,170.30	242.21	5.832	
5,900.00	5,766.06	5,629.06	5,629.06	24.12	225.16	-18.37	884.69	-1,910.96	1,377.43	1,131.10	246.33	5.592	
6,000.00	5,859.09	5,722.09	5,722.09	24.73	228.88	-18.86	884.69	-1,910.96	1,342.44	1,091.98	250.46	5.360	
6,043.66	5,899.71	5,762.71	5,762.71	25.00	230.51	-19.08	884.69	-1,910.96	1,327.20	1,074.93	252.27	5.261	
6,100.00	5,952.42	5,815.42	5,815.42	25.34	232.62	-19.16	884.69	-1,910.96	1,308.28	1,053.68	254.61	5.138	
6,200.00	6,047.34	5,910.34	5,910.34	25.90	236.41	-19.31	884.69	-1,910.96	1,278.45	1,019.63	258.81	4.940	
6,300.00	6,143.78	6,006.78	6,006.78	26.41	240.27	-19.45	884.69	-1,910.96	1,253.43	990.35	263.07	4.765	
6,400.00	6,241.46	6,104.46	6,104.46	26.88	244.18	-19.57	884.69	-1,910.96	1,233.27	965.89	267.38	4.612	
6,500.00	6,340.13	6,203.13	6,203.13	27.30	248.13	-19.67	884.69	-1,910.96	1,217.99	946.28	271.71	4.483	
6,600.00	6,439.51	6,302.51	6,302.51	27.68	252.10	-19.74	884.69	-1,910.96	1,207.62	931.57	276.05	4.375	
6,700.00	6,539.33	6,402.33	6,402.33	28.01	256.09	-19.78	884.69	-1,910.96	1,202.17	921.77	280.40	4.287	
6,760.68	6,600.00	6,463.00	6,463.00	28.20	258.52	-73.81	884.69	-1,910.96	1,201.26	918.23	283.03	4.244	
6,800.00	6,639.32	6,502.32	6,502.32	28.32	260.09	-73.81	884.69	-1,910.96	1,201.26	916.53	284.73	4.219	
6,900.00	6,739.32	6,602.32	6,602.32	28.62	264.09	-73.81	884.69	-1,910.96	1,201.26	912.19	289.07	4.156	
7,000.00	6,839.32	6,702.32	6,702.32	28.92	268.09	-73.81	884.69	-1,910.96	1,201.26	907.86	293.40	4.094	
7,100.00	6,939.32	6,802.32	6,802.32	29.23	272.09	-73.81	884.69	-1,910.96	1,201.26	903.52	297.74	4.035	
7,200.00	7,039.32	6,902.32	6,902.32	29.53	276.09	-73.81	884.69	-1,910.96	1,201.26	899.18	302.08	3.977	
7,300.00	7,139.32	7,002.32	7,002.32	29.84	280.09	-73.81	884.69	-1,910.96	1,201.26	894.84	306.42	3.920	
7,400.00	7,239.32	7,102.32	7,102.32	30.14	284.09	-73.81	884.69	-1,910.96	1,201.26	890.51	310.75	3.866	
7,500.00	7,339.32	7,202.32	7,202.32	30.45	288.09	-73.81	884.69	-1,910.96	1,201.26	886.17	315.09	3.812	
7,600.00	7,439.32	7,302.32	7,302.32	30.76	292.09	-73.81	884.69	-1,910.96	1,201.26	881.83	319.43	3.761	
7,700.00	7,539.32	7,402.32	7,402.32	31.07	296.09	-73.81	884.69	-1,910.96	1,201.26	877.49	323.77	3.710	
7,800.00	7,639.32	7,502.32	7,502.32	31.38	300.09	-73.81	884.69	-1,910.96	1,201.26	873.15	328.11	3.661	
7,900.00	7,739.32	7,602.32	7,602.32	31.69	304.09	-73.81	884.69	-1,910.96	1,201.26	868.81	332.45	3.613	
8,000.00	7,839.32	7,702.32	7,702.32	32.01	308.09	-73.81	884.69	-1,910.96	1,201.26	864.47	336.79	3.567	
8,009.19	7,848.51	7,711.51	7,711.51	32.04	308.46	-73.81	884.69	-1,910.96	1,201.26	864.07	337.19	3.563 CC	
8,100.00	7,939.32	7,784.00	7,784.00	32.32	311.36	-73.81	884.69	-1,910.96	1,201.40	861.00	340.40	3.529 ES, SF	
8,160.68	8,000.00	7,784.00	7,784.00	32.51	311.36	-73.81	884.69	-1,910.96	1,203.85	863.79	340.06	3.540	

Released to Imaging: 11/14/2024 1:51:29 PM

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-131.10	-1,856.54	-2,128.39	2,824.78				
100.00	100.00	49.00	49.00	0.36	1.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,822.00	2.32	1,218.127	
200.00	200.00	149.00	149.00	0.72	5.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,817.64	6.68	422.995	
300.00	300.00	249.00	249.00	1.08	9.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,813.28	11.04	255.932	
400.00	400.00	349.00	349.00	1.43	13.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,808.92	15.39	183.470	
500.00	500.00	449.00	449.00	1.79	17.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,804.56	19.75	142.986	
600.00	600.00	549.00	549.00	2.15	21.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,800.21	24.11	117.139	
700.00	700.00	649.00	649.00	2.51	25.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,795.85	28.47	99.206	
800.00	800.00	749.00	749.00	2.87	29.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,791.49	32.83	86.034	
900.00	900.00	849.00	849.00	3.23	33.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,787.13	37.19	75.951	
1,000.00	1,000.00	949.00	949.00	3.58	37.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,782.77	41.54	67.983	
1,100.00	1,100.00	1,049.00	1,049.00	3.94	41.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,778.41	45.90	61.528	
1,200.00	1,200.00	1,149.00	1,149.00	4.30	45.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,774.05	50.26	56.192	
1,300.00	1,300.00	1,249.00	1,249.00	4.66	49.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,769.70	54.62	51.708	
1,400.00	1,400.00	1,349.00	1,349.00	5.02	53.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,765.34	58.98	47.887	
1,500.00	1,500.00	1,449.00	1,449.00	5.38	57.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,760.98	63.34	44.592	
1,600.00	1,600.00	1,549.00	1,549.00	5.74	61.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,756.62	67.70	41.721	
1,700.00	1,700.00	1,649.00	1,649.00	6.09	65.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,752.26	72.05	39.197	
1,800.00	1,800.00	1,749.00	1,749.00	6.45	69.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,747.90	76.41	36.961	
1,900.00	1,900.00	1,849.00	1,849.00	6.81	73.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,743.55	80.77	34.967	
2,000.00	2,000.00	1,949.00	1,949.00	7.17	77.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,739.19	85.13	33.177	
2,100.00	2,100.00	2,049.00	2,049.00	7.53	81.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,734.83	89.49	31.561	
2,200.00	2,200.00	2,149.00	2,149.00	7.89	85.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,730.47	93.85	30.095	
2,300.00	2,300.00	2,249.00	2,249.00	8.24	89.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,726.11	98.20	28.759	
2,400.00	2,400.00	2,349.00	2,349.00	8.60	93.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,721.75	102.56	27.537	
2,500.00	2,500.00	2,449.00	2,449.00	8.96	97.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,717.39	106.92	26.415	
2,600.00	2,600.00	2,549.00	2,549.00	9.32	101.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,713.04	111.28	25.380	
2,700.00	2,700.00	2,649.00	2,649.00	9.68	105.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,708.68	115.64	24.424	
2,800.00	2,800.00	2,749.00	2,749.00	10.04	109.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,704.32	120.00	23.537	
2,900.00	2,900.00	2,849.00	2,849.00	10.40	113.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,699.96	124.36	22.712	
3,000.00	3,000.00	2,949.00	2,949.00	10.75	117.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,695.60	128.71	21.943	
3,100.00	3,100.00	3,049.00	3,049.00	11.11	121.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,691.24	133.07	21.224	
3,200.00	3,200.00	3,149.00	3,149.00	11.47	125.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,686.89	137.43	20.551	
3,300.00	3,300.00	3,249.00	3,249.00	11.83	129.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,682.53	141.79	19.919	
3,400.00	3,400.00	3,349.00	3,349.00	12.19	133.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,678.17	146.15	19.325	
3,500.00	3,500.00	3,449.00	3,449.00	12.55	137.96	-131.10	-1,856.54	-2,128.39	2,824.32	2,673.81	150.51	18.765	
3,600.00	3,599.95	3,548.95	3,548.95	12.90	141.96	-77.14	-1,856.54	-2,128.39	2,823.73	2,668.87	154.86	18.234	
3,700.00	3,699.63	3,648.63	3,648.63	13.25	145.95	-77.35	-1,856.54	-2,128.39	2,821.99	2,662.80	159.20	17.726	
3,800.00	3,798.77	3,747.77	3,747.77	13.61	149.91	-77.69	-1,856.54	-2,128.39	2,819.15	2,655.63	163.52	17.241	
3,900.00	3,897.08	3,846.08	3,846.08	13.97	153.84	-78.16	-1,856.54	-2,128.39	2,815.27	2,647.47	167.80	16.777	
4,000.00	3,994.31	3,943.31	3,943.31	14.33	157.73	-78.75	-1,856.54	-2,128.39	2,810.47	2,638.42	172.06	16.335	
4,100.00	4,090.18	4,039.18	4,039.18	14.71	161.57	-79.46	-1,856.54	-2,128.39	2,804.88	2,628.62	176.26	15.913	
4,200.00	4,184.43	4,133.43	4,133.43	15.10	165.34	-80.28	-1,856.54	-2,128.39	2,798.67	2,618.24	180.43	15.511	
4,217.02	4,200.29	4,149.29	4,149.29	15.17	165.97	-80.43	-1,856.54	-2,128.39	2,797.56	2,616.43	181.13	15.445	
4,300.00	4,277.50	4,226.50	4,226.50	15.52	169.06	-81.00	-1,856.54	-2,128.39	2,792.29	2,607.73	184.57	15.129	
4,400.00	4,370.53	4,319.53	4,319.53	15.96	172.78	-81.70	-1,856.54	-2,128.39	2,786.38	2,597.65	188.72	14.764	
4,500.00	4,463.57	4,412.57	4,412.57	16.42	176.50	-82.39	-1,856.54	-2,128.39	2,780.93	2,588.03	192.90	14.416	
4,600.00	4,556.60	4,505.60	4,505.60	16.90	180.22	-83.09	-1,856.54	-2,128.39	2,775.96	2,578.86	197.10	14.084	
4,700.00	4,649.64	4,598.64	4,598.64	17.39	183.95	-83.79	-1,856.54	-2,128.39	2,771.46	2,570.15	201.31	13.767	
4,800.00	4,742.67	4,691.67	4,691.67	17.89	187.67	-84.50	-1,856.54	-2,128.39	2,767.44	2,561.91	205.54	13.464	
4,900.00	4,835.71	4,784.71	4,784.71	18.41	191.39	-85.20	-1,856.54	-2,128.39	2,763.91	2,554.13	209.78	13.175	
5,000.00	4,928.74	4,877.74	4,877.74	18.94	195.11	-85.91	-1,856.54	-2,128.39	2,760.85	2,546.82	214.03	12.899	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,021.78	4,970.78	4,970.78	19.48	198.83	-86.61	-1,856.54	-2,128.39	2,758.28	2,539.98	218.30	12.635	
5,200.00	5,114.81	5,063.81	5,063.81	20.03	202.55	-87.32	-1,856.54	-2,128.39	2,756.20	2,533.62	222.57	12.383	
5,300.00	5,207.85	5,156.85	5,156.85	20.60	206.27	-88.03	-1,856.54	-2,128.39	2,754.60	2,527.74	226.86	12.142	
5,400.00	5,300.88	5,249.88	5,249.88	21.17	210.00	-88.74	-1,856.54	-2,128.39	2,753.49	2,522.33	231.15	11.912	
5,500.00	5,393.92	5,342.92	5,342.92	21.74	213.72	-89.45	-1,856.54	-2,128.39	2,752.86	2,517.41	235.45	11.692	
5,577.62	5,466.12	5,415.12	5,415.12	22.20	216.60	-90.00	-1,856.54	-2,128.39	2,752.72	2,513.92	238.80	11.527 CC	
5,600.00	5,486.95	5,435.95	5,435.95	22.33	217.44	-90.16	-1,856.54	-2,128.39	2,752.73	2,512.97	239.76	11.481	
5,700.00	5,579.99	5,528.99	5,528.99	22.92	221.16	-90.87	-1,856.54	-2,128.39	2,753.08	2,509.00	244.08	11.280	
5,800.00	5,673.02	5,622.02	5,622.02	23.52	224.88	-91.58	-1,856.54	-2,128.39	2,753.92	2,505.52	248.40	11.087	
5,900.00	5,766.06	5,715.06	5,715.06	24.12	228.60	-92.29	-1,856.54	-2,128.39	2,755.25	2,502.53	252.72	10.902	
6,000.00	5,859.09	5,808.09	5,808.09	24.73	232.32	-93.00	-1,856.54	-2,128.39	2,757.07	2,500.02	257.05	10.726	
6,043.66	5,899.71	5,848.71	5,848.71	25.00	233.95	-93.31	-1,856.54	-2,128.39	2,758.01	2,499.07	258.94	10.651	
6,100.00	5,952.42	5,901.42	5,901.42	25.34	236.06	-93.73	-1,856.54	-2,128.39	2,759.32	2,497.93	261.39	10.556	
6,200.00	6,047.34	5,996.34	5,996.34	25.90	239.85	-94.42	-1,856.54	-2,128.39	2,761.67	2,495.92	265.75	10.392	
6,300.00	6,143.78	6,092.78	6,092.78	26.41	243.71	-95.01	-1,856.54	-2,128.39	2,763.92	2,493.81	270.11	10.232	
6,400.00	6,241.46	6,190.46	6,190.46	26.88	247.62	-95.50	-1,856.54	-2,128.39	2,765.92	2,491.44	274.48	10.077	
6,500.00	6,340.13	6,289.13	6,289.13	27.30	251.57	-95.88	-1,856.54	-2,128.39	2,767.55	2,488.70	278.85	9.925	
6,600.00	6,439.51	6,388.51	6,388.51	27.68	255.54	-96.14	-1,856.54	-2,128.39	2,768.71	2,485.51	283.20	9.777	
6,700.00	6,539.33	6,488.33	6,488.33	28.01	259.53	-96.28	-1,856.54	-2,128.39	2,769.34	2,481.81	287.53	9.632	
6,760.68	6,600.00	6,549.00	6,549.00	28.20	261.96	-150.33	-1,856.54	-2,128.39	2,769.44	2,479.30	290.14	9.545	
6,800.00	6,639.32	6,588.32	6,588.32	28.32	263.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,477.61	291.83	9.490	
6,900.00	6,739.32	6,688.32	6,688.32	28.62	267.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,473.31	296.13	9.352	
7,000.00	6,839.32	6,788.32	6,788.32	28.92	271.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,469.01	300.43	9.218	
7,100.00	6,939.32	6,888.32	6,888.32	29.23	275.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,464.70	304.74	9.088	
7,200.00	7,039.32	6,988.32	6,988.32	29.53	279.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,460.40	309.04	8.961	
7,300.00	7,139.32	7,088.32	7,088.32	29.84	283.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,456.09	313.35	8.838	
7,400.00	7,239.32	7,188.32	7,188.32	30.14	287.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,451.78	317.66	8.718	
7,500.00	7,339.32	7,288.32	7,288.32	30.45	291.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,447.48	321.97	8.602	
7,600.00	7,439.32	7,388.32	7,388.32	30.76	295.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,443.17	326.28	8.488	
7,700.00	7,539.32	7,488.32	7,488.32	31.07	299.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,438.86	330.59	8.377	
7,800.00	7,639.32	7,588.32	7,588.32	31.38	303.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,434.54	334.90	8.270	
7,900.00	7,739.32	7,688.32	7,688.32	31.69	307.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,430.23	339.21	8.164	
8,000.00	7,839.32	7,788.32	7,788.32	32.01	311.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,425.92	343.52	8.062	
8,100.00	7,939.32	7,888.32	7,888.32	32.32	315.53	-150.33	-1,856.54	-2,128.39	2,769.44	2,421.60	347.84	7.962	
8,160.68	8,000.00	7,900.00	7,900.00	32.51	316.00	-150.33	-1,856.54	-2,128.39	2,769.87	2,421.44	348.44	7.949 ES, SF	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-130.02	-1,954.81	-2,328.02	3,040.47				
100.00	100.00	41.00	41.00	0.36	1.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,037.90	2.00	1,521.022	
200.00	200.00	141.00	141.00	0.72	5.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,033.54	6.36	478.201	
300.00	300.00	241.00	241.00	1.08	9.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,029.18	10.72	283.694	
400.00	400.00	341.00	341.00	1.43	13.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,024.82	15.07	201.667	
500.00	500.00	441.00	441.00	1.79	17.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,020.47	19.43	156.435	
600.00	600.00	541.00	541.00	2.15	21.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,016.11	23.79	127.776	
700.00	700.00	641.00	641.00	2.51	25.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,011.75	28.15	107.992	
800.00	800.00	741.00	741.00	2.87	29.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,007.39	32.51	93.513	
900.00	900.00	841.00	841.00	3.23	33.64	-130.02	-1,954.81	-2,328.02	3,039.90	3,003.03	36.87	82.458	
1,000.00	1,000.00	941.00	941.00	3.58	37.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,998.67	41.22	73.740	
1,100.00	1,100.00	1,041.00	1,041.00	3.94	41.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,994.32	45.58	66.689	
1,200.00	1,200.00	1,141.00	1,141.00	4.30	45.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,989.96	49.94	60.869	
1,300.00	1,300.00	1,241.00	1,241.00	4.66	49.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,985.60	54.30	55.983	
1,400.00	1,400.00	1,341.00	1,341.00	5.02	53.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,981.24	58.66	51.824	
1,500.00	1,500.00	1,441.00	1,441.00	5.38	57.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,976.88	63.02	48.239	
1,600.00	1,600.00	1,541.00	1,541.00	5.74	61.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,972.52	67.38	45.119	
1,700.00	1,700.00	1,641.00	1,641.00	6.09	65.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,968.16	71.73	42.377	
1,800.00	1,800.00	1,741.00	1,741.00	6.45	69.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,963.81	76.09	39.950	
1,900.00	1,900.00	1,841.00	1,841.00	6.81	73.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,959.45	80.45	37.786	
2,000.00	2,000.00	1,941.00	1,941.00	7.17	77.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,955.09	84.81	35.844	
2,100.00	2,100.00	2,041.00	2,041.00	7.53	81.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,950.73	89.17	34.092	
2,200.00	2,200.00	2,141.00	2,141.00	7.89	85.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,946.37	93.53	32.503	
2,300.00	2,300.00	2,241.00	2,241.00	8.24	89.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,942.01	97.88	31.056	
2,400.00	2,400.00	2,341.00	2,341.00	8.60	93.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,937.66	102.24	29.732	
2,500.00	2,500.00	2,441.00	2,441.00	8.96	97.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,933.30	106.60	28.516	
2,600.00	2,600.00	2,541.00	2,541.00	9.32	101.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,928.94	110.96	27.396	
2,700.00	2,700.00	2,641.00	2,641.00	9.68	105.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,924.58	115.32	26.361	
2,800.00	2,800.00	2,741.00	2,741.00	10.04	109.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,920.22	119.68	25.401	
2,900.00	2,900.00	2,841.00	2,841.00	10.40	113.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,915.86	124.04	24.508	
3,000.00	3,000.00	2,941.00	2,941.00	10.75	117.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,911.50	128.39	23.676	
3,100.00	3,100.00	3,041.00	3,041.00	11.11	121.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,907.15	132.75	22.899	
3,200.00	3,200.00	3,141.00	3,141.00	11.47	125.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,902.79	137.11	22.171	
3,300.00	3,300.00	3,241.00	3,241.00	11.83	129.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,898.43	141.47	21.488	
3,400.00	3,400.00	3,341.00	3,341.00	12.19	133.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,894.07	145.83	20.846	
3,500.00	3,500.00	3,441.00	3,441.00	12.55	137.64	-130.02	-1,954.81	-2,328.02	3,039.90	2,889.71	150.19	20.241	
3,600.00	3,599.95	3,536.00	3,536.00	12.90	141.44	-76.06	-1,954.81	-2,328.02	3,039.27	2,884.93	154.34	19.692	
3,654.20	3,654.03	3,536.00	3,536.00	13.09	141.44	-76.06	-1,954.81	-2,328.02	3,038.97	2,884.47	154.50	19.669 CC, ES	
3,700.00	3,699.63	3,536.00	3,536.00	13.25	141.44	-76.06	-1,954.81	-2,328.02	3,039.19	2,884.58	154.60	19.658	
3,800.00	3,798.77	3,536.00	3,536.00	13.61	141.44	-76.00	-1,954.81	-2,328.02	3,041.13	2,886.43	154.70	19.658 SF	
3,900.00	3,897.08	3,536.00	3,536.00	13.97	141.44	-75.89	-1,954.81	-2,328.02	3,045.09	2,890.44	154.65	19.691	
4,000.00	3,994.31	3,536.00	3,536.00	14.33	141.44	-75.71	-1,954.81	-2,328.02	3,051.05	2,896.61	154.44	19.755	
4,100.00	4,090.18	3,536.00	3,536.00	14.71	141.44	-75.48	-1,954.81	-2,328.02	3,058.98	2,904.87	154.11	19.849	
4,200.00	4,184.43	3,536.00	3,536.00	15.10	141.44	-75.19	-1,954.81	-2,328.02	3,068.85	2,915.19	153.66	19.971	
4,217.02	4,200.29	3,536.00	3,536.00	15.17	141.44	-75.14	-1,954.81	-2,328.02	3,070.72	2,917.14	153.58	19.995	
4,300.00	4,277.50	3,536.00	3,536.00	15.52	141.44	-75.14	-1,954.81	-2,328.02	3,081.07	2,927.96	153.11	20.123	
4,400.00	4,370.53	3,536.00	3,536.00	15.96	141.44	-75.14	-1,954.81	-2,328.02	3,096.45	2,944.00	152.45	20.311	
4,500.00	4,463.57	3,536.00	3,536.00	16.42	141.44	-75.14	-1,954.81	-2,328.02	3,114.97	2,963.28	151.69	20.535	
4,600.00	4,556.60	3,536.00	3,536.00	16.90	141.44	-75.14	-1,954.81	-2,328.02	3,136.57	2,985.74	150.83	20.796	
4,700.00	4,649.64	3,536.00	3,536.00	17.39	141.44	-75.14	-1,954.81	-2,328.02	3,161.18	3,011.31	149.87	21.092	
4,800.00	4,742.67	3,536.00	3,536.00	17.89	141.44	-75.14	-1,954.81	-2,328.02	3,188.75	3,039.91	148.83	21.425	
4,900.00	4,835.71	3,536.00	3,536.00	18.41	141.44	-75.14	-1,954.81	-2,328.02	3,219.18	3,071.47	147.71	21.793	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	3,536.00	3,536.00	18.94	141.44	-75.14	-1,954.81	-2,328.02	3,252.41	3,105.88	146.53	22.197	
5,100.00	5,021.78	3,536.00	3,536.00	19.48	141.44	-75.14	-1,954.81	-2,328.02	3,288.34	3,143.06	145.28	22.635	
5,200.00	5,114.81	3,536.00	3,536.00	20.03	141.44	-75.14	-1,954.81	-2,328.02	3,326.89	3,182.92	143.97	23.108	
5,300.00	5,207.85	3,536.00	3,536.00	20.60	141.44	-75.14	-1,954.81	-2,328.02	3,367.97	3,225.34	142.62	23.614	
5,400.00	5,300.88	3,536.00	3,536.00	21.17	141.44	-75.14	-1,954.81	-2,328.02	3,411.49	3,270.25	141.24	24.154	
5,500.00	5,393.92	3,536.00	3,536.00	21.74	141.44	-75.14	-1,954.81	-2,328.02	3,457.35	3,317.53	139.82	24.727	
5,600.00	5,486.95	3,536.00	3,536.00	22.33	141.44	-75.14	-1,954.81	-2,328.02	3,505.46	3,367.08	138.38	25.331	
5,700.00	5,579.99	3,536.00	3,536.00	22.92	141.44	-75.14	-1,954.81	-2,328.02	3,555.74	3,418.81	136.93	25.967	
5,800.00	5,673.02	3,536.00	3,536.00	23.52	141.44	-75.14	-1,954.81	-2,328.02	3,608.09	3,472.62	135.47	26.634	
5,900.00	5,766.06	3,536.00	3,536.00	24.12	141.44	-75.14	-1,954.81	-2,328.02	3,662.42	3,528.42	134.00	27.331	
6,000.00	5,859.09	3,536.00	3,536.00	24.73	141.44	-75.14	-1,954.81	-2,328.02	3,718.65	3,586.11	132.54	28.057	
6,043.66	5,899.71	3,536.00	3,536.00	25.00	141.44	-75.14	-1,954.81	-2,328.02	3,743.77	3,611.87	131.90	28.383	
6,100.00	5,952.42	3,536.00	3,536.00	25.34	141.44	-76.33	-1,954.81	-2,328.02	3,776.86	3,645.79	131.07	28.816	
6,200.00	6,047.34	3,536.00	3,536.00	25.90	141.44	-78.57	-1,954.81	-2,328.02	3,837.66	3,708.12	129.54	29.624	
6,300.00	6,143.78	3,536.00	3,536.00	26.41	141.44	-80.98	-1,954.81	-2,328.02	3,900.88	3,772.92	127.96	30.485	
6,400.00	6,241.46	3,536.00	3,536.00	26.88	141.44	-83.55	-1,954.81	-2,328.02	3,966.24	3,839.90	126.33	31.395	
6,500.00	6,340.13	3,536.00	3,536.00	27.30	141.44	-86.26	-1,954.81	-2,328.02	4,033.44	3,908.77	124.67	32.353	
6,600.00	6,439.51	3,536.00	3,536.00	27.68	141.44	-89.10	-1,954.81	-2,328.02	4,102.23	3,979.24	122.99	33.355	
6,700.00	6,539.33	3,536.00	3,536.00	28.01	141.44	-92.05	-1,954.81	-2,328.02	4,172.34	4,051.05	121.29	34.401	
6,760.68	6,600.00	3,536.00	3,536.00	28.20	141.44	-147.91	-1,954.81	-2,328.02	4,215.41	4,095.16	120.26	35.054	
6,800.00	6,639.32	3,536.00	3,536.00	28.32	141.44	-147.91	-1,954.81	-2,328.02	4,243.54	4,123.94	119.59	35.484	
6,900.00	6,739.32	3,536.00	3,536.00	28.62	141.44	-147.91	-1,954.81	-2,328.02	4,315.84	4,197.91	117.92	36.598	
7,000.00	6,839.32	3,536.00	3,536.00	28.92	141.44	-147.91	-1,954.81	-2,328.02	4,389.23	4,272.93	116.29	37.742	
7,100.00	6,939.32	3,536.00	3,536.00	29.23	141.44	-147.91	-1,954.81	-2,328.02	4,463.65	4,348.95	114.70	38.916	
7,200.00	7,039.32	3,536.00	3,536.00	29.53	141.44	-147.91	-1,954.81	-2,328.02	4,539.06	4,425.92	113.14	40.118	
7,300.00	7,139.32	3,536.00	3,536.00	29.84	141.44	-147.91	-1,954.81	-2,328.02	4,615.40	4,503.78	111.62	41.348	
7,400.00	7,239.32	3,536.00	3,536.00	30.14	141.44	-147.91	-1,954.81	-2,328.02	4,692.63	4,582.49	110.14	42.604	
7,500.00	7,339.32	3,536.00	3,536.00	30.45	141.44	-147.91	-1,954.81	-2,328.02	4,770.71	4,662.00	108.70	43.888	
7,600.00	7,439.32	3,536.00	3,536.00	30.76	141.44	-147.91	-1,954.81	-2,328.02	4,849.59	4,742.29	107.30	45.196	
7,700.00	7,539.32	3,536.00	3,536.00	31.07	141.44	-147.91	-1,954.81	-2,328.02	4,929.24	4,823.30	105.94	46.530	
7,800.00	7,639.32	3,536.00	3,536.00	31.38	141.44	-147.91	-1,954.81	-2,328.02	5,009.62	4,905.00	104.61	47.888	
7,900.00	7,739.32	3,536.00	3,536.00	31.69	141.44	-147.91	-1,954.81	-2,328.02	5,090.69	4,987.37	103.32	49.269	
8,000.00	7,839.32	3,536.00	3,536.00	32.01	141.44	-147.91	-1,954.81	-2,328.02	5,172.42	5,070.35	102.07	50.673	
8,100.00	7,939.32	3,536.00	3,536.00	32.32	141.44	-147.91	-1,954.81	-2,328.02	5,254.79	5,153.93	100.86	52.099	
8,160.68	8,000.00	3,536.00	3,536.00	32.51	141.44	-147.91	-1,954.81	-2,328.02	5,305.06	5,204.92	100.14	52.974	



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	17.56	1,048.45	331.70	1,100.80				
100.00	100.00	50.00	50.00	0.36	2.00	17.56	1,048.45	331.70	1,099.67	1,097.31	2.36	466.242	
200.00	200.00	150.00	150.00	0.72	6.00	17.56	1,048.45	331.70	1,099.67	1,092.95	6.72	163.715	
300.00	300.00	250.00	250.00	1.08	10.00	17.56	1,048.45	331.70	1,099.67	1,088.59	11.08	99.289	
400.00	400.00	350.00	350.00	1.43	14.00	17.56	1,048.45	331.70	1,099.67	1,084.23	15.43	71.250	
500.00	500.00	450.00	450.00	1.79	18.00	17.56	1,048.45	331.70	1,099.67	1,079.87	19.79	55.560	
600.00	600.00	550.00	550.00	2.15	22.00	17.56	1,048.45	331.70	1,099.67	1,075.52	24.15	45.533	
700.00	700.00	650.00	650.00	2.51	26.00	17.56	1,048.45	331.70	1,099.67	1,071.16	28.51	38.572	
800.00	800.00	750.00	750.00	2.87	30.00	17.56	1,048.45	331.70	1,099.67	1,066.80	32.87	33.457	
900.00	900.00	850.00	850.00	3.23	34.00	17.56	1,048.45	331.70	1,099.67	1,062.44	37.23	29.540	
1,000.00	1,000.00	950.00	950.00	3.58	38.00	17.56	1,048.45	331.70	1,099.67	1,058.08	41.58	26.444	
1,100.00	1,100.00	1,050.00	1,050.00	3.94	42.00	17.56	1,048.45	331.70	1,099.67	1,053.72	45.94	23.935	
1,200.00	1,200.00	1,150.00	1,150.00	4.30	46.00	17.56	1,048.45	331.70	1,099.67	1,049.36	50.30	21.861	
1,300.00	1,300.00	1,250.00	1,250.00	4.66	50.00	17.56	1,048.45	331.70	1,099.67	1,045.01	54.66	20.118	
1,400.00	1,400.00	1,350.00	1,350.00	5.02	54.00	17.56	1,048.45	331.70	1,099.67	1,040.65	59.02	18.633	
1,500.00	1,500.00	1,450.00	1,450.00	5.38	58.00	17.56	1,048.45	331.70	1,099.67	1,036.29	63.38	17.351	
1,600.00	1,600.00	1,550.00	1,550.00	5.74	62.00	17.56	1,048.45	331.70	1,099.67	1,031.93	67.74	16.235	
1,700.00	1,700.00	1,650.00	1,650.00	6.09	66.00	17.56	1,048.45	331.70	1,099.67	1,027.57	72.09	15.253	
1,800.00	1,800.00	1,750.00	1,750.00	6.45	70.00	17.56	1,048.45	331.70	1,099.67	1,023.21	76.45	14.384	
1,900.00	1,900.00	1,850.00	1,850.00	6.81	74.00	17.56	1,048.45	331.70	1,099.67	1,018.86	80.81	13.608	
2,000.00	2,000.00	1,950.00	1,950.00	7.17	78.00	17.56	1,048.45	331.70	1,099.67	1,014.50	85.17	12.912	
2,100.00	2,100.00	2,050.00	2,050.00	7.53	82.00	17.56	1,048.45	331.70	1,099.67	1,010.14	89.53	12.283	
2,200.00	2,200.00	2,150.00	2,150.00	7.89	86.00	17.56	1,048.45	331.70	1,099.67	1,005.78	93.89	11.713	
2,300.00	2,300.00	2,250.00	2,250.00	8.24	90.00	17.56	1,048.45	331.70	1,099.67	1,001.42	98.24	11.193	
2,400.00	2,400.00	2,350.00	2,350.00	8.60	94.00	17.56	1,048.45	331.70	1,099.67	997.06	102.60	10.718	
2,500.00	2,500.00	2,450.00	2,450.00	8.96	98.00	17.56	1,048.45	331.70	1,099.67	992.70	106.96	10.281	
2,600.00	2,600.00	2,550.00	2,550.00	9.32	102.00	17.56	1,048.45	331.70	1,099.67	988.35	111.32	9.878	
2,700.00	2,700.00	2,650.00	2,650.00	9.68	106.00	17.56	1,048.45	331.70	1,099.67	983.99	115.68	9.506	
2,800.00	2,800.00	2,750.00	2,750.00	10.04	110.00	17.56	1,048.45	331.70	1,099.67	979.63	120.04	9.161	
2,900.00	2,900.00	2,850.00	2,850.00	10.40	114.00	17.56	1,048.45	331.70	1,099.67	975.27	124.40	8.840	
3,000.00	3,000.00	2,950.00	2,950.00	10.75	118.00	17.56	1,048.45	331.70	1,099.67	970.91	128.75	8.541	
3,100.00	3,100.00	3,050.00	3,050.00	11.11	122.00	17.56	1,048.45	331.70	1,099.67	966.55	133.11	8.261	
3,200.00	3,200.00	3,150.00	3,150.00	11.47	126.00	17.56	1,048.45	331.70	1,099.67	962.20	137.47	7.999	
3,300.00	3,300.00	3,250.00	3,250.00	11.83	130.00	17.56	1,048.45	331.70	1,099.67	957.84	141.83	7.753	
3,400.00	3,400.00	3,350.00	3,350.00	12.19	134.00	17.56	1,048.45	331.70	1,099.67	953.48	146.19	7.522	
3,500.00	3,500.00	3,450.00	3,450.00	12.55	138.00	17.56	1,048.45	331.70	1,099.67	949.12	150.55	7.304	
3,600.00	3,599.95	3,549.95	3,549.95	12.90	142.00	71.74	1,048.45	331.70	1,098.84	943.94	154.90	7.094	
3,700.00	3,699.63	3,649.63	3,649.63	13.25	145.99	72.19	1,048.45	331.70	1,096.41	937.17	159.24	6.885	
3,800.00	3,798.77	3,748.77	3,748.77	13.61	149.95	72.95	1,048.45	331.70	1,092.47	928.91	163.56	6.679	
3,900.00	3,897.08	3,847.08	3,847.08	13.97	153.88	74.01	1,048.45	331.70	1,087.20	919.35	167.85	6.477	
4,000.00	3,994.31	3,944.31	3,944.31	14.33	157.77	75.35	1,048.45	331.70	1,080.87	908.77	172.10	6.280	
4,100.00	4,090.18	4,040.18	4,040.18	14.71	161.61	76.97	1,048.45	331.70	1,073.80	897.49	176.32	6.090	
4,200.00	4,184.43	4,134.43	4,134.43	15.10	165.38	78.83	1,048.45	331.70	1,066.40	885.92	180.48	5.909	
4,217.02	4,200.29	4,150.29	4,150.29	15.17	166.01	79.18	1,048.45	331.70	1,065.14	883.96	181.19	5.879	
4,300.00	4,277.50	4,227.50	4,227.50	15.52	169.10	80.68	1,048.45	331.70	1,059.44	874.81	184.62	5.738	
4,400.00	4,370.53	4,320.53	4,320.53	15.96	172.82	82.52	1,048.45	331.70	1,053.69	864.90	188.78	5.581	
4,500.00	4,463.57	4,413.57	4,413.57	16.42	176.54	84.37	1,048.45	331.70	1,049.19	856.23	192.96	5.437	
4,600.00	4,556.60	4,506.60	4,506.60	16.90	180.26	86.23	1,048.45	331.70	1,045.96	848.80	197.16	5.305	
4,700.00	4,649.64	4,599.64	4,599.64	17.39	183.99	88.09	1,048.45	331.70	1,044.01	842.63	201.37	5.184	
4,800.00	4,742.67	4,692.67	4,692.67	17.89	187.71	89.97	1,048.45	331.70	1,043.34	837.74	205.60	5.075 CC	
4,804.45	4,746.81	4,696.81	4,696.81	17.92	187.87	90.05	1,048.45	331.70	1,043.34	837.55	205.79	5.070	
4,900.00	4,835.71	4,785.71	4,785.71	18.41	191.43	91.84	1,048.45	331.70	1,043.96	834.13	209.83	4.975	

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



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	4,878.74	4,878.74	18.94	195.15	93.71	1,048.45	331.70	1,045.87	831.79	214.07	4.886	
5,100.00	5,021.78	4,971.78	4,971.78	19.48	198.87	95.57	1,048.45	331.70	1,049.05	830.73	218.32	4.805 ES	
5,200.00	5,114.81	5,064.81	5,064.81	20.03	202.59	97.42	1,048.45	331.70	1,053.51	830.93	222.57	4.733	
5,300.00	5,207.85	5,157.85	5,157.85	20.60	206.31	99.25	1,048.45	331.70	1,059.21	832.39	226.83	4.670	
5,400.00	5,300.88	5,250.88	5,250.88	21.17	210.04	101.07	1,048.45	331.70	1,066.15	835.07	231.08	4.614	
5,500.00	5,393.92	5,343.92	5,343.92	21.74	213.76	102.86	1,048.45	331.70	1,074.29	838.96	235.33	4.565	
5,600.00	5,486.95	5,436.95	5,436.95	22.33	217.48	104.63	1,048.45	331.70	1,083.62	844.03	239.58	4.523	
5,700.00	5,579.99	5,529.99	5,529.99	22.92	221.20	106.37	1,048.45	331.70	1,094.09	850.26	243.83	4.487	
5,800.00	5,673.02	5,623.02	5,623.02	23.52	224.92	108.08	1,048.45	331.70	1,105.68	857.62	248.07	4.457	
5,900.00	5,766.06	5,716.06	5,716.06	24.12	228.64	109.75	1,048.45	331.70	1,118.35	866.06	252.30	4.433	
6,000.00	5,859.09	5,809.09	5,809.09	24.73	232.36	111.39	1,048.45	331.70	1,132.07	875.55	256.53	4.413	
6,043.66	5,899.71	5,849.71	5,849.71	25.00	233.99	112.10	1,048.45	331.70	1,138.38	880.01	258.37	4.406	
6,100.00	5,952.42	5,902.42	5,902.42	25.34	236.10	113.20	1,048.45	331.70	1,146.48	885.73	260.75	4.397	
6,200.00	6,047.34	5,997.34	5,997.34	25.90	239.89	114.93	1,048.45	331.70	1,159.86	894.86	265.01	4.377	
6,300.00	6,143.78	6,093.78	6,093.78	26.41	243.75	116.39	1,048.45	331.70	1,171.64	902.36	269.29	4.351	
6,400.00	6,241.46	6,191.46	6,191.46	26.88	247.66	117.56	1,048.45	331.70	1,181.50	907.92	273.59	4.319	
6,500.00	6,340.13	6,290.13	6,290.13	27.30	251.61	118.45	1,048.45	331.70	1,189.19	911.29	277.90	4.279	
6,600.00	6,439.51	6,389.51	6,389.51	27.68	255.58	119.05	1,048.45	331.70	1,194.51	912.29	282.22	4.233	
6,700.00	6,539.33	6,489.33	6,489.33	28.01	259.57	119.37	1,048.45	331.70	1,197.34	910.81	286.53	4.179	
6,760.68	6,600.00	6,550.00	6,550.00	28.20	262.00	65.39	1,048.45	331.70	1,197.81	908.67	289.15	4.143	
6,800.00	6,639.32	6,589.32	6,589.32	28.32	263.57	65.39	1,048.45	331.70	1,197.81	906.97	290.84	4.118	
6,900.00	6,739.32	6,689.32	6,689.32	28.62	267.57	65.39	1,048.45	331.70	1,197.81	902.66	295.15	4.058	
7,000.00	6,839.32	6,789.32	6,789.32	28.92	271.57	65.39	1,048.45	331.70	1,197.81	898.35	299.46	4.000	
7,100.00	6,939.32	6,889.32	6,889.32	29.23	275.57	65.39	1,048.45	331.70	1,197.81	894.04	303.77	3.943	
7,200.00	7,039.32	6,989.32	6,989.32	29.53	279.57	65.39	1,048.45	331.70	1,197.81	889.73	308.08	3.888	
7,300.00	7,139.32	7,089.32	7,089.32	29.84	283.57	65.39	1,048.45	331.70	1,197.81	885.42	312.40	3.834	
7,400.00	7,239.32	7,189.32	7,189.32	30.14	287.57	65.39	1,048.45	331.70	1,197.81	881.10	316.71	3.782	
7,500.00	7,339.32	7,289.32	7,289.32	30.45	291.57	65.39	1,048.45	331.70	1,197.81	876.79	321.03	3.731	
7,600.00	7,439.32	7,389.32	7,389.32	30.76	295.57	65.39	1,048.45	331.70	1,197.81	872.47	325.34	3.682	
7,700.00	7,539.32	7,489.32	7,489.32	31.07	299.57	65.39	1,048.45	331.70	1,197.81	868.16	329.66	3.633	
7,800.00	7,639.32	7,589.32	7,589.32	31.38	303.57	65.39	1,048.45	331.70	1,197.81	863.84	333.98	3.587	
7,900.00	7,739.32	7,689.32	7,689.32	31.69	307.57	65.39	1,048.45	331.70	1,197.81	859.52	338.30	3.541	
8,000.00	7,839.32	7,789.32	7,789.32	32.01	311.57	65.39	1,048.45	331.70	1,197.81	855.20	342.62	3.496	
8,100.00	7,939.32	7,889.32	7,889.32	32.32	315.57	65.39	1,048.45	331.70	1,197.81	850.88	346.94	3.453	
8,106.07	7,945.39	7,895.39	7,895.39	32.34	315.82	65.39	1,048.45	331.70	1,197.81	850.62	347.20	3.450	
8,160.68	8,000.00	7,920.00	7,920.00	32.51	316.80	65.39	1,048.45	331.70	1,198.19	849.97	348.22	3.441 SF	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 3700-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	160.85	-1,470.73	510.80	1,557.56				
100.00	100.00	55.00	55.00	0.36	2.20	160.85	-1,470.73	510.80	1,556.91	1,554.35	2.56	608.484	
200.00	200.00	155.00	155.00	0.72	6.20	160.85	-1,470.73	510.80	1,556.91	1,549.99	6.92	225.080	
300.00	300.00	255.00	255.00	1.08	10.20	160.85	-1,470.73	510.80	1,556.91	1,545.63	11.28	138.078	
400.00	400.00	355.00	355.00	1.43	14.20	160.85	-1,470.73	510.80	1,556.91	1,541.28	15.63	99.584	
500.00	500.00	455.00	455.00	1.79	18.20	160.85	-1,470.73	510.80	1,556.91	1,536.92	19.99	77.875	
600.00	600.00	555.00	555.00	2.15	22.20	160.85	-1,470.73	510.80	1,556.91	1,532.56	24.35	63.936	
700.00	700.00	655.00	655.00	2.51	26.20	160.85	-1,470.73	510.80	1,556.91	1,528.20	28.71	54.230	
800.00	800.00	755.00	755.00	2.87	30.20	160.85	-1,470.73	510.80	1,556.91	1,523.84	33.07	47.082	
900.00	900.00	855.00	855.00	3.23	34.20	160.85	-1,470.73	510.80	1,556.91	1,519.48	37.43	41.599	
1,000.00	1,000.00	955.00	955.00	3.58	38.20	160.85	-1,470.73	510.80	1,556.91	1,515.12	41.78	37.260	
1,100.00	1,100.00	1,055.00	1,055.00	3.94	42.20	160.85	-1,470.73	510.80	1,556.91	1,510.77	46.14	33.741	
1,200.00	1,200.00	1,155.00	1,155.00	4.30	46.20	160.85	-1,470.73	510.80	1,556.91	1,506.41	50.50	30.829	
1,300.00	1,300.00	1,255.00	1,255.00	4.66	50.20	160.85	-1,470.73	510.80	1,556.91	1,502.05	54.86	28.380	
1,400.00	1,400.00	1,355.00	1,355.00	5.02	54.20	160.85	-1,470.73	510.80	1,556.91	1,497.69	59.22	26.291	
1,500.00	1,500.00	1,455.00	1,455.00	5.38	58.20	160.85	-1,470.73	510.80	1,556.91	1,493.33	63.58	24.488	
1,600.00	1,600.00	1,555.00	1,555.00	5.74	62.20	160.85	-1,470.73	510.80	1,556.91	1,488.97	67.94	22.917	
1,700.00	1,700.00	1,655.00	1,655.00	6.09	66.20	160.85	-1,470.73	510.80	1,556.91	1,484.62	72.29	21.536	
1,800.00	1,800.00	1,755.00	1,755.00	6.45	70.20	160.85	-1,470.73	510.80	1,556.91	1,480.26	76.65	20.311	
1,900.00	1,900.00	1,855.00	1,855.00	6.81	74.20	160.85	-1,470.73	510.80	1,556.91	1,475.90	81.01	19.218	
2,000.00	2,000.00	1,955.00	1,955.00	7.17	78.20	160.85	-1,470.73	510.80	1,556.91	1,471.54	85.37	18.237	
2,100.00	2,100.00	2,055.00	2,055.00	7.53	82.20	160.85	-1,470.73	510.80	1,556.91	1,467.18	89.73	17.351	
2,200.00	2,200.00	2,155.00	2,155.00	7.89	86.20	160.85	-1,470.73	510.80	1,556.91	1,462.82	94.09	16.548	
2,300.00	2,300.00	2,255.00	2,255.00	8.24	90.20	160.85	-1,470.73	510.80	1,556.91	1,458.46	98.44	15.815	
2,400.00	2,400.00	2,355.00	2,355.00	8.60	94.20	160.85	-1,470.73	510.80	1,556.91	1,454.11	102.80	15.145	
2,500.00	2,500.00	2,455.00	2,455.00	8.96	98.20	160.85	-1,470.73	510.80	1,556.91	1,449.75	107.16	14.529	
2,600.00	2,600.00	2,555.00	2,555.00	9.32	102.20	160.85	-1,470.73	510.80	1,556.91	1,445.39	111.52	13.961	
2,700.00	2,700.00	2,655.00	2,655.00	9.68	106.20	160.85	-1,470.73	510.80	1,556.91	1,441.03	115.88	13.436	
2,800.00	2,800.00	2,755.00	2,755.00	10.04	110.20	160.85	-1,470.73	510.80	1,556.91	1,436.67	120.24	12.949	
2,900.00	2,900.00	2,855.00	2,855.00	10.40	114.20	160.85	-1,470.73	510.80	1,556.91	1,432.31	124.60	12.496	
3,000.00	3,000.00	2,955.00	2,955.00	10.75	118.20	160.85	-1,470.73	510.80	1,556.91	1,427.96	128.95	12.073	
3,100.00	3,100.00	3,055.00	3,055.00	11.11	122.20	160.85	-1,470.73	510.80	1,556.91	1,423.60	133.31	11.679	
3,200.00	3,200.00	3,155.00	3,155.00	11.47	126.20	160.85	-1,470.73	510.80	1,556.91	1,419.24	137.67	11.309	
3,300.00	3,300.00	3,255.00	3,255.00	11.83	130.20	160.85	-1,470.73	510.80	1,556.91	1,414.88	142.03	10.962	
3,400.00	3,400.00	3,355.00	3,355.00	12.19	134.20	160.85	-1,470.73	510.80	1,556.91	1,410.52	146.39	10.635	
3,500.00	3,500.00	3,455.00	3,455.00	12.55	138.20	160.85	-1,470.73	510.80	1,556.91	1,406.16	150.75	10.328 CC	
3,600.00	3,599.95	3,554.95	3,554.95	12.90	142.20	-145.14	-1,470.73	510.80	1,559.06	1,403.96	155.10	10.052 ES	
3,700.00	3,699.63	3,654.63	3,654.63	13.25	146.19	-145.20	-1,470.73	510.80	1,565.50	1,406.07	159.44	9.819	
3,800.00	3,798.77	3,753.77	3,753.77	13.61	150.15	-145.28	-1,470.73	510.80	1,576.26	1,412.50	163.76	9.626	
3,900.00	3,897.08	3,852.08	3,852.08	13.97	154.08	-145.40	-1,470.73	510.80	1,591.33	1,423.29	168.04	9.470	
4,000.00	3,994.31	3,949.31	3,949.31	14.33	157.97	-145.53	-1,470.73	510.80	1,610.73	1,438.45	172.28	9.349	
4,100.00	4,090.18	4,045.18	4,045.18	14.71	161.81	-145.67	-1,470.73	510.80	1,634.47	1,458.00	176.47	9.262	
4,200.00	4,184.43	4,139.43	4,139.43	15.10	165.58	-145.82	-1,470.73	510.80	1,662.56	1,481.97	180.60	9.206	
4,217.02	4,200.29	4,155.29	4,155.29	15.17	166.21	-145.85	-1,470.73	510.80	1,667.78	1,486.49	181.29	9.199	
4,300.00	4,277.50	4,232.50	4,232.50	15.52	169.30	-146.41	-1,470.73	510.80	1,693.59	1,508.91	184.68	9.171	
4,400.00	4,370.53	4,325.53	4,325.53	15.96	173.02	-147.07	-1,470.73	510.80	1,724.89	1,536.13	188.76	9.138	
4,500.00	4,463.57	4,418.57	4,418.57	16.42	176.74	-147.71	-1,470.73	510.80	1,756.40	1,563.55	192.85	9.108	
4,600.00	4,556.60	4,511.60	4,511.60	16.90	180.46	-148.33	-1,470.73	510.80	1,788.10	1,591.16	196.94	9.079	
4,700.00	4,649.64	4,604.64	4,604.64	17.39	184.19	-148.92	-1,470.73	510.80	1,819.99	1,618.95	201.04	9.053	
4,800.00	4,742.67	4,697.67	4,697.67	17.89	187.91	-149.50	-1,470.73	510.80	1,852.06	1,646.92	205.14	9.028	
4,900.00	4,835.71	4,790.71	4,790.71	18.41	191.63	-150.05	-1,470.73	510.80	1,884.30	1,675.05	209.25	9.005	
5,000.00	4,928.74	4,883.74	4,883.74	18.94	195.35	-150.59	-1,470.73	510.80	1,916.69	1,703.34	213.36	8.983	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 3700-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,021.78	4,976.78	4,976.78	19.48	199.07	-151.11	-1,470.73	510.80	1,949.24	1,731.77	217.47	8.963	
5,200.00	5,114.81	5,069.81	5,069.81	20.03	202.79	-151.62	-1,470.73	510.80	1,981.93	1,760.35	221.58	8.944	
5,300.00	5,207.85	5,162.85	5,162.85	20.60	206.51	-152.10	-1,470.73	510.80	2,014.76	1,789.06	225.70	8.927	
5,400.00	5,300.88	5,255.88	5,255.88	21.17	210.24	-152.58	-1,470.73	510.80	2,047.72	1,817.90	229.81	8.910	
5,500.00	5,393.92	5,348.92	5,348.92	21.74	213.96	-153.04	-1,470.73	510.80	2,080.80	1,846.87	233.93	8.895	
5,600.00	5,486.95	5,441.95	5,441.95	22.33	217.68	-153.48	-1,470.73	510.80	2,114.00	1,875.95	238.05	8.880	
5,700.00	5,579.99	5,534.99	5,534.99	22.92	221.40	-153.91	-1,470.73	510.80	2,147.32	1,905.14	242.17	8.867	
5,800.00	5,673.02	5,628.02	5,628.02	23.52	225.12	-154.33	-1,470.73	510.80	2,180.74	1,934.44	246.30	8.854	
5,900.00	5,766.06	5,721.06	5,721.06	24.12	228.84	-154.74	-1,470.73	510.80	2,214.26	1,963.84	250.42	8.842	
6,000.00	5,859.09	5,814.09	5,814.09	24.73	232.56	-155.13	-1,470.73	510.80	2,247.88	1,993.34	254.54	8.831	
6,043.66	5,899.71	5,854.71	5,854.71	25.00	234.19	-155.30	-1,470.73	510.80	2,262.59	2,006.25	256.34	8.826	
6,100.00	5,952.42	5,907.42	5,907.42	25.34	236.30	-155.74	-1,470.73	510.80	2,280.88	2,022.21	258.68	8.818	
6,200.00	6,047.34	6,002.34	6,002.34	25.90	240.09	-156.43	-1,470.73	510.80	2,309.85	2,046.99	262.87	8.787	
6,300.00	6,143.78	6,098.78	6,098.78	26.41	243.95	-156.98	-1,470.73	510.80	2,334.25	2,067.14	267.11	8.739	
6,400.00	6,241.46	6,196.46	6,196.46	26.88	247.86	-157.42	-1,470.73	510.80	2,353.99	2,082.59	271.40	8.674	
6,500.00	6,340.13	6,295.13	6,295.13	27.30	251.81	-157.74	-1,470.73	510.80	2,368.99	2,093.27	275.71	8.592	
6,600.00	6,439.51	6,394.51	6,394.51	27.68	255.78	-157.96	-1,470.73	510.80	2,379.19	2,099.14	280.05	8.496	
6,700.00	6,539.33	6,494.33	6,494.33	28.01	259.77	-158.07	-1,470.73	510.80	2,384.56	2,100.18	284.39	8.385	
6,760.68	6,600.00	6,555.00	6,555.00	28.20	262.20	147.89	-1,470.73	510.80	2,385.46	2,098.44	287.02	8.311	
6,800.00	6,639.32	6,594.32	6,594.32	28.32	263.77	147.89	-1,470.73	510.80	2,385.46	2,096.74	288.72	8.262	
6,900.00	6,739.32	6,694.32	6,694.32	28.62	267.77	147.89	-1,470.73	510.80	2,385.46	2,092.40	293.06	8.140	
7,000.00	6,839.32	6,794.32	6,794.32	28.92	271.77	147.89	-1,470.73	510.80	2,385.46	2,088.07	297.39	8.021	
7,100.00	6,939.32	6,894.32	6,894.32	29.23	275.77	147.89	-1,470.73	510.80	2,385.46	2,083.73	301.73	7.906	
7,200.00	7,039.32	6,994.32	6,994.32	29.53	279.77	147.89	-1,470.73	510.80	2,385.46	2,079.40	306.06	7.794	
7,300.00	7,139.32	7,094.32	7,094.32	29.84	283.77	147.89	-1,470.73	510.80	2,385.46	2,075.06	310.40	7.685	
7,400.00	7,239.32	7,194.32	7,194.32	30.14	287.77	147.89	-1,470.73	510.80	2,385.46	2,070.72	314.74	7.579	
7,500.00	7,339.32	7,294.32	7,294.32	30.45	291.77	147.89	-1,470.73	510.80	2,385.46	2,066.38	319.07	7.476	
7,600.00	7,439.32	7,394.32	7,394.32	30.76	295.77	147.89	-1,470.73	510.80	2,385.46	2,062.05	323.41	7.376	
7,700.00	7,539.32	7,494.32	7,494.32	31.07	299.77	147.89	-1,470.73	510.80	2,385.46	2,057.71	327.75	7.278	
7,800.00	7,639.32	7,594.32	7,594.32	31.38	303.77	147.89	-1,470.73	510.80	2,385.46	2,053.37	332.09	7.183	
7,900.00	7,739.32	7,694.32	7,694.32	31.69	307.77	147.89	-1,470.73	510.80	2,385.46	2,049.03	336.43	7.091	
8,000.00	7,839.32	7,794.32	7,794.32	32.01	311.77	147.89	-1,470.73	510.80	2,385.46	2,044.69	340.77	7.000	
8,010.00	7,849.32	7,804.32	7,804.32	32.04	312.17	147.89	-1,470.73	510.80	2,385.46	2,044.25	341.20	6.991	
8,100.00	7,939.32	7,852.00	7,852.00	32.32	314.08	147.89	-1,470.73	510.80	2,385.83	2,042.52	343.32	6.949 SF	
8,160.68	8,000.00	7,852.00	7,852.00	32.51	314.08	147.89	-1,470.73	510.80	2,387.68	2,044.48	343.20	6.957	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-67.83	1,081.33	-2,653.60	2,867.97				
100.00	100.00	0.00	0.00	0.36	0.00	-67.83	1,081.33	-2,653.60	2,865.53	2,865.17	0.36	7,981.498	
141.67	141.67	21.67	21.67	0.51	0.87	-67.83	1,081.33	-2,653.60	2,865.46	2,864.09	1.37	2,084.488	
200.00	200.00	80.00	80.00	0.72	3.20	-67.83	1,081.33	-2,653.60	2,865.46	2,861.55	3.92	731.548	
300.00	300.00	180.00	180.00	1.08	7.20	-67.83	1,081.33	-2,653.60	2,865.46	2,857.19	8.28	346.262	
400.00	400.00	280.00	280.00	1.43	11.20	-67.83	1,081.33	-2,653.60	2,865.46	2,852.83	12.63	226.808	
500.00	500.00	380.00	380.00	1.79	15.20	-67.83	1,081.33	-2,653.60	2,865.46	2,848.47	16.99	168.632	
600.00	600.00	480.00	480.00	2.15	19.20	-67.83	1,081.33	-2,653.60	2,865.46	2,844.11	21.35	134.208	
700.00	700.00	580.00	580.00	2.51	23.20	-67.83	1,081.33	-2,653.60	2,865.46	2,839.75	25.71	111.456	
800.00	800.00	680.00	680.00	2.87	27.20	-67.83	1,081.33	-2,653.60	2,865.46	2,835.39	30.07	95.300	
900.00	900.00	780.00	780.00	3.23	31.20	-67.83	1,081.33	-2,653.60	2,865.46	2,831.04	34.43	83.235	
1,000.00	1,000.00	880.00	880.00	3.58	35.20	-67.83	1,081.33	-2,653.60	2,865.46	2,826.68	38.78	73.881	
1,100.00	1,100.00	980.00	980.00	3.94	39.20	-67.83	1,081.33	-2,653.60	2,865.46	2,822.32	43.14	66.417	
1,200.00	1,200.00	1,080.00	1,080.00	4.30	43.20	-67.83	1,081.33	-2,653.60	2,865.46	2,817.96	47.50	60.323	
1,300.00	1,300.00	1,180.00	1,180.00	4.66	47.20	-67.83	1,081.33	-2,653.60	2,865.46	2,813.60	51.86	55.254	
1,400.00	1,400.00	1,280.00	1,280.00	5.02	51.20	-67.83	1,081.33	-2,653.60	2,865.46	2,809.24	56.22	50.970	
1,500.00	1,500.00	1,380.00	1,380.00	5.38	55.20	-67.83	1,081.33	-2,653.60	2,865.46	2,804.89	60.58	47.303	
1,600.00	1,600.00	1,480.00	1,480.00	5.74	59.20	-67.83	1,081.33	-2,653.60	2,865.46	2,800.53	64.94	44.128	
1,700.00	1,700.00	1,580.00	1,580.00	6.09	63.20	-67.83	1,081.33	-2,653.60	2,865.46	2,796.17	69.29	41.352	
1,800.00	1,800.00	1,680.00	1,680.00	6.45	67.20	-67.83	1,081.33	-2,653.60	2,865.46	2,791.81	73.65	38.905	
1,900.00	1,900.00	1,780.00	1,780.00	6.81	71.20	-67.83	1,081.33	-2,653.60	2,865.46	2,787.45	78.01	36.732	
2,000.00	2,000.00	1,880.00	1,880.00	7.17	75.20	-67.83	1,081.33	-2,653.60	2,865.46	2,783.09	82.37	34.788	
2,100.00	2,100.00	1,980.00	1,980.00	7.53	79.20	-67.83	1,081.33	-2,653.60	2,865.46	2,778.73	86.73	33.040	
2,200.00	2,200.00	2,080.00	2,080.00	7.89	83.20	-67.83	1,081.33	-2,653.60	2,865.46	2,774.38	91.09	31.459	
2,300.00	2,300.00	2,180.00	2,180.00	8.24	87.20	-67.83	1,081.33	-2,653.60	2,865.46	2,770.02	95.44	30.022	
2,400.00	2,400.00	2,280.00	2,280.00	8.60	91.20	-67.83	1,081.33	-2,653.60	2,865.46	2,765.66	99.80	28.711	
2,500.00	2,500.00	2,380.00	2,380.00	8.96	95.20	-67.83	1,081.33	-2,653.60	2,865.46	2,761.30	104.16	27.510	
2,600.00	2,600.00	2,480.00	2,480.00	9.32	99.20	-67.83	1,081.33	-2,653.60	2,865.46	2,756.94	108.52	26.405	
2,700.00	2,700.00	2,580.00	2,580.00	9.68	103.20	-67.83	1,081.33	-2,653.60	2,865.46	2,752.58	112.88	25.385	
2,800.00	2,800.00	2,680.00	2,680.00	10.04	107.20	-67.83	1,081.33	-2,653.60	2,865.46	2,748.23	117.24	24.442	
2,900.00	2,900.00	2,780.00	2,780.00	10.40	111.20	-67.83	1,081.33	-2,653.60	2,865.46	2,743.87	121.60	23.565	
3,000.00	3,000.00	2,880.00	2,880.00	10.75	115.20	-67.83	1,081.33	-2,653.60	2,865.46	2,739.51	125.95	22.750	
3,100.00	3,100.00	2,980.00	2,980.00	11.11	119.20	-67.83	1,081.33	-2,653.60	2,865.46	2,735.15	130.31	21.989	
3,200.00	3,200.00	3,080.00	3,080.00	11.47	123.20	-67.83	1,081.33	-2,653.60	2,865.46	2,730.79	134.67	21.277	
3,300.00	3,300.00	3,180.00	3,180.00	11.83	127.20	-67.83	1,081.33	-2,653.60	2,865.46	2,726.43	139.03	20.610	
3,400.00	3,400.00	3,280.00	3,280.00	12.19	131.20	-67.83	1,081.33	-2,653.60	2,865.46	2,722.07	143.39	19.984	
3,500.00	3,500.00	3,380.00	3,380.00	12.55	135.20	-67.83	1,081.33	-2,653.60	2,865.46	2,717.72	147.75	19.394	
3,600.00	3,599.95	3,479.95	3,479.95	12.90	139.20	-13.83	1,081.33	-2,653.60	2,862.92	2,710.82	152.10	18.823	
3,700.00	3,699.63	3,579.63	3,579.63	13.25	143.19	-13.93	1,081.33	-2,653.60	2,855.30	2,698.87	156.44	18.252	
3,800.00	3,798.77	3,678.77	3,678.77	13.61	147.15	-14.08	1,081.33	-2,653.60	2,842.63	2,681.88	160.75	17.684	
3,900.00	3,897.08	3,777.08	3,777.08	13.97	151.08	-14.31	1,081.33	-2,653.60	2,824.95	2,659.92	165.03	17.118	
4,000.00	3,994.31	3,874.31	3,874.31	14.33	154.97	-14.60	1,081.33	-2,653.60	2,802.31	2,633.05	169.26	16.556	
4,100.00	4,090.18	3,970.18	3,970.18	14.71	158.81	-14.97	1,081.33	-2,653.60	2,774.78	2,601.34	173.43	15.999	
4,200.00	4,184.43	4,064.43	4,064.43	15.10	162.58	-15.42	1,081.33	-2,653.60	2,742.44	2,564.90	177.54	15.447	
4,217.02	4,200.29	4,080.29	4,080.29	15.17	163.21	-15.50	1,081.33	-2,653.60	2,736.47	2,558.24	178.23	15.353	
4,300.00	4,277.50	4,157.50	4,157.50	15.52	166.30	-15.67	1,081.33	-2,653.60	2,707.02	2,525.42	181.59	14.907	
4,400.00	4,370.53	4,250.53	4,250.53	15.96	170.02	-15.88	1,081.33	-2,653.60	2,671.55	2,485.90	185.65	14.390	
4,500.00	4,463.57	4,343.57	4,343.57	16.42	173.74	-16.10	1,081.33	-2,653.60	2,636.12	2,446.41	189.71	13.896	
4,600.00	4,556.60	4,436.60	4,436.60	16.90	177.46	-16.32	1,081.33	-2,653.60	2,600.73	2,406.95	193.77	13.421	
4,700.00	4,649.64	4,529.64	4,529.64	17.39	181.19	-16.55	1,081.33	-2,653.60	2,565.37	2,367.52	197.85	12.966	
4,800.00	4,742.67	4,622.67	4,622.67	17.89	184.91	-16.79	1,081.33	-2,653.60	2,530.05	2,328.12	201.92	12.530	
4,900.00	4,835.71	4,715.71	4,715.71	18.41	188.63	-17.03	1,081.33	-2,653.60	2,494.76	2,288.76	206.00	12.110	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	4,808.74	4,808.74	18.94	192.35	-17.28	1,081.33	-2,653.60	2,459.52	2,249.43	210.09	11.707	
5,100.00	5,021.78	4,901.78	4,901.78	19.48	196.07	-17.53	1,081.33	-2,653.60	2,424.32	2,210.14	214.18	11.319	
5,200.00	5,114.81	4,994.81	4,994.81	20.03	199.79	-17.80	1,081.33	-2,653.60	2,389.16	2,170.89	218.27	10.946	
5,300.00	5,207.85	5,087.85	5,087.85	20.60	203.51	-18.07	1,081.33	-2,653.60	2,354.05	2,131.68	222.37	10.586	
5,400.00	5,300.88	5,180.88	5,180.88	21.17	207.24	-18.35	1,081.33	-2,653.60	2,318.99	2,092.51	226.47	10.239	
5,500.00	5,393.92	5,273.92	5,273.92	21.74	210.96	-18.63	1,081.33	-2,653.60	2,283.98	2,053.39	230.58	9.905	
5,600.00	5,486.95	5,366.95	5,366.95	22.33	214.68	-18.93	1,081.33	-2,653.60	2,249.02	2,014.32	234.69	9.583	
5,700.00	5,579.99	5,459.99	5,459.99	22.92	218.40	-19.24	1,081.33	-2,653.60	2,214.11	1,975.30	238.81	9.271	
5,800.00	5,673.02	5,553.02	5,553.02	23.52	222.12	-19.55	1,081.33	-2,653.60	2,179.27	1,936.34	242.93	8.971	
5,900.00	5,766.06	5,646.06	5,646.06	24.12	225.84	-19.88	1,081.33	-2,653.60	2,144.48	1,897.43	247.06	8.680	
6,000.00	5,859.09	5,739.09	5,739.09	24.73	229.56	-20.21	1,081.33	-2,653.60	2,109.76	1,858.57	251.18	8.399	
6,043.66	5,899.71	5,779.71	5,779.71	25.00	231.19	-20.36	1,081.33	-2,653.60	2,094.62	1,841.63	252.99	8.280	
6,100.00	5,952.42	5,832.42	5,832.42	25.34	233.30	-20.34	1,081.33	-2,653.60	2,075.84	1,820.51	255.33	8.130	
6,200.00	6,047.34	5,927.34	5,927.34	25.90	237.09	-20.32	1,081.33	-2,653.60	2,046.19	1,786.66	259.53	7.884	
6,300.00	6,143.78	6,023.78	6,023.78	26.41	240.95	-20.31	1,081.33	-2,653.60	2,021.31	1,757.52	263.79	7.663	
6,400.00	6,241.46	6,121.46	6,121.46	26.88	244.86	-20.31	1,081.33	-2,653.60	2,001.24	1,733.15	268.09	7.465	
6,500.00	6,340.13	6,220.13	6,220.13	27.30	248.81	-20.31	1,081.33	-2,653.60	1,986.03	1,713.62	272.41	7.290	
6,600.00	6,439.51	6,319.51	6,319.51	27.68	252.78	-20.31	1,081.33	-2,653.60	1,975.70	1,698.94	276.76	7.139	
6,700.00	6,539.33	6,419.33	6,419.33	28.01	256.77	-20.31	1,081.33	-2,653.60	1,970.27	1,689.17	281.10	7.009	
6,760.68	6,600.00	6,480.00	6,480.00	28.20	259.20	-74.34	1,081.33	-2,653.60	1,969.36	1,685.63	283.73	6.941	
6,800.00	6,639.32	6,519.32	6,519.32	28.32	260.77	-74.34	1,081.33	-2,653.60	1,969.36	1,683.93	285.44	6.899	
6,900.00	6,739.32	6,619.32	6,619.32	28.62	264.77	-74.34	1,081.33	-2,653.60	1,969.36	1,679.59	289.77	6.796	
7,000.00	6,839.32	6,719.32	6,719.32	28.92	268.77	-74.34	1,081.33	-2,653.60	1,969.36	1,675.26	294.11	6.696	
7,100.00	6,939.32	6,819.32	6,819.32	29.23	272.77	-74.34	1,081.33	-2,653.60	1,969.36	1,670.92	298.44	6.599	
7,200.00	7,039.32	6,919.32	6,919.32	29.53	276.77	-74.34	1,081.33	-2,653.60	1,969.36	1,666.58	302.78	6.504	
7,300.00	7,139.32	7,019.32	7,019.32	29.84	280.77	-74.34	1,081.33	-2,653.60	1,969.36	1,662.24	307.12	6.412	
7,400.00	7,239.32	7,119.32	7,119.32	30.14	284.77	-74.34	1,081.33	-2,653.60	1,969.36	1,657.91	311.46	6.323	
7,500.00	7,339.32	7,219.32	7,219.32	30.45	288.77	-74.34	1,081.33	-2,653.60	1,969.36	1,653.57	315.80	6.236	
7,600.00	7,439.32	7,319.32	7,319.32	30.76	292.77	-74.34	1,081.33	-2,653.60	1,969.36	1,649.23	320.13	6.152	
7,700.00	7,539.32	7,419.32	7,419.32	31.07	296.77	-74.34	1,081.33	-2,653.60	1,969.36	1,644.89	324.47	6.069	
7,800.00	7,639.32	7,519.32	7,519.32	31.38	300.77	-74.34	1,081.33	-2,653.60	1,969.36	1,640.55	328.81	5.989	
7,900.00	7,739.32	7,619.32	7,619.32	31.69	304.77	-74.34	1,081.33	-2,653.60	1,969.36	1,636.21	333.15	5.911	
8,000.00	7,839.32	7,719.32	7,719.32	32.01	308.77	-74.34	1,081.33	-2,653.60	1,969.36	1,631.87	337.50	5.835	
8,100.00	7,939.32	7,819.32	7,819.32	32.32	312.77	-74.34	1,081.33	-2,653.60	1,969.36	1,627.53	341.84	5.761	
8,160.68	8,000.00	7,880.00	7,880.00	32.51	315.20	-74.34	1,081.33	-2,653.60	1,969.36	1,624.89	344.47	5.717	CC, ES, SF

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	178.53	-2,508.26	64.59	2,509.78				
100.00	100.00	41.00	41.00	0.36	1.64	178.53	-2,508.26	64.59	2,509.09	2,507.09	2.00	1,255.429	
200.00	200.00	141.00	141.00	0.72	5.64	178.53	-2,508.26	64.59	2,509.09	2,502.73	6.36	394.700	
300.00	300.00	241.00	241.00	1.08	9.64	178.53	-2,508.26	64.59	2,509.09	2,498.37	10.72	234.157	
400.00	400.00	341.00	341.00	1.43	13.64	178.53	-2,508.26	64.59	2,509.09	2,494.01	15.07	166.453	
500.00	500.00	441.00	441.00	1.79	17.64	178.53	-2,508.26	64.59	2,509.09	2,489.66	19.43	129.119	
600.00	600.00	541.00	541.00	2.15	21.64	178.53	-2,508.26	64.59	2,509.09	2,485.30	23.79	105.464	
700.00	700.00	641.00	641.00	2.51	25.64	178.53	-2,508.26	64.59	2,509.09	2,480.94	28.15	89.135	
800.00	800.00	741.00	741.00	2.87	29.64	178.53	-2,508.26	64.59	2,509.09	2,476.58	32.51	77.184	
900.00	900.00	841.00	841.00	3.23	33.64	178.53	-2,508.26	64.59	2,509.09	2,472.22	36.87	68.059	
1,000.00	1,000.00	941.00	941.00	3.58	37.64	178.53	-2,508.26	64.59	2,509.09	2,467.86	41.22	60.864	
1,100.00	1,100.00	1,041.00	1,041.00	3.94	41.64	178.53	-2,508.26	64.59	2,509.09	2,463.50	45.58	55.044	
1,200.00	1,200.00	1,141.00	1,141.00	4.30	45.64	178.53	-2,508.26	64.59	2,509.09	2,459.15	49.94	50.240	
1,300.00	1,300.00	1,241.00	1,241.00	4.66	49.64	178.53	-2,508.26	64.59	2,509.09	2,454.79	54.30	46.208	
1,400.00	1,400.00	1,341.00	1,341.00	5.02	53.64	178.53	-2,508.26	64.59	2,509.09	2,450.43	58.66	42.774	
1,500.00	1,500.00	1,441.00	1,441.00	5.38	57.64	178.53	-2,508.26	64.59	2,509.09	2,446.07	63.02	39.816	
1,600.00	1,600.00	1,541.00	1,541.00	5.74	61.64	178.53	-2,508.26	64.59	2,509.09	2,441.71	67.38	37.240	
1,700.00	1,700.00	1,641.00	1,641.00	6.09	65.64	178.53	-2,508.26	64.59	2,509.09	2,437.35	71.73	34.978	
1,800.00	1,800.00	1,741.00	1,741.00	6.45	69.64	178.53	-2,508.26	64.59	2,509.09	2,433.00	76.09	32.974	
1,900.00	1,900.00	1,841.00	1,841.00	6.81	73.64	178.53	-2,508.26	64.59	2,509.09	2,428.64	80.45	31.188	
2,000.00	2,000.00	1,941.00	1,941.00	7.17	77.64	178.53	-2,508.26	64.59	2,509.09	2,424.28	84.81	29.585	
2,100.00	2,100.00	2,041.00	2,041.00	7.53	81.64	178.53	-2,508.26	64.59	2,509.09	2,419.92	89.17	28.139	
2,200.00	2,200.00	2,141.00	2,141.00	7.89	85.64	178.53	-2,508.26	64.59	2,509.09	2,415.56	93.53	26.828	
2,300.00	2,300.00	2,241.00	2,241.00	8.24	89.64	178.53	-2,508.26	64.59	2,509.09	2,411.20	97.88	25.633	
2,400.00	2,400.00	2,341.00	2,341.00	8.60	93.64	178.53	-2,508.26	64.59	2,509.09	2,406.84	102.24	24.540	
2,500.00	2,500.00	2,441.00	2,441.00	8.96	97.64	178.53	-2,508.26	64.59	2,509.09	2,402.49	106.60	23.537	
2,600.00	2,600.00	2,541.00	2,541.00	9.32	101.64	178.53	-2,508.26	64.59	2,509.09	2,398.13	110.96	22.612	
2,700.00	2,700.00	2,641.00	2,641.00	9.68	105.64	178.53	-2,508.26	64.59	2,509.09	2,393.77	115.32	21.758	
2,800.00	2,800.00	2,741.00	2,741.00	10.04	109.64	178.53	-2,508.26	64.59	2,509.09	2,389.41	119.68	20.965	
2,900.00	2,900.00	2,841.00	2,841.00	10.40	113.64	178.53	-2,508.26	64.59	2,509.09	2,385.05	124.04	20.229	
3,000.00	3,000.00	2,941.00	2,941.00	10.75	117.64	178.53	-2,508.26	64.59	2,509.09	2,380.69	128.39	19.542	
3,100.00	3,100.00	3,041.00	3,041.00	11.11	121.64	178.53	-2,508.26	64.59	2,509.09	2,376.34	132.75	18.900	
3,200.00	3,200.00	3,141.00	3,141.00	11.47	125.64	178.53	-2,508.26	64.59	2,509.09	2,371.98	137.11	18.300	
3,300.00	3,300.00	3,241.00	3,241.00	11.83	129.64	178.53	-2,508.26	64.59	2,509.09	2,367.62	141.47	17.736	
3,400.00	3,400.00	3,341.00	3,341.00	12.19	133.64	178.53	-2,508.26	64.59	2,509.09	2,363.26	145.83	17.206	
3,500.00	3,500.00	3,441.00	3,441.00	12.55	137.64	178.53	-2,508.26	64.59	2,509.09	2,358.90	150.19	16.706 CC	
3,600.00	3,599.95	3,504.00	3,504.00	12.90	140.16	-127.42	-2,508.26	64.59	2,510.95	2,357.91	153.05	16.407 ES, SF	
3,700.00	3,699.63	3,504.00	3,504.00	13.25	140.16	-127.23	-2,508.26	64.59	2,519.17	2,365.98	153.19	16.445	
3,800.00	3,798.77	3,504.00	3,504.00	13.61	140.16	-126.86	-2,508.26	64.59	2,534.44	2,381.34	153.11	16.553	
3,900.00	3,897.08	3,504.00	3,504.00	13.97	140.16	-126.31	-2,508.26	64.59	2,556.60	2,403.79	152.82	16.730	
4,000.00	3,994.31	3,504.00	3,504.00	14.33	140.16	-125.58	-2,508.26	64.59	2,585.41	2,433.07	152.34	16.972	
4,100.00	4,090.18	3,504.00	3,504.00	14.71	140.16	-124.65	-2,508.26	64.59	2,620.57	2,468.87	151.70	17.274	
4,200.00	4,184.43	3,504.00	3,504.00	15.10	140.16	-123.53	-2,508.26	64.59	2,661.74	2,510.78	150.95	17.633	
4,217.02	4,200.29	3,504.00	3,504.00	15.17	140.16	-123.32	-2,508.26	64.59	2,669.32	2,518.50	150.82	17.699	
4,300.00	4,277.50	3,504.00	3,504.00	15.52	140.16	-123.32	-2,508.26	64.59	2,707.67	2,557.56	150.11	18.038	
4,400.00	4,370.53	3,504.00	3,504.00	15.96	140.16	-123.32	-2,508.26	64.59	2,756.50	2,607.33	149.17	18.479	
4,500.00	4,463.57	3,504.00	3,504.00	16.42	140.16	-123.32	-2,508.26	64.59	2,808.04	2,659.89	148.15	18.954	
4,600.00	4,556.60	3,504.00	3,504.00	16.90	140.16	-123.32	-2,508.26	64.59	2,862.15	2,715.09	147.06	19.462	
4,700.00	4,649.64	3,504.00	3,504.00	17.39	140.16	-123.32	-2,508.26	64.59	2,918.69	2,772.77	145.92	20.002	
4,800.00	4,742.67	3,504.00	3,504.00	17.89	140.16	-123.32	-2,508.26	64.59	2,977.51	2,832.77	144.74	20.572	
4,900.00	4,835.71	3,504.00	3,504.00	18.41	140.16	-123.32	-2,508.26	64.59	3,038.48	2,894.96	143.52	21.171	
5,000.00	4,928.74	3,504.00	3,504.00	18.94	140.16	-123.32	-2,508.26	64.59	3,101.48	2,959.20	142.28	21.798	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,021.78	3,504.00	3,504.00	19.48	140.16	-123.32	-2,508.26	64.59	3,166.39	3,025.35	141.03	22.451	
5,200.00	5,114.81	3,504.00	3,504.00	20.03	140.16	-123.32	-2,508.26	64.59	3,233.08	3,093.31	139.78	23.131	
5,300.00	5,207.85	3,504.00	3,504.00	20.60	140.16	-123.32	-2,508.26	64.59	3,301.46	3,162.94	138.52	23.834	
5,400.00	5,300.88	3,504.00	3,504.00	21.17	140.16	-123.32	-2,508.26	64.59	3,371.42	3,234.15	137.27	24.561	
5,500.00	5,393.92	3,504.00	3,504.00	21.74	140.16	-123.32	-2,508.26	64.59	3,442.86	3,306.83	136.03	25.310	
5,600.00	5,486.95	3,504.00	3,504.00	22.33	140.16	-123.32	-2,508.26	64.59	3,515.69	3,380.89	134.80	26.081	
5,700.00	5,579.99	3,504.00	3,504.00	22.92	140.16	-123.32	-2,508.26	64.59	3,589.83	3,456.24	133.59	26.872	
5,800.00	5,673.02	3,504.00	3,504.00	23.52	140.16	-123.32	-2,508.26	64.59	3,665.20	3,532.80	132.40	27.682	
5,900.00	5,766.06	3,504.00	3,504.00	24.12	140.16	-123.32	-2,508.26	64.59	3,741.73	3,610.49	131.24	28.510	
6,000.00	5,859.09	3,504.00	3,504.00	24.73	140.16	-123.32	-2,508.26	64.59	3,819.34	3,689.24	130.10	29.357	
6,043.66	5,899.71	3,504.00	3,504.00	25.00	140.16	-123.32	-2,508.26	64.59	3,853.54	3,723.93	129.61	29.731	
6,100.00	5,952.42	3,504.00	3,504.00	25.34	140.16	-125.08	-2,508.26	64.59	3,897.68	3,768.71	128.97	30.221	
6,200.00	6,047.34	3,504.00	3,504.00	25.90	140.16	-128.05	-2,508.26	64.59	3,975.32	3,847.54	127.78	31.111	
6,300.00	6,143.78	3,504.00	3,504.00	26.41	140.16	-130.81	-2,508.26	64.59	4,051.92	3,925.41	126.51	32.028	
6,400.00	6,241.46	3,504.00	3,504.00	26.88	140.16	-133.37	-2,508.26	64.59	4,127.34	4,002.16	125.18	32.973	
6,500.00	6,340.13	3,504.00	3,504.00	27.30	140.16	-135.73	-2,508.26	64.59	4,201.44	4,077.67	123.78	33.944	
6,600.00	6,439.51	3,504.00	3,504.00	27.68	140.16	-137.90	-2,508.26	64.59	4,274.09	4,151.78	122.32	34.943	
6,700.00	6,539.33	3,504.00	3,504.00	28.01	140.16	-139.89	-2,508.26	64.59	4,345.18	4,224.38	120.80	35.971	
6,760.68	6,600.00	3,504.00	3,504.00	28.20	140.16	164.96	-2,508.26	64.59	4,387.50	4,267.65	119.85	36.608	
6,800.00	6,639.32	3,504.00	3,504.00	28.32	140.16	164.96	-2,508.26	64.59	4,414.81	4,295.57	119.23	37.026	
6,900.00	6,739.32	3,504.00	3,504.00	28.62	140.16	164.96	-2,508.26	64.59	4,485.06	4,367.37	117.69	38.109	
7,000.00	6,839.32	3,504.00	3,504.00	28.92	140.16	164.96	-2,508.26	64.59	4,556.43	4,440.26	116.17	39.221	
7,100.00	6,939.32	3,504.00	3,504.00	29.23	140.16	164.96	-2,508.26	64.59	4,628.86	4,514.17	114.69	40.360	
7,200.00	7,039.32	3,504.00	3,504.00	29.53	140.16	164.96	-2,508.26	64.59	4,702.30	4,589.06	113.24	41.526	
7,300.00	7,139.32	3,504.00	3,504.00	29.84	140.16	164.96	-2,508.26	64.59	4,776.70	4,664.89	111.81	42.720	
7,400.00	7,239.32	3,504.00	3,504.00	30.14	140.16	164.96	-2,508.26	64.59	4,852.02	4,741.60	110.43	43.939	
7,500.00	7,339.32	3,504.00	3,504.00	30.45	140.16	164.96	-2,508.26	64.59	4,928.22	4,819.15	109.07	45.184	
7,600.00	7,439.32	3,504.00	3,504.00	30.76	140.16	164.96	-2,508.26	64.59	5,005.26	4,897.51	107.75	46.453	
7,700.00	7,539.32	3,504.00	3,504.00	31.07	140.16	164.96	-2,508.26	64.59	5,083.10	4,976.64	106.46	47.746	
7,800.00	7,639.32	3,504.00	3,504.00	31.38	140.16	164.96	-2,508.26	64.59	5,161.70	5,056.50	105.21	49.063	
7,900.00	7,739.32	3,504.00	3,504.00	31.69	140.16	164.96	-2,508.26	64.59	5,241.04	5,137.05	103.99	50.401	
8,000.00	7,839.32	3,504.00	3,504.00	32.01	140.16	164.96	-2,508.26	64.59	5,321.06	5,218.26	102.80	51.761	
8,100.00	7,939.32	3,504.00	3,504.00	32.32	140.16	164.96	-2,508.26	64.59	5,401.76	5,300.11	101.65	53.142	
8,160.68	8,000.00	3,504.00	3,504.00	32.51	140.16	164.96	-2,508.26	64.59	5,451.03	5,350.07	100.96	53.990	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	178.94	-2,541.02	46.97	2,542.24				
100.00	100.00	37.00	37.00	0.36	1.48	178.94	-2,541.02	46.97	2,541.45	2,539.62	1.84	1,382.279	
200.00	200.00	137.00	137.00	0.72	5.48	178.94	-2,541.02	46.97	2,541.45	2,535.26	6.20	410.114	
300.00	300.00	237.00	237.00	1.08	9.48	178.94	-2,541.02	46.97	2,541.45	2,530.90	10.56	240.773	
400.00	400.00	337.00	337.00	1.43	13.48	178.94	-2,541.02	46.97	2,541.45	2,526.54	14.91	170.409	
500.00	500.00	437.00	437.00	1.79	17.48	178.94	-2,541.02	46.97	2,541.45	2,522.18	19.27	131.870	
600.00	600.00	537.00	537.00	2.15	21.48	178.94	-2,541.02	46.97	2,541.45	2,517.82	23.63	107.548	
700.00	700.00	637.00	637.00	2.51	25.48	178.94	-2,541.02	46.97	2,541.45	2,513.47	27.99	90.801	
800.00	800.00	737.00	737.00	2.87	29.48	178.94	-2,541.02	46.97	2,541.45	2,509.11	32.35	78.567	
900.00	900.00	837.00	837.00	3.23	33.48	178.94	-2,541.02	46.97	2,541.45	2,504.75	36.71	69.238	
1,000.00	1,000.00	937.00	937.00	3.58	37.48	178.94	-2,541.02	46.97	2,541.45	2,500.39	41.06	61.889	
1,100.00	1,100.00	1,037.00	1,037.00	3.94	41.48	178.94	-2,541.02	46.97	2,541.45	2,496.03	45.42	55.951	
1,200.00	1,200.00	1,137.00	1,137.00	4.30	45.48	178.94	-2,541.02	46.97	2,541.45	2,491.67	49.78	51.052	
1,300.00	1,300.00	1,237.00	1,237.00	4.66	49.48	178.94	-2,541.02	46.97	2,541.45	2,487.31	54.14	46.942	
1,400.00	1,400.00	1,337.00	1,337.00	5.02	53.48	178.94	-2,541.02	46.97	2,541.45	2,482.96	58.50	43.445	
1,500.00	1,500.00	1,437.00	1,437.00	5.38	57.48	178.94	-2,541.02	46.97	2,541.45	2,478.60	62.86	40.432	
1,600.00	1,600.00	1,537.00	1,537.00	5.74	61.48	178.94	-2,541.02	46.97	2,541.45	2,474.24	67.22	37.811	
1,700.00	1,700.00	1,637.00	1,637.00	6.09	65.48	178.94	-2,541.02	46.97	2,541.45	2,469.88	71.57	35.508	
1,800.00	1,800.00	1,737.00	1,737.00	6.45	69.48	178.94	-2,541.02	46.97	2,541.45	2,465.52	75.93	33.470	
1,900.00	1,900.00	1,837.00	1,837.00	6.81	73.48	178.94	-2,541.02	46.97	2,541.45	2,461.16	80.29	31.653	
2,000.00	2,000.00	1,937.00	1,937.00	7.17	77.48	178.94	-2,541.02	46.97	2,541.45	2,456.80	84.65	30.023	
2,100.00	2,100.00	2,037.00	2,037.00	7.53	81.48	178.94	-2,541.02	46.97	2,541.45	2,452.45	89.01	28.553	
2,200.00	2,200.00	2,137.00	2,137.00	7.89	85.48	178.94	-2,541.02	46.97	2,541.45	2,448.09	93.37	27.220	
2,300.00	2,300.00	2,237.00	2,237.00	8.24	89.48	178.94	-2,541.02	46.97	2,541.45	2,443.73	97.72	26.006	
2,400.00	2,400.00	2,337.00	2,337.00	8.60	93.48	178.94	-2,541.02	46.97	2,541.45	2,439.37	102.08	24.896	
2,500.00	2,500.00	2,437.00	2,437.00	8.96	97.48	178.94	-2,541.02	46.97	2,541.45	2,435.01	106.44	23.876	
2,600.00	2,600.00	2,537.00	2,537.00	9.32	101.48	178.94	-2,541.02	46.97	2,541.45	2,430.65	110.80	22.937	
2,700.00	2,700.00	2,637.00	2,637.00	9.68	105.48	178.94	-2,541.02	46.97	2,541.45	2,426.30	115.16	22.069	
2,800.00	2,800.00	2,737.00	2,737.00	10.04	109.48	178.94	-2,541.02	46.97	2,541.45	2,421.94	119.52	21.264	
2,900.00	2,900.00	2,837.00	2,837.00	10.40	113.48	178.94	-2,541.02	46.97	2,541.45	2,417.58	123.88	20.516	
3,000.00	3,000.00	2,937.00	2,937.00	10.75	117.48	178.94	-2,541.02	46.97	2,541.45	2,413.22	128.23	19.819	
3,100.00	3,100.00	3,037.00	3,037.00	11.11	121.48	178.94	-2,541.02	46.97	2,541.45	2,408.86	132.59	19.167	
3,200.00	3,200.00	3,137.00	3,137.00	11.47	125.48	178.94	-2,541.02	46.97	2,541.45	2,404.50	136.95	18.557	
3,300.00	3,300.00	3,237.00	3,237.00	11.83	129.48	178.94	-2,541.02	46.97	2,541.45	2,400.14	141.31	17.985	
3,400.00	3,400.00	3,337.00	3,337.00	12.19	133.48	178.94	-2,541.02	46.97	2,541.45	2,395.79	145.67	17.447	
3,500.00	3,500.00	3,437.00	3,437.00	12.55	137.48	178.94	-2,541.02	46.97	2,541.45	2,391.43	150.03	16.940 CC	
3,600.00	3,599.95	3,536.95	3,536.95	12.90	141.48	-127.04	-2,541.02	46.97	2,543.03	2,388.65	154.38	16.473 ES	
3,700.00	3,699.63	3,611.00	3,611.00	13.25	144.44	-127.02	-2,541.02	46.97	2,547.90	2,390.21	157.69	16.158 SF	
3,800.00	3,798.77	3,611.00	3,611.00	13.61	144.44	-126.76	-2,541.02	46.97	2,558.73	2,400.87	157.86	16.209	
3,900.00	3,897.08	3,611.00	3,611.00	13.97	144.44	-126.32	-2,541.02	46.97	2,576.48	2,418.67	157.81	16.326	
4,000.00	3,994.31	3,611.00	3,611.00	14.33	144.44	-125.71	-2,541.02	46.97	2,600.97	2,443.41	157.56	16.508	
4,100.00	4,090.18	3,611.00	3,611.00	14.71	144.44	-124.91	-2,541.02	46.97	2,631.94	2,474.80	157.14	16.749	
4,200.00	4,184.43	3,611.00	3,611.00	15.10	144.44	-123.92	-2,541.02	46.97	2,669.07	2,512.51	156.57	17.047	
4,217.02	4,200.29	3,611.00	3,611.00	15.17	144.44	-123.73	-2,541.02	46.97	2,675.98	2,519.52	156.46	17.103	
4,300.00	4,277.50	3,611.00	3,611.00	15.52	144.44	-123.73	-2,541.02	46.97	2,711.14	2,555.26	155.88	17.392	
4,400.00	4,370.53	3,611.00	3,611.00	15.96	144.44	-123.73	-2,541.02	46.97	2,756.23	2,601.15	155.08	17.773	
4,500.00	4,463.57	3,611.00	3,611.00	16.42	144.44	-123.73	-2,541.02	46.97	2,804.16	2,649.98	154.18	18.188	
4,600.00	4,556.60	3,611.00	3,611.00	16.90	144.44	-123.73	-2,541.02	46.97	2,854.80	2,701.60	153.19	18.635	
4,700.00	4,649.64	3,611.00	3,611.00	17.39	144.44	-123.73	-2,541.02	46.97	2,907.99	2,755.85	152.13	19.115	
4,800.00	4,742.67	3,611.00	3,611.00	17.89	144.44	-123.73	-2,541.02	46.97	2,963.60	2,812.58	151.01	19.625	
4,900.00	4,835.71	3,611.00	3,611.00	18.41	144.44	-123.73	-2,541.02	46.97	3,021.50	2,871.65	149.85	20.164	
5,000.00	4,928.74	3,611.00	3,611.00	18.94	144.44	-123.73	-2,541.02	46.97	3,081.55	2,932.91	148.65	20.731	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,021.78	3,611.00	3,611.00	19.48	144.44	-123.73	-2,541.02	46.97	3,143.64	2,996.23	147.42	21.325	
5,200.00	5,114.81	3,611.00	3,611.00	20.03	144.44	-123.73	-2,541.02	46.97	3,207.65	3,061.48	146.17	21.945	
5,300.00	5,207.85	3,611.00	3,611.00	20.60	144.44	-123.73	-2,541.02	46.97	3,273.46	3,128.55	144.91	22.590	
5,400.00	5,300.88	3,611.00	3,611.00	21.17	144.44	-123.73	-2,541.02	46.97	3,340.97	3,197.32	143.65	23.258	
5,500.00	5,393.92	3,611.00	3,611.00	21.74	144.44	-123.73	-2,541.02	46.97	3,410.08	3,267.69	142.39	23.949	
5,600.00	5,486.95	3,611.00	3,611.00	22.33	144.44	-123.73	-2,541.02	46.97	3,480.68	3,339.55	141.13	24.662	
5,700.00	5,579.99	3,611.00	3,611.00	22.92	144.44	-123.73	-2,541.02	46.97	3,552.70	3,412.81	139.89	25.396	
5,800.00	5,673.02	3,611.00	3,611.00	23.52	144.44	-123.73	-2,541.02	46.97	3,626.04	3,487.38	138.67	26.149	
5,900.00	5,766.06	3,611.00	3,611.00	24.12	144.44	-123.73	-2,541.02	46.97	3,700.64	3,563.18	137.46	26.922	
6,000.00	5,859.09	3,611.00	3,611.00	24.73	144.44	-123.73	-2,541.02	46.97	3,776.41	3,640.13	136.27	27.712	
6,043.66	5,899.71	3,611.00	3,611.00	25.00	144.44	-123.73	-2,541.02	46.97	3,809.84	3,674.07	135.76	28.063	
6,100.00	5,952.42	3,611.00	3,611.00	25.34	144.44	-125.39	-2,541.02	46.97	3,852.98	3,717.89	135.09	28.521	
6,200.00	6,047.34	3,611.00	3,611.00	25.90	144.44	-128.19	-2,541.02	46.97	3,928.86	3,795.02	133.84	29.354	
6,300.00	6,143.78	3,611.00	3,611.00	26.41	144.44	-130.80	-2,541.02	46.97	4,003.71	3,871.19	132.52	30.212	
6,400.00	6,241.46	3,611.00	3,611.00	26.88	144.44	-133.23	-2,541.02	46.97	4,077.39	3,946.26	131.13	31.095	
6,500.00	6,340.13	3,611.00	3,611.00	27.30	144.44	-135.48	-2,541.02	46.97	4,149.76	4,020.10	129.66	32.004	
6,600.00	6,439.51	3,611.00	3,611.00	27.68	144.44	-137.56	-2,541.02	46.97	4,220.71	4,092.57	128.14	32.938	
6,700.00	6,539.33	3,611.00	3,611.00	28.01	144.44	-139.47	-2,541.02	46.97	4,290.10	4,163.54	126.56	33.899	
6,760.68	6,600.00	3,611.00	3,611.00	28.20	144.44	165.41	-2,541.02	46.97	4,331.40	4,205.83	125.57	34.494	
6,800.00	6,639.32	3,611.00	3,611.00	28.32	144.44	165.41	-2,541.02	46.97	4,358.06	4,233.14	124.92	34.886	
6,900.00	6,739.32	3,611.00	3,611.00	28.62	144.44	165.41	-2,541.02	46.97	4,426.71	4,303.40	123.31	35.899	
7,000.00	6,839.32	3,611.00	3,611.00	28.92	144.44	165.41	-2,541.02	46.97	4,496.54	4,374.82	121.72	36.941	
7,100.00	6,939.32	3,611.00	3,611.00	29.23	144.44	165.41	-2,541.02	46.97	4,567.48	4,447.32	120.16	38.011	
7,200.00	7,039.32	3,611.00	3,611.00	29.53	144.44	165.41	-2,541.02	46.97	4,639.50	4,520.87	118.63	39.108	
7,300.00	7,139.32	3,611.00	3,611.00	29.84	144.44	165.41	-2,541.02	46.97	4,712.54	4,595.41	117.14	40.232	
7,400.00	7,239.32	3,611.00	3,611.00	30.14	144.44	165.41	-2,541.02	46.97	4,786.56	4,670.89	115.67	41.381	
7,500.00	7,339.32	3,611.00	3,611.00	30.45	144.44	165.41	-2,541.02	46.97	4,861.50	4,747.26	114.24	42.556	
7,600.00	7,439.32	3,611.00	3,611.00	30.76	144.44	165.41	-2,541.02	46.97	4,937.33	4,824.49	112.84	43.756	
7,700.00	7,539.32	3,611.00	3,611.00	31.07	144.44	165.41	-2,541.02	46.97	5,014.01	4,902.54	111.47	44.979	
7,800.00	7,639.32	3,611.00	3,611.00	31.38	144.44	165.41	-2,541.02	46.97	5,091.50	4,981.36	110.14	46.227	
7,900.00	7,739.32	3,611.00	3,611.00	31.69	144.44	165.41	-2,541.02	46.97	5,169.76	5,060.92	108.85	47.496	
8,000.00	7,839.32	3,611.00	3,611.00	32.01	144.44	165.41	-2,541.02	46.97	5,248.76	5,141.18	107.58	48.788	
8,100.00	7,939.32	3,611.00	3,611.00	32.32	144.44	165.41	-2,541.02	46.97	5,328.47	5,222.11	106.36	50.101	
8,160.68	8,000.00	3,611.00	3,611.00	32.51	144.44	165.41	-2,541.02	46.97	5,377.16	5,271.53	105.63	50.907	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 292-NS-GYRO-MS												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	179.03	-2,428.17	41.10	2,429.23				
100.00	100.00	39.87	39.87	0.36	0.05	179.03	-2,428.18	41.08	2,428.52	2,428.11	0.41	5,900.670	
200.00	200.00	137.10	137.10	0.72	0.18	179.03	-2,428.28	40.91	2,428.63	2,427.73	0.90	2,701.311	
300.00	300.00	234.33	234.33	1.08	0.31	179.04	-2,428.50	40.53	2,428.85	2,427.46	1.39	1,751.728	
400.00	400.00	333.35	333.35	1.43	0.49	179.06	-2,428.82	39.98	2,429.16	2,427.24	1.92	1,265.779	
500.00	500.00	434.99	434.98	1.79	0.73	179.07	-2,429.12	39.48	2,429.44	2,426.93	2.52	965.073	
600.00	600.00	536.62	536.62	2.15	0.96	179.08	-2,429.34	39.09	2,429.66	2,426.54	3.12	779.826	
700.00	700.00	638.26	638.25	2.51	1.20	179.08	-2,429.49	38.83	2,429.80	2,426.09	3.71	654.243	
800.00	800.00	739.89	739.89	2.87	1.44	179.09	-2,429.58	38.69	2,429.88	2,425.57	4.31	563.491	
900.00	900.00	841.21	841.21	3.23	1.69	179.09	-2,429.59	38.66	2,429.90	2,424.99	4.91	494.598	
1,000.00	1,000.00	1,762.84	1,741.81	3.58	3.83	179.45	-2,267.65	21.70	2,405.00	2,397.99	7.00	343.416	
1,100.00	1,100.00	1,864.73	1,837.68	3.94	4.16	179.60	-2,233.68	15.59	2,371.55	2,363.96	7.59	312.398	
1,200.00	1,200.00	1,954.22	1,921.84	4.30	4.46	179.74	-2,203.77	10.17	2,338.03	2,329.87	8.16	286.457	
1,300.00	1,300.00	2,048.88	2,010.91	4.66	4.78	179.89	-2,172.24	4.27	2,304.65	2,295.91	8.75	263.467	
1,400.00	1,400.00	2,121.05	2,078.91	5.02	5.03	180.00	-2,148.45	0.02	2,271.63	2,262.34	9.29	244.402	
1,500.00	1,500.00	2,199.06	2,152.69	5.38	5.30	-179.88	-2,123.51	-4.42	2,239.60	2,229.74	9.86	227.213	
1,600.00	1,600.00	2,275.86	2,225.45	5.74	5.56	-179.76	-2,099.30	-8.72	2,208.08	2,197.66	10.42	211.906	
1,700.00	1,700.00	2,342.00	2,288.40	6.09	5.79	-179.67	-2,079.30	-12.10	2,177.79	2,166.82	10.97	198.581	
1,800.00	1,800.00	2,426.03	2,368.63	6.45	6.08	-179.55	-2,054.63	-16.04	2,148.41	2,136.86	11.55	186.045	
1,900.00	1,900.00	2,551.28	2,488.14	6.81	6.51	-179.39	-2,017.56	-21.51	2,118.91	2,106.71	12.20	173.659	
2,000.00	2,000.00	2,735.68	2,661.89	7.17	7.17	-179.13	-1,956.44	-29.83	2,085.24	2,072.30	12.94	161.108	
2,100.00	2,100.00	2,816.65	2,737.88	7.53	7.47	-179.00	-1,928.76	-33.73	2,051.07	2,037.55	13.53	151.641	
2,200.00	2,200.00	2,922.41	2,837.15	7.89	7.87	-178.82	-1,892.67	-39.02	2,017.02	2,002.87	14.14	142.597	
2,300.00	2,300.00	3,002.63	2,912.27	8.24	8.17	-178.68	-1,864.80	-42.98	1,982.41	1,967.68	14.73	134.569	
2,400.00	2,400.00	3,062.00	2,968.28	8.60	8.39	-178.57	-1,845.34	-45.97	1,949.58	1,934.29	15.29	127.477	
2,500.00	2,500.00	3,107.54	3,011.55	8.96	8.55	-178.49	-1,831.34	-48.22	1,918.76	1,902.93	15.84	121.159	
2,600.00	2,600.00	3,188.00	3,088.66	9.32	8.83	-178.36	-1,808.65	-51.79	1,890.45	1,874.03	16.43	115.074	
2,700.00	2,700.00	3,211.90	3,111.72	9.68	8.91	-178.32	-1,802.44	-52.78	1,863.64	1,846.70	16.94	110.039	
2,800.00	2,800.00	3,282.00	3,179.78	10.04	9.14	-178.21	-1,785.92	-55.66	1,839.87	1,822.36	17.51	105.075	
2,900.00	2,900.00	3,321.19	3,218.03	10.40	9.26	-178.15	-1,777.57	-57.32	1,818.01	1,799.99	18.03	100.843	
3,000.00	3,000.00	3,377.00	3,272.63	10.75	9.44	-178.06	-1,766.28	-59.81	1,798.14	1,779.57	18.57	96.834	
3,100.00	3,100.00	3,442.46	3,336.93	11.11	9.63	-177.95	-1,754.39	-62.76	1,780.28	1,761.16	19.12	93.089	
3,200.00	3,200.00	3,503.39	3,397.06	11.47	9.81	-177.86	-1,744.88	-65.32	1,764.78	1,745.12	19.66	89.745	
3,300.00	3,300.00	3,564.00	3,457.05	11.83	9.98	-177.77	-1,736.52	-67.56	1,751.21	1,731.01	20.20	86.709	
3,400.00	3,400.00	3,629.46	3,522.02	12.19	10.16	-177.69	-1,728.83	-69.67	1,739.68	1,718.95	20.73	83.912	
3,500.00	3,500.00	3,685.05	3,577.34	12.55	10.30	-177.63	-1,723.62	-71.21	1,730.47	1,709.24	21.23	81.502	
3,600.00	3,599.95	3,753.00	3,645.15	12.90	10.47	-123.75	-1,719.46	-72.31	1,725.58	1,703.82	21.75	79.330	
3,636.03	3,635.92	3,753.00	3,645.15	13.03	10.47	-123.77	-1,719.46	-72.31	1,725.01	1,703.15	21.86	78.912 CC, ES	
3,700.00	3,699.63	3,787.41	3,679.54	13.25	10.55	-123.81	-1,718.33	-72.55	1,726.11	1,703.96	22.15	77.932	
3,800.00	3,798.77	3,871.23	3,763.35	13.61	10.74	-123.97	-1,717.12	-72.79	1,731.92	1,709.23	22.70	76.310	
3,900.00	3,897.08	3,969.72	3,861.83	13.97	10.98	-124.23	-1,715.77	-73.05	1,740.89	1,717.59	23.30	74.714	
4,000.00	3,994.31	4,067.17	3,959.28	14.33	11.21	-124.54	-1,714.43	-73.31	1,752.94	1,729.04	23.91	73.326	
4,100.00	4,090.18	4,163.32	4,055.42	14.71	11.45	-124.89	-1,713.11	-73.57	1,768.19	1,743.67	24.51	72.129	
4,200.00	4,184.43	4,257.91	4,149.99	15.10	11.68	-125.26	-1,711.82	-73.82	1,786.73	1,761.60	25.13	71.104	
4,217.02	4,200.29	4,273.83	4,165.92	15.17	11.72	-125.33	-1,711.60	-73.86	1,790.23	1,764.99	25.23	70.943	
4,300.00	4,277.50	4,351.34	4,243.41	15.52	11.90	-126.08	-1,710.54	-74.07	1,807.66	1,781.90	25.75	70.193	
4,400.00	4,370.53	4,444.74	4,336.80	15.96	12.13	-126.96	-1,709.26	-74.32	1,829.08	1,802.69	26.39	69.316	
4,500.00	4,463.57	4,538.14	4,430.19	16.42	12.36	-127.82	-1,707.98	-74.56	1,850.95	1,823.91	27.03	68.468	
4,600.00	4,556.60	4,631.54	4,523.59	16.90	12.59	-128.66	-1,706.70	-74.81	1,873.24	1,845.55	27.69	67.652	
4,700.00	4,649.64	4,724.94	4,616.98	17.39	12.81	-129.49	-1,705.42	-75.06	1,895.95	1,867.59	28.35	66.870	
4,800.00	4,742.67	4,818.34	4,710.37	17.89	13.04	-130.30	-1,704.14	-75.31	1,919.05	1,890.02	29.02	66.122	
4,900.00	4,835.71	4,911.74	4,803.76	18.41	13.27	-131.09	-1,702.85	-75.56	1,942.53	1,912.83	29.70	65.409	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 292-NS-GYRO-MS												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.00	4,928.74	5,005.14	4,897.15	18.94	13.50	-131.86	-1,701.57	-75.81	1,966.38	1,936.00	30.38	64.729	
5,100.00	5,021.78	5,098.54	4,990.54	19.48	13.72	-132.62	-1,700.29	-76.06	1,990.59	1,959.52	31.06	64.083	
5,200.00	5,114.81	5,191.94	5,083.93	20.03	13.95	-133.35	-1,699.01	-76.31	2,015.14	1,983.39	31.75	63.470	
5,300.00	5,207.85	5,285.34	5,177.32	20.60	14.18	-134.07	-1,697.73	-76.56	2,040.02	2,007.58	32.44	62.888	
5,400.00	5,300.88	5,378.74	5,270.71	21.17	14.41	-134.78	-1,696.45	-76.80	2,065.22	2,032.09	33.13	62.337	
5,500.00	5,393.92	5,472.14	5,364.11	21.74	14.63	-135.47	-1,695.17	-77.05	2,090.72	2,056.90	33.82	61.816	
5,600.00	5,486.95	5,565.54	5,457.50	22.33	14.86	-136.14	-1,693.89	-77.30	2,116.52	2,082.01	34.51	61.322	
5,700.00	5,579.99	5,658.94	5,550.89	22.92	15.09	-136.80	-1,692.61	-77.55	2,142.61	2,107.40	35.21	60.855	
5,800.00	5,673.02	5,752.34	5,644.28	23.52	15.32	-137.44	-1,691.33	-77.80	2,168.97	2,133.07	35.90	60.413	
5,900.00	5,766.06	5,845.74	5,737.67	24.12	15.54	-138.07	-1,690.05	-78.05	2,195.59	2,159.00	36.60	59.996	
6,000.00	5,859.09	5,939.14	5,831.06	24.73	15.77	-138.69	-1,688.77	-78.30	2,222.47	2,185.19	37.29	59.601	
6,043.66	5,899.71	5,979.91	5,871.83	25.00	15.87	-138.95	-1,688.21	-78.41	2,234.29	2,196.70	37.59	59.436	
6,100.00	5,952.42	6,032.83	5,924.74	25.34	16.00	-139.57	-1,687.49	-78.55	2,248.99	2,211.01	37.98	59.217	
6,200.00	6,047.34	6,128.06	6,019.96	25.90	16.23	-140.54	-1,686.18	-78.80	2,272.22	2,233.56	38.66	58.781	
6,300.00	6,143.78	6,224.76	6,116.65	26.41	16.47	-141.33	-1,684.86	-79.06	2,291.64	2,252.32	39.32	58.286	
6,400.00	6,241.46	6,322.65	6,214.53	26.88	16.71	-141.95	-1,683.52	-79.32	2,307.14	2,267.17	39.96	57.731	
6,500.00	6,340.13	6,421.48	6,313.35	27.30	16.95	-142.41	-1,682.16	-79.58	2,318.61	2,278.01	40.59	57.117	
6,600.00	6,439.51	6,520.96	6,412.82	27.68	17.19	-142.71	-1,680.80	-79.85	2,325.98	2,284.77	41.21	56.444	
6,700.00	6,539.33	6,620.83	6,512.68	28.01	17.43	-142.86	-1,679.43	-80.11	2,329.21	2,287.40	41.81	55.715	
6,760.68	6,600.00	6,681.50	6,573.35	28.20	17.58	163.10	-1,678.60	-80.27	2,329.13	2,286.97	42.16	55.244	
6,800.00	6,639.32	6,720.82	6,612.66	28.32	17.68	163.10	-1,678.06	-80.38	2,328.59	2,286.20	42.39	54.933	
6,900.00	6,739.32	6,820.81	6,712.64	28.62	17.92	163.09	-1,676.69	-80.65	2,327.20	2,284.23	42.97	54.157	
7,000.00	6,839.32	6,920.80	6,812.62	28.92	18.16	163.09	-1,675.32	-80.91	2,325.81	2,282.26	43.55	53.401	
7,100.00	6,939.32	7,020.79	6,912.61	29.23	18.41	163.09	-1,673.95	-81.18	2,324.42	2,280.28	44.14	52.663	
7,200.00	7,039.32	7,120.78	7,012.59	29.53	18.65	163.08	-1,672.58	-81.44	2,323.03	2,278.31	44.72	51.944	
7,300.00	7,139.32	7,220.77	7,112.57	29.84	18.89	163.08	-1,671.21	-81.71	2,321.64	2,276.34	45.31	51.243	
7,400.00	7,239.32	7,320.76	7,212.55	30.14	19.14	163.08	-1,669.84	-81.98	2,320.25	2,274.36	45.89	50.558	
7,500.00	7,339.32	7,420.75	7,312.53	30.45	19.38	163.07	-1,668.47	-82.24	2,318.87	2,272.39	46.48	49.890	
7,600.00	7,439.32	7,520.74	7,412.51	30.76	19.63	163.07	-1,667.10	-82.51	2,317.48	2,270.41	47.07	49.238	
7,700.00	7,539.32	7,620.73	7,512.49	31.07	19.87	163.07	-1,665.73	-82.78	2,316.09	2,268.43	47.65	48.602	
7,800.00	7,639.32	7,720.72	7,612.47	31.38	20.11	163.06	-1,664.36	-83.04	2,314.70	2,266.46	48.24	47.980	
7,900.00	7,739.32	7,820.71	7,712.45	31.69	20.36	163.06	-1,662.99	-83.31	2,313.31	2,264.48	48.83	47.373	
8,000.00	7,839.32	7,920.70	7,812.43	32.01	20.60	163.05	-1,661.62	-83.58	2,311.92	2,262.50	49.42	46.779	
8,042.40	7,881.72	7,931.00	7,822.73	32.14	20.63	163.05	-1,661.47	-83.60	2,311.56	2,262.02	49.53	46.666	
8,100.00	7,939.32	7,931.00	7,822.73	32.32	20.63	163.05	-1,661.47	-83.60	2,312.27	2,262.67	49.61	46.612 SF	
8,160.68	8,000.00	7,931.00	7,822.73	32.51	20.63	163.05	-1,661.47	-83.60	2,314.58	2,264.92	49.65	46.613	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	160.00	-1,387.00	504.93	1,476.57				
100.00	100.00	59.00	59.00	0.36	0.08	160.00	-1,387.08	504.83	1,476.09	1,475.66	0.44	3,378.581	
200.00	200.00	159.08	159.08	0.72	0.29	160.02	-1,387.44	504.36	1,476.27	1,475.27	1.01	1,466.981	
300.00	300.00	260.96	260.95	1.08	0.48	160.03	-1,387.52	504.32	1,476.33	1,474.78	1.55	949.720	
400.00	400.00	373.68	373.65	1.43	0.60	159.94	-1,386.41	506.38	1,476.05	1,474.02	2.03	726.352	
500.00	500.00	475.17	474.94	1.79	0.76	159.70	-1,383.30	511.79	1,475.01	1,472.47	2.55	579.239	
600.00	600.00	578.64	577.85	2.15	0.97	159.28	-1,378.63	521.39	1,474.03	1,470.90	3.13	471.680	
700.00	700.00	670.08	668.39	2.51	1.20	158.79	-1,373.27	533.02	1,473.11	1,469.40	3.71	397.235	
736.93	736.93	700.00	697.93	2.64	1.28	158.60	-1,371.47	537.35	1,472.98	1,469.07	3.92	376.047	CC, ES
800.00	800.00	739.88	737.29	2.87	1.38	158.35	-1,369.37	543.45	1,473.46	1,469.21	4.25	346.676	
900.00	900.00	800.00	796.58	3.23	1.55	157.97	-1,367.36	553.20	1,476.43	1,471.66	4.77	309.584	
1,000.00	1,000.00	875.03	870.47	3.58	1.75	157.49	-1,366.22	566.15	1,481.65	1,476.32	5.33	277.822	
1,100.00	1,100.00	946.49	940.72	3.94	1.96	157.02	-1,366.11	579.25	1,488.71	1,482.83	5.89	252.945	
1,200.00	1,200.00	1,000.00	993.17	4.30	2.11	156.66	-1,366.68	589.80	1,497.95	1,491.57	6.38	234.728	
1,300.00	1,300.00	1,072.53	1,064.03	4.66	2.32	156.15	-1,368.83	605.12	1,509.53	1,502.59	6.93	217.682	
1,400.00	1,400.00	1,134.10	1,123.91	5.02	2.50	155.72	-1,372.14	619.05	1,523.88	1,516.43	7.45	204.614	
1,500.00	1,500.00	1,200.00	1,187.71	5.38	2.70	155.25	-1,376.84	634.87	1,540.60	1,532.63	7.97	193.292	
1,600.00	1,600.00	1,262.51	1,248.00	5.74	2.90	154.81	-1,382.49	650.40	1,559.57	1,551.09	8.47	184.037	
1,700.00	1,700.00	1,329.28	1,312.21	6.09	3.10	154.36	-1,389.91	667.12	1,580.68	1,571.70	8.99	175.851	
1,800.00	1,800.00	1,400.00	1,380.05	6.45	3.32	153.92	-1,399.09	684.85	1,603.62	1,594.11	9.51	168.629	
1,900.00	1,900.00	1,462.39	1,439.72	6.81	3.52	153.56	-1,408.45	700.48	1,628.46	1,618.47	9.99	162.972	
2,000.00	2,000.00	1,527.64	1,501.87	7.17	3.73	153.21	-1,419.60	716.92	1,655.31	1,644.83	10.48	157.950	
2,100.00	2,100.00	1,600.00	1,570.40	7.53	3.96	152.81	-1,432.81	736.04	1,683.86	1,672.87	10.99	153.228	
2,200.00	2,200.00	1,684.67	1,650.26	7.89	4.25	152.34	-1,448.66	759.28	1,713.47	1,701.91	11.56	148.279	
2,300.00	2,300.00	1,774.31	1,734.67	8.24	4.56	151.84	-1,465.39	784.41	1,743.47	1,731.32	12.15	143.538	
2,400.00	2,400.00	1,864.11	1,819.08	8.60	4.88	151.34	-1,482.10	810.06	1,773.84	1,761.10	12.74	139.237	
2,500.00	2,500.00	2,033.82	1,979.52	8.96	5.48	150.46	-1,511.84	856.65	1,803.14	1,789.46	13.69	131.736	
2,600.00	2,600.00	2,170.77	2,110.67	9.32	5.95	149.84	-1,532.21	890.41	1,828.46	1,813.98	14.48	126.261	
2,700.00	2,700.00	2,280.54	2,216.04	9.68	6.33	149.33	-1,546.96	917.37	1,852.74	1,837.58	15.16	122.192	
2,800.00	2,800.00	2,417.39	2,347.69	10.04	6.80	148.69	-1,563.26	951.00	1,875.90	1,859.95	15.96	117.563	
2,900.00	2,900.00	2,474.59	2,402.66	10.40	7.00	148.42	-1,570.17	965.23	1,899.26	1,882.83	16.42	115.654	
3,000.00	3,000.00	2,549.55	2,474.48	10.75	7.26	148.08	-1,580.00	984.31	1,924.05	1,907.10	16.96	113.470	
3,100.00	3,100.00	2,630.27	2,551.68	11.11	7.54	147.72	-1,591.28	1,005.00	1,949.77	1,932.25	17.51	111.331	
3,200.00	3,200.00	2,711.25	2,629.05	11.47	7.83	147.39	-1,603.37	1,025.63	1,976.28	1,958.21	18.07	109.377	
3,300.00	3,300.00	2,789.62	2,703.74	11.83	8.11	147.08	-1,615.48	1,046.08	2,003.64	1,985.03	18.61	107.663	
3,400.00	3,400.00	2,879.49	2,789.21	12.19	8.43	146.71	-1,629.72	1,069.91	2,031.66	2,012.46	19.20	105.794	
3,500.00	3,500.00	2,964.54	2,870.07	12.55	8.74	146.39	-1,643.60	1,092.31	2,060.04	2,040.27	19.77	104.176	
3,600.00	3,599.95	3,059.99	2,960.65	12.90	9.09	-159.64	-1,659.14	1,118.11	2,091.21	2,070.81	20.39	102.546	
3,700.00	3,699.63	3,700.56	3,588.09	13.25	11.00	-161.34	-1,713.21	1,219.13	2,113.87	2,091.04	22.83	92.581	
3,800.00	3,798.77	3,848.22	3,735.68	13.61	11.33	-161.46	-1,713.53	1,223.70	2,128.07	2,104.57	23.50	90.550	
3,900.00	3,897.08	3,957.29	3,844.74	13.97	11.56	-161.50	-1,713.46	1,225.52	2,146.29	2,122.20	24.09	89.092	
4,000.00	3,994.31	4,062.47	3,949.91	14.33	11.77	-161.51	-1,713.24	1,226.49	2,168.85	2,144.19	24.66	87.944	
4,100.00	4,090.18	4,161.81	4,049.25	14.71	11.96	-161.51	-1,713.02	1,227.08	2,196.06	2,170.85	25.21	87.118	
4,200.00	4,184.43	4,259.30	4,146.74	15.10	12.12	-161.48	-1,712.73	1,227.49	2,227.90	2,202.18	25.72	86.611	
4,217.02	4,200.29	4,275.70	4,163.13	15.17	12.15	-161.48	-1,712.68	1,227.54	2,233.78	2,207.97	25.81	86.546	
4,300.00	4,277.50	4,351.66	4,239.09	15.52	12.28	-161.72	-1,712.50	1,227.67	2,262.78	2,236.56	26.23	86.278	
4,400.00	4,370.53	4,446.10	4,333.54	15.96	12.42	-162.01	-1,712.42	1,227.78	2,297.86	2,271.15	26.71	86.018	
4,500.00	4,463.57	4,540.09	4,427.52	16.42	12.50	-162.29	-1,712.27	1,227.70	2,332.82	2,305.67	27.14	85.942	
4,600.00	4,556.60	4,632.40	4,519.84	16.90	12.54	-162.56	-1,712.34	1,227.58	2,367.96	2,340.43	27.53	86.004	
4,700.00	4,649.64	4,733.30	4,620.73	17.39	12.57	-162.84	-1,712.15	1,227.30	2,402.88	2,374.97	27.91	86.094	
4,800.00	4,742.67	4,823.05	4,710.48	17.89	12.58	-163.07	-1,712.03	1,226.89	2,437.77	2,409.50	28.28	86.204	
4,900.00	4,835.71	4,907.12	4,794.55	18.41	12.61	-163.29	-1,712.15	1,226.64	2,473.00	2,444.33	28.68	86.242	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	5,006.00	4,893.43	18.94	12.66	-163.54	-1,712.23	1,226.49	2,508.31	2,479.23	29.08	86.255	
5,100.00	5,021.78	5,107.56	4,994.99	19.48	12.67	-163.79	-1,712.13	1,226.09	2,543.38	2,513.92	29.46	86.341	
5,200.00	5,114.81	5,200.00	5,087.43	20.03	12.69	-164.00	-1,712.03	1,225.48	2,578.33	2,548.48	29.84	86.397	
5,300.00	5,207.85	5,288.53	5,175.95	20.60	12.72	-164.21	-1,711.90	1,225.09	2,613.40	2,583.15	30.25	86.390	
5,400.00	5,300.88	5,385.99	5,273.41	21.17	12.79	-164.43	-1,711.55	1,225.01	2,648.57	2,617.87	30.70	86.265	
5,500.00	5,393.92	5,480.30	5,367.73	21.74	12.90	-164.65	-1,710.96	1,225.03	2,683.64	2,652.45	31.19	86.034	
5,600.00	5,486.95	5,573.81	5,461.23	22.33	13.01	-164.87	-1,710.28	1,225.13	2,718.73	2,687.04	31.69	85.792	
5,700.00	5,579.99	5,666.79	5,556.21	22.92	13.13	-165.09	-1,709.48	1,225.33	2,753.82	2,721.61	32.21	85.502	
5,800.00	5,673.02	5,764.38	5,651.79	23.52	13.26	-165.30	-1,708.51	1,225.60	2,788.87	2,756.13	32.73	85.196	
5,900.00	5,766.06	5,857.25	5,744.65	24.12	13.40	-165.51	-1,707.46	1,225.90	2,823.90	2,790.63	33.26	84.892	
6,000.00	5,859.09	5,948.48	5,835.88	24.73	13.53	-165.71	-1,706.52	1,226.17	2,859.01	2,825.21	33.80	84.595	
6,043.66	5,899.71	5,988.30	5,875.70	25.00	13.59	-165.79	-1,706.15	1,226.28	2,874.37	2,840.34	34.03	84.468	
6,100.00	5,952.42	6,041.93	5,929.32	25.34	13.67	-166.04	-1,705.66	1,226.42	2,893.45	2,859.11	34.33	84.271	
6,200.00	6,047.34	6,139.53	6,026.92	25.90	13.82	-166.44	-1,704.66	1,226.68	2,923.49	2,888.61	34.88	83.809	
6,300.00	6,143.78	6,238.65	6,126.03	26.41	13.98	-166.76	-1,703.51	1,226.98	2,948.58	2,913.15	35.43	83.220	
6,400.00	6,241.46	6,338.98	6,226.36	26.88	14.13	-167.02	-1,702.25	1,227.26	2,968.64	2,932.66	35.98	82.510	
6,500.00	6,340.13	6,440.37	6,327.73	27.30	14.29	-167.21	-1,700.89	1,227.50	2,983.60	2,947.07	36.52	81.688	
6,600.00	6,439.51	6,542.54	6,429.89	27.68	14.46	-167.35	-1,699.34	1,227.81	2,993.41	2,956.34	37.07	80.760	
6,700.00	6,539.33	6,639.39	6,526.73	28.01	14.62	-167.43	-1,697.76	1,228.17	2,998.08	2,960.49	37.59	79.758	
6,760.68	6,600.00	6,693.80	6,581.13	28.20	14.71	138.53	-1,697.04	1,228.34	2,998.55	2,960.65	37.90	79.124	
6,800.00	6,639.32	6,729.07	6,616.40	28.32	14.77	138.52	-1,696.68	1,228.43	2,998.31	2,960.21	38.09	78.707	
6,900.00	6,739.32	6,821.55	6,708.88	28.62	14.93	138.51	-1,696.06	1,228.61	2,997.93	2,959.33	38.61	77.653	
7,000.00	6,839.32	6,924.62	6,811.94	28.92	15.12	138.50	-1,695.39	1,228.85	2,997.60	2,958.45	39.15	76.563	
7,100.00	6,939.32	7,024.36	6,911.69	29.23	15.31	138.49	-1,694.54	1,229.16	2,997.17	2,957.48	39.70	75.505	
7,200.00	7,039.32	7,115.09	7,002.41	29.53	15.50	138.47	-1,693.96	1,229.51	2,996.95	2,956.72	40.23	74.490	
7,222.53	7,061.85	7,135.53	7,022.85	29.60	15.54	138.47	-1,693.88	1,229.60	2,996.94	2,956.59	40.35	74.266	
7,300.00	7,139.32	7,206.77	7,094.09	29.84	15.69	138.46	-1,693.71	1,229.92	2,997.03	2,956.26	40.77	73.505	
7,400.00	7,239.32	7,312.25	7,199.57	30.14	15.90	138.46	-1,693.48	1,230.35	2,997.15	2,955.81	41.34	72.494	
7,500.00	7,339.32	7,417.74	7,305.06	30.45	16.12	138.45	-1,693.10	1,230.68	2,997.08	2,955.17	41.91	71.506	
7,600.00	7,439.32	7,523.23	7,410.54	30.76	16.33	138.44	-1,692.57	1,230.89	2,996.83	2,954.35	42.48	70.540	
7,700.00	7,539.32	7,627.92	7,515.23	31.07	16.52	138.43	-1,691.89	1,230.98	2,996.40	2,953.37	43.03	69.635	
7,800.00	7,639.32	7,730.48	7,617.80	31.38	16.65	138.42	-1,691.34	1,230.76	2,995.86	2,952.35	43.51	68.852	
7,900.00	7,739.32	7,834.56	7,721.87	31.69	16.77	138.43	-1,690.95	1,230.20	2,995.23	2,951.24	43.99	68.083	
8,000.00	7,839.32	7,941.81	7,829.12	32.01	16.90	138.42	-1,690.16	1,229.73	2,994.39	2,949.91	44.48	67.323	
8,100.00	7,939.32	8,021.00	7,908.30	32.32	17.00	138.41	-1,689.22	1,229.55	2,993.43	2,948.51	44.92	66.632	
8,107.95	7,947.27	8,021.00	7,908.30	32.35	17.00	138.41	-1,689.22	1,229.55	2,993.42	2,948.48	44.95	66.597	
8,160.68	8,000.00	8,021.00	7,908.30	32.51	17.00	138.41	-1,689.22	1,229.55	2,993.89	2,948.79	45.10	66.386 SF	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 200-NS-GYRO-MS												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	178.04	-2,577.42	88.07	2,579.60				
100.00	100.00	45.05	45.05	0.36	0.06	178.04	-2,577.39	88.04	2,578.90	2,578.48	0.42	6,162.873	
200.00	200.00	154.93	154.93	0.72	0.21	178.05	-2,577.02	87.65	2,578.55	2,577.63	0.92	2,794.319	
300.00	300.00	255.84	255.84	1.08	0.41	178.07	-2,576.41	86.83	2,577.92	2,576.44	1.48	1,738.423	
400.00	400.00	350.51	350.49	1.43	0.65	178.10	-2,576.02	85.28	2,577.45	2,575.36	2.08	1,238.065	
458.97	458.97	400.00	399.97	1.65	0.77	178.13	-2,575.90	84.15	2,577.27	2,574.86	2.42	1,065.451	CC, ES
500.00	500.00	400.00	399.97	1.79	0.77	178.13	-2,575.90	84.15	2,577.60	2,575.03	2.57	1,004.333	
600.00	600.00	489.37	489.28	2.15	0.98	178.19	-2,576.77	81.21	2,578.57	2,575.44	3.13	824.132	
700.00	700.00	549.76	549.58	2.51	1.12	178.26	-2,578.53	78.44	2,581.35	2,577.72	3.62	712.166	
800.00	800.00	600.00	599.70	2.87	1.23	178.32	-2,580.72	75.65	2,585.69	2,581.59	4.10	631.332	
900.00	900.00	668.21	667.64	3.23	1.38	178.42	-2,584.76	71.27	2,591.55	2,586.94	4.60	562.810	
1,000.00	1,000.00	726.47	725.58	3.58	1.52	178.52	-2,589.22	67.07	2,599.04	2,593.95	5.09	510.689	
1,100.00	1,100.00	800.00	798.54	3.94	1.68	178.65	-2,596.19	61.14	2,608.20	2,602.59	5.61	465.130	
1,200.00	1,200.00	800.00	798.54	4.30	1.68	178.65	-2,596.19	61.14	2,619.39	2,613.44	5.95	440.365	
1,300.00	1,300.00	887.01	884.52	4.66	1.90	178.83	-2,606.70	53.01	2,631.49	2,624.98	6.51	404.138	
1,400.00	1,400.00	936.76	933.46	5.02	2.03	178.95	-2,613.96	47.72	2,645.97	2,639.00	6.97	379.431	
1,500.00	1,500.00	1,000.00	995.37	5.38	2.19	179.12	-2,624.50	40.32	2,662.37	2,654.90	7.47	356.497	
1,600.00	1,600.00	1,000.00	995.37	5.74	2.19	179.12	-2,624.50	40.32	2,680.92	2,673.14	7.78	344.481	
1,700.00	1,700.00	1,086.55	1,079.59	6.09	2.44	179.36	-2,641.19	29.51	2,700.36	2,692.01	8.35	323.465	
1,800.00	1,800.00	1,136.41	1,127.85	6.45	2.58	179.50	-2,651.96	23.12	2,722.02	2,713.22	8.80	309.316	
1,900.00	1,900.00	1,200.00	1,189.10	6.81	2.76	179.68	-2,666.92	14.80	2,745.48	2,736.18	9.30	295.359	
2,000.00	2,000.00	1,200.00	1,189.10	7.17	2.76	179.68	-2,666.92	14.80	2,770.92	2,761.35	9.58	289.322	
2,100.00	2,100.00	1,278.05	1,263.70	7.53	3.01	179.91	-2,687.26	4.27	2,797.42	2,787.31	10.12	276.533	
2,200.00	2,200.00	1,322.96	1,306.31	7.89	3.15	-179.96	-2,700.01	-1.99	2,826.08	2,815.55	10.54	268.177	
2,300.00	2,300.00	1,400.00	1,378.80	8.24	3.40	-179.73	-2,723.64	-13.03	2,856.88	2,845.81	11.07	258.035	
2,400.00	2,400.00	1,400.00	1,378.80	8.60	3.40	-179.73	-2,723.64	-13.03	2,888.63	2,877.31	11.32	255.196	
2,500.00	2,500.00	1,494.17	1,466.81	8.96	3.73	-179.45	-2,754.24	-26.63	2,921.57	2,909.65	11.92	245.134	
2,600.00	2,600.00	1,568.81	1,536.42	9.32	3.99	-179.23	-2,779.01	-37.24	2,955.24	2,942.80	12.44	237.503	
2,700.00	2,700.00	1,667.10	1,627.94	9.68	4.35	-178.96	-2,811.98	-51.29	2,989.34	2,976.27	13.07	228.791	
2,800.00	2,800.00	1,782.72	1,735.66	10.04	4.77	-178.61	-2,850.00	-69.19	3,022.91	3,009.15	13.76	219.658	
2,900.00	2,900.00	2,188.67	2,120.98	10.40	6.23	-177.50	-2,961.98	-129.22	3,050.97	3,035.39	15.58	195.804	
3,000.00	3,000.00	2,371.28	2,298.06	10.75	6.82	-177.14	-3,001.41	-149.99	3,073.16	3,056.66	16.50	186.209	
3,100.00	3,100.00	2,875.20	2,795.06	11.11	8.28	-176.42	-3,070.21	-192.05	3,086.03	3,067.67	18.36	168.130	
3,200.00	3,200.00	3,095.20	3,014.60	11.47	8.83	-176.30	-3,081.85	-199.38	3,090.87	3,071.61	19.26	160.446	
3,300.00	3,300.00	3,219.52	3,138.81	11.83	9.13	-176.25	-3,086.26	-202.25	3,094.57	3,074.64	19.93	155.260	
3,400.00	3,400.00	3,333.05	3,252.27	12.19	9.40	-176.22	-3,089.66	-204.38	3,097.68	3,077.11	20.57	150.576	
3,500.00	3,500.00	3,450.90	3,370.08	12.55	9.68	-176.19	-3,092.61	-206.06	3,100.28	3,079.06	21.22	146.103	
3,600.00	3,599.95	3,572.63	3,491.78	12.90	9.96	-172.11	-3,094.91	-207.11	3,103.61	3,081.74	21.87	141.917	
3,700.00	3,699.63	3,679.93	3,599.06	13.25	10.20	-172.09	-3,096.40	-207.53	3,109.20	3,086.72	22.48	138.320	
3,800.00	3,798.77	3,782.51	3,701.63	13.61	10.43	-172.09	-3,097.70	-207.76	3,117.46	3,094.39	23.08	135.086	
3,900.00	3,897.08	3,888.78	3,807.90	13.97	10.67	-172.11	-3,098.87	-207.88	3,128.38	3,104.69	23.69	132.059	
4,000.00	3,994.31	3,994.87	3,913.99	14.33	10.91	-172.15	-3,099.73	-208.05	3,141.88	3,117.57	24.31	129.264	
4,100.00	4,090.18	4,094.46	4,013.58	14.71	11.14	-172.17	-3,100.34	-208.22	3,158.08	3,133.15	24.93	126.702	
4,200.00	4,184.43	4,192.13	4,111.24	15.10	11.36	-172.19	-3,100.82	-208.36	3,177.13	3,151.58	25.55	124.335	
4,217.02	4,200.29	4,208.52	4,127.64	15.17	11.40	-172.19	-3,100.89	-208.38	3,180.66	3,155.00	25.66	123.943	
4,300.00	4,277.50	4,288.12	4,207.23	15.52	11.59	-172.64	-3,101.20	-208.50	3,198.14	3,171.95	26.20	122.084	
4,400.00	4,370.53	4,384.08	4,303.20	15.96	11.82	-173.17	-3,101.49	-208.65	3,219.39	3,192.54	26.85	119.894	
4,500.00	4,463.57	4,478.08	4,397.19	16.42	12.04	-173.69	-3,101.72	-208.82	3,240.86	3,213.34	27.52	117.779	
4,600.00	4,556.60	4,571.69	4,490.80	16.90	12.27	-174.20	-3,101.92	-209.02	3,262.58	3,234.39	28.19	115.733	
4,700.00	4,649.64	4,666.60	4,585.71	17.39	12.48	-174.71	-3,102.10	-209.27	3,284.53	3,255.67	28.86	113.800	
4,800.00	4,742.67	4,762.13	4,681.24	17.89	12.69	-175.22	-3,102.21	-209.60	3,306.68	3,277.14	29.54	111.948	
4,900.00	4,835.71	4,855.42	4,774.53	18.41	12.89	-175.71	-3,102.27	-210.00	3,329.03	3,298.82	30.21	110.194	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 200-NS-GYRO-MS												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,928.74	4,947.18	4,866.28	18.94	13.08	-126.18	-3,102.36	-210.40	3,351.66	3,320.77	30.88	108.525	
5,100.00	5,021.78	5,038.97	4,958.07	19.48	13.28	-126.65	-3,102.49	-210.80	3,374.56	3,342.99	31.57	106.899	
5,200.00	5,114.81	5,130.83	5,049.94	20.03	13.49	-127.11	-3,102.66	-211.24	3,397.74	3,365.47	32.26	105.311	
5,300.00	5,207.85	5,221.61	5,140.72	20.60	13.70	-127.56	-3,102.86	-211.71	3,421.18	3,388.22	32.96	103.791	
5,400.00	5,300.88	5,308.97	5,228.07	21.17	13.90	-127.99	-3,103.16	-212.07	3,444.97	3,411.31	33.66	102.352	
5,500.00	5,393.92	5,400.00	5,319.10	21.74	14.11	-128.43	-3,103.62	-212.25	3,469.14	3,434.78	34.36	100.950	
5,600.00	5,486.95	5,495.80	5,414.90	22.33	14.33	-128.90	-3,104.09	-212.33	3,493.53	3,458.45	35.08	99.587	
5,700.00	5,579.99	5,596.11	5,515.21	22.92	14.56	-129.38	-3,104.36	-212.36	3,517.94	3,482.13	35.81	98.245	
5,800.00	5,673.02	5,695.92	5,615.02	23.52	14.72	-129.85	-3,104.43	-212.40	3,542.38	3,505.92	36.47	97.144	
5,900.00	5,766.06	5,795.85	5,714.95	24.12	14.87	-130.31	-3,104.32	-212.53	3,566.85	3,529.73	37.12	96.087	
6,000.00	5,859.09	5,893.48	5,812.58	24.73	14.95	-130.76	-3,104.06	-212.73	3,591.37	3,553.67	37.70	95.252	
6,043.66	5,899.71	5,936.08	5,855.18	25.00	14.99	-130.95	-3,103.91	-212.83	3,602.11	3,564.15	37.96	94.900	
6,100.00	5,952.42	5,991.39	5,910.49	25.34	15.03	-131.50	-3,103.69	-212.96	3,615.45	3,577.17	38.28	94.448	
6,200.00	6,047.34	6,092.50	6,011.60	25.90	15.09	-132.36	-3,103.15	-213.20	3,636.50	3,597.69	38.81	93.699	
6,300.00	6,143.78	6,195.37	6,114.46	26.41	15.15	-133.07	-3,102.42	-213.37	3,654.04	3,614.73	39.31	92.947	
6,400.00	6,241.46	6,301.23	6,220.32	26.88	15.17	-133.64	-3,101.44	-213.38	3,667.95	3,628.19	39.76	92.250	
6,500.00	6,340.13	6,408.17	6,327.25	27.30	15.20	-134.06	-3,100.17	-213.13	3,678.10	3,637.92	40.18	91.537	
6,600.00	6,439.51	6,506.19	6,425.26	27.68	15.22	-134.33	-3,098.91	-212.84	3,684.58	3,644.01	40.57	90.824	
6,700.00	6,539.33	6,600.00	6,519.07	28.01	15.24	-134.46	-3,097.73	-212.61	3,687.43	3,646.50	40.93	90.092	
6,760.68	6,600.00	6,655.78	6,574.85	28.20	15.25	171.50	-3,097.12	-212.49	3,687.47	3,646.33	41.14	89.635	
6,800.00	6,639.32	6,689.01	6,608.08	28.32	15.26	171.50	-3,096.83	-212.41	3,687.14	3,645.87	41.27	89.340	
6,900.00	6,739.32	6,773.52	6,692.58	28.62	15.28	171.50	-3,096.33	-212.19	3,686.60	3,644.99	41.61	88.604	
7,000.00	6,839.32	6,868.06	6,787.12	28.92	15.30	171.49	-3,096.09	-211.93	3,686.38	3,644.43	41.95	87.879	
7,100.00	6,939.32	6,967.17	6,886.23	29.23	15.33	171.49	-3,095.88	-211.72	3,686.21	3,643.92	42.29	87.160	
7,200.00	7,039.32	7,067.72	6,986.78	29.53	15.36	171.49	-3,095.70	-211.58	3,686.05	3,643.40	42.65	86.432	
7,300.00	7,139.32	7,168.98	7,088.04	29.84	15.39	171.48	-3,095.48	-211.45	3,685.86	3,642.85	43.01	85.704	
7,400.00	7,239.32	7,275.67	7,194.72	30.14	15.47	171.48	-3,095.18	-211.42	3,685.58	3,642.17	43.41	84.900	
7,500.00	7,339.32	7,384.75	7,303.80	30.45	15.56	171.48	-3,094.65	-211.68	3,685.07	3,641.23	43.84	84.067	
7,600.00	7,439.32	7,483.70	7,402.75	30.76	15.69	171.49	-3,094.07	-212.08	3,684.42	3,640.14	44.29	83.193	
7,700.00	7,539.32	7,581.01	7,500.06	31.07	15.81	171.49	-3,093.56	-212.43	3,683.85	3,639.10	44.75	82.329	
7,800.00	7,639.32	7,684.47	7,603.52	31.38	15.92	171.50	-3,093.00	-212.66	3,683.28	3,638.10	45.19	81.513	
7,900.00	7,739.32	7,789.42	7,708.47	31.69	16.03	171.49	-3,092.24	-212.56	3,682.59	3,636.96	45.62	80.716	
8,000.00	7,839.32	7,887.97	7,807.01	32.01	16.10	171.49	-3,091.45	-212.31	3,681.83	3,635.81	46.03	79.993	
8,080.67	7,919.99	7,942.00	7,861.04	32.26	16.14	171.48	-3,091.05	-212.18	3,681.35	3,635.03	46.33	79.466	
8,100.00	7,939.32	7,942.00	7,861.04	32.32	16.14	171.48	-3,091.05	-212.18	3,681.40	3,635.02	46.38	79.368	
8,160.68	8,000.00	7,942.00	7,861.04	32.51	16.14	171.48	-3,091.05	-212.18	3,682.22	3,635.66	46.56	79.088 SF	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												San Juan 27-5 Unit NP 330 - San Juan 27-5 UN 905 - OH - OH		Offset Site Error: 0.00 ft	
Survey Program: 230-NS-GYRO-MS												Offset Well Error: 0.00 ft			
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.00	0.00	0.00	0.00	0.00	0.00	178.71	-2,479.13	55.78	2,480.46						
100.00	100.00	41.99	41.99	0.36	0.06	178.71	-2,479.13	55.72	2,479.75	2,479.34	0.41	5,983.749			
200.00	200.00	144.39	144.39	0.72	0.19	178.73	-2,479.05	55.15	2,479.66	2,478.76	0.91	2,728.378			
300.00	300.00	243.96	243.95	1.08	0.32	178.75	-2,478.90	54.03	2,479.49	2,478.09	1.40	1,771.558			
319.92	319.92	260.93	260.92	1.15	0.35	178.75	-2,478.89	53.92	2,479.48	2,477.98	1.49	1,659.991			
400.00	400.00	332.34	332.33	1.43	0.44	178.74	-2,479.05	54.56	2,479.66	2,477.79	1.87	1,324.299			
500.00	500.00	457.41	457.29	1.79	0.61	178.63	-2,478.88	59.43	2,479.65	2,477.25	2.40	1,033.626			
600.00	600.00	570.60	570.12	2.15	0.85	178.42	-2,477.39	68.29	2,478.50	2,475.50	3.00	826.335			
700.00	700.00	673.07	671.89	2.51	1.10	178.15	-2,475.84	80.08	2,477.33	2,473.71	3.61	685.878			
800.00	800.00	770.86	768.57	2.87	1.36	177.81	-2,474.15	94.66	2,476.12	2,471.89	4.23	585.080			
900.00	900.00	856.32	852.62	3.23	1.61	177.45	-2,472.82	110.07	2,475.30	2,470.46	4.83	512.230			
1,000.00	1,000.00	980.44	973.87	3.58	1.97	176.84	-2,470.62	136.47	2,474.61	2,469.05	5.56	445.199			
1,088.35	1,088.35	1,037.59	1,029.35	3.90	2.15	176.52	-2,469.55	150.11	2,474.11	2,468.05	6.05	408.631	CC		
1,100.00	1,100.00	1,045.70	1,037.21	3.94	2.18	176.47	-2,469.43	152.12	2,474.12	2,467.99	6.12	404.157			
1,200.00	1,200.00	1,127.66	1,116.39	4.30	2.44	175.98	-2,468.56	173.27	2,474.76	2,468.01	6.74	367.028			
1,300.00	1,300.00	1,212.79	1,198.13	4.66	2.72	175.44	-2,467.88	197.02	2,476.11	2,468.72	7.38	335.365			
1,400.00	1,400.00	1,355.86	1,333.75	5.02	3.22	174.38	-2,465.76	242.51	2,477.67	2,469.43	8.24	300.617			
1,500.00	1,500.00	1,456.98	1,428.80	5.38	3.59	173.59	-2,462.57	276.84	2,478.11	2,469.14	8.97	276.236			
1,600.00	1,600.00	1,557.92	1,523.49	5.74	3.97	172.78	-2,459.02	311.63	2,478.75	2,469.05	9.70	255.441			
1,700.00	1,700.00	1,669.27	1,628.50	6.09	4.38	171.92	-2,454.69	348.43	2,479.33	2,468.86	10.47	236.716			
1,800.00	1,800.00	1,774.92	1,728.24	6.45	4.77	171.12	-2,450.05	382.94	2,479.82	2,468.60	11.22	220.980			
1,900.00	1,900.00	1,862.43	1,811.04	6.81	5.09	170.46	-2,446.10	410.97	2,480.56	2,468.66	11.90	208.450			
2,000.00	2,000.00	1,952.32	1,896.89	7.17	5.41	169.85	-2,442.97	437.43	2,482.21	2,469.64	12.58	197.362			
2,100.00	2,100.00	2,065.16	2,005.94	7.53	5.80	169.18	-2,439.42	466.18	2,483.81	2,470.49	13.32	186.529			
2,200.00	2,200.00	2,159.09	2,097.56	7.89	6.10	168.71	-2,436.78	486.69	2,485.29	2,471.31	13.97	177.861			
2,300.00	2,300.00	2,258.78	2,195.57	8.24	6.40	168.29	-2,434.98	504.77	2,487.17	2,472.53	14.63	169.985			
2,400.00	2,400.00	2,385.67	2,321.15	8.60	6.76	167.87	-2,432.97	522.74	2,488.57	2,473.22	15.35	162.113			
2,500.00	2,500.00	2,449.25	2,384.31	8.96	6.93	167.71	-2,432.46	530.10	2,490.20	2,474.32	15.88	156.837			
2,600.00	2,600.00	2,583.02	2,517.51	9.32	7.28	167.43	-2,432.36	542.27	2,492.19	2,475.60	16.58	150.282			
2,700.00	2,700.00	2,695.56	2,629.85	9.68	7.56	167.27	-2,431.34	549.06	2,492.59	2,475.37	17.22	144.746			
2,800.00	2,800.00	2,792.49	2,726.65	10.04	7.80	167.16	-2,430.97	554.04	2,493.34	2,475.53	17.82	139.947			
2,900.00	2,900.00	2,931.74	2,865.73	10.40	8.13	167.01	-2,428.80	560.42	2,492.74	2,474.23	18.50	134.710			
3,000.00	3,000.00	3,036.00	2,969.91	10.75	8.37	166.92	-2,426.73	563.82	2,491.54	2,472.43	19.10	130.428			
3,100.00	3,100.00	3,126.69	3,060.56	11.11	8.58	166.86	-2,425.53	566.31	2,490.84	2,471.17	19.68	126.599			
3,200.00	3,200.00	3,221.00	3,154.82	11.47	8.80	166.80	-2,424.21	568.78	2,490.08	2,469.82	20.26	122.936			
3,300.00	3,300.00	3,312.00	3,245.81	11.83	8.96	166.77	-2,423.73	570.01	2,489.86	2,469.08	20.77	119.849			
3,314.83	3,314.83	3,313.61	3,247.42	11.88	8.96	166.77	-2,423.73	570.01	2,489.87	2,469.04	20.83	119.530			
3,400.00	3,400.00	3,417.72	3,351.53	12.19	9.08	166.77	-2,423.70	570.01	2,489.85	2,468.60	21.25	117.170			
3,500.00	3,500.00	3,540.33	3,474.14	12.55	9.20	166.77	-2,422.47	569.70	2,488.78	2,467.04	21.73	114.524			
3,532.13	3,532.13	3,571.03	3,504.83	12.66	9.23	-139.22	-2,422.08	569.59	2,488.56	2,466.68	21.88	113.752	ES		
3,600.00	3,599.95	3,633.18	3,566.98	12.90	9.31	-139.23	-2,421.38	569.41	2,489.54	2,467.35	22.19	112.174			
3,700.00	3,699.63	3,732.91	3,666.70	13.25	9.50	-139.25	-2,420.35	569.24	2,494.45	2,471.71	22.74	109.696			
3,800.00	3,798.77	3,832.14	3,765.93	13.61	9.69	-139.27	-2,419.32	569.06	2,503.33	2,480.05	23.28	107.509			
3,900.00	3,897.08	3,930.59	3,864.37	13.97	9.88	-139.29	-2,418.31	568.88	2,516.20	2,492.37	23.83	105.593			
4,000.00	3,994.31	4,027.98	3,961.76	14.33	10.07	-139.30	-2,417.30	568.71	2,533.07	2,508.69	24.37	103.930			
4,100.00	4,090.18	4,124.06	4,057.83	14.71	10.26	-139.29	-2,416.31	568.54	2,553.94	2,529.02	24.92	102.501			
4,200.00	4,184.43	4,218.56	4,152.32	15.10	10.44	-139.26	-2,415.34	568.37	2,578.83	2,553.37	25.46	101.285			
4,217.02	4,200.29	4,234.47	4,168.23	15.17	10.47	-139.26	-2,415.17	568.34	2,583.46	2,557.91	25.56	101.092			
4,300.00	4,277.50	4,311.89	4,245.65	15.52	10.62	-139.68	-2,414.37	568.20	2,606.42	2,580.41	26.01	100.209			
4,400.00	4,370.53	4,405.20	4,338.95	15.96	10.80	-140.19	-2,413.41	568.04	2,634.27	2,607.71	26.57	99.163			
4,500.00	4,463.57	4,498.50	4,432.25	16.42	10.99	-140.68	-2,412.45	567.87	2,662.32	2,635.19	27.13	98.139			
4,600.00	4,556.60	4,591.81	4,525.55	16.90	11.17	-141.16	-2,411.48	567.70	2,690.55	2,662.85	27.70	97.138			

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 230-NS-GYRO-MS												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
4,700.00	4,649.64	4,685.11	4,618.85	17.39	11.35	-141.64	-2,410.52	567.54	2,718.97	2,690.69	28.27	96.163	
4,800.00	4,742.67	4,778.42	4,712.15	17.89	11.53	-142.10	-2,409.56	567.37	2,747.56	2,718.71	28.86	95.216	
4,900.00	4,835.71	4,871.72	4,805.45	18.41	11.71	-142.56	-2,408.60	567.21	2,776.33	2,746.89	29.44	94.296	
5,000.00	4,928.74	4,965.03	4,898.75	18.94	11.89	-143.01	-2,407.63	567.04	2,805.26	2,775.23	30.03	93.406	
5,100.00	5,021.78	5,058.33	4,992.05	19.48	12.07	-143.45	-2,406.67	566.87	2,834.35	2,803.73	30.63	92.544	
5,200.00	5,114.81	5,151.64	5,085.35	20.03	12.25	-143.87	-2,405.71	566.71	2,863.60	2,832.38	31.22	91.710	
5,300.00	5,207.85	5,244.94	5,178.65	20.60	12.43	-144.30	-2,404.74	566.54	2,893.00	2,861.18	31.82	90.905	
5,400.00	5,300.88	5,338.25	5,271.95	21.17	12.61	-144.71	-2,403.78	566.37	2,922.55	2,890.13	32.43	90.128	
5,500.00	5,393.92	5,431.55	5,365.25	21.74	12.80	-145.12	-2,402.82	566.21	2,952.24	2,919.21	33.03	89.378	
5,600.00	5,486.95	5,524.86	5,458.55	22.33	12.98	-145.51	-2,401.86	566.04	2,982.07	2,948.44	33.64	88.655	
5,700.00	5,579.99	5,618.16	5,551.85	22.92	13.16	-145.90	-2,400.89	565.88	3,012.04	2,977.79	34.24	87.957	
5,800.00	5,673.02	5,711.47	5,645.15	23.52	13.34	-146.29	-2,399.93	565.71	3,042.13	3,007.28	34.85	87.285	
5,900.00	5,766.06	5,804.77	5,738.45	24.12	13.52	-146.66	-2,398.97	565.54	3,072.35	3,036.89	35.46	86.636	
6,000.00	5,859.09	5,898.08	5,831.75	24.73	13.70	-147.03	-2,398.00	565.38	3,102.69	3,066.62	36.07	86.011	
6,043.66	5,899.71	5,938.81	5,872.48	25.00	13.78	-147.19	-2,397.58	565.30	3,115.98	3,079.64	36.34	85.745	
6,100.00	5,952.42	5,991.67	5,925.34	25.34	13.88	-147.66	-2,397.04	565.21	3,132.49	3,095.80	36.68	85.394	
6,200.00	6,047.34	6,086.82	6,020.49	25.90	14.07	-148.39	-2,396.06	565.04	3,158.53	3,121.25	37.28	84.717	
6,300.00	6,143.78	6,183.45	6,117.11	26.41	14.26	-148.99	-2,395.06	564.87	3,180.32	3,142.45	37.87	83.971	
6,400.00	6,241.46	6,281.29	6,214.94	26.88	14.45	-149.46	-2,394.05	564.69	3,197.76	3,159.30	38.45	83.158	
6,500.00	6,340.13	6,380.08	6,313.72	27.30	14.64	-149.81	-2,393.03	564.52	3,210.77	3,171.75	39.02	82.283	
6,600.00	6,439.51	6,479.54	6,413.18	27.68	14.83	-150.04	-2,392.00	564.34	3,219.30	3,179.72	39.57	81.347	
6,700.00	6,539.33	6,579.40	6,513.03	28.01	15.02	-150.16	-2,390.97	564.16	3,223.31	3,183.19	40.11	80.353	
6,760.68	6,600.00	6,640.06	6,573.70	28.20	15.14	155.80	-2,390.35	564.05	3,223.53	3,183.09	40.43	79.722	
6,800.00	6,639.32	6,679.39	6,613.02	28.32	15.22	155.80	-2,389.94	563.98	3,223.13	3,182.49	40.64	79.308	
6,900.00	6,739.32	6,779.38	6,713.00	28.62	15.41	155.79	-2,388.91	563.81	3,222.12	3,180.95	41.17	78.273	
7,000.00	6,839.32	6,879.38	6,812.99	28.92	15.61	155.79	-2,387.88	563.63	3,221.10	3,179.41	41.69	77.262	
7,100.00	6,939.32	6,979.37	6,912.98	29.23	15.80	155.78	-2,386.85	563.45	3,220.09	3,177.87	42.22	76.274	
7,200.00	7,039.32	7,079.36	7,012.97	29.53	16.00	155.78	-2,385.81	563.27	3,219.07	3,176.33	42.74	75.310	
7,300.00	7,139.32	7,179.36	7,112.96	29.84	16.19	155.77	-2,384.78	563.09	3,218.06	3,174.79	43.27	74.368	
7,400.00	7,239.32	7,279.35	7,212.95	30.14	16.39	155.77	-2,383.75	562.91	3,217.05	3,173.25	43.80	73.448	
7,500.00	7,339.32	7,379.35	7,312.94	30.45	16.58	155.76	-2,382.72	562.74	3,216.03	3,171.70	44.33	72.549	
7,600.00	7,439.32	7,479.34	7,412.93	30.76	16.77	155.76	-2,381.69	562.56	3,215.02	3,170.16	44.86	71.669	
7,700.00	7,539.32	7,579.34	7,512.92	31.07	16.97	155.76	-2,380.66	562.38	3,214.00	3,168.61	45.39	70.810	
7,800.00	7,639.32	7,679.33	7,612.91	31.38	17.16	155.75	-2,379.62	562.20	3,212.99	3,167.07	45.92	69.969	
7,900.00	7,739.32	7,779.33	7,712.89	31.69	17.36	155.75	-2,378.59	562.02	3,211.97	3,165.52	46.45	69.147	
8,000.00	7,839.32	7,879.32	7,812.88	32.01	17.55	155.74	-2,377.56	561.84	3,210.96	3,163.98	46.98	68.342	
8,064.24	7,903.56	7,911.00	7,844.56	32.21	17.61	155.74	-2,377.23	561.79	3,210.47	3,163.24	47.24	67.967	
8,100.00	7,939.32	7,911.00	7,844.56	32.32	17.61	155.74	-2,377.23	561.79	3,210.67	3,163.35	47.32	67.845	
8,160.68	8,000.00	7,911.00	7,844.56	32.51	17.61	155.74	-2,377.23	561.79	3,211.92	3,164.46	47.46	67.675 SF	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6678' @ 6678.00ft

Offset Depths are relative to Offset Datum

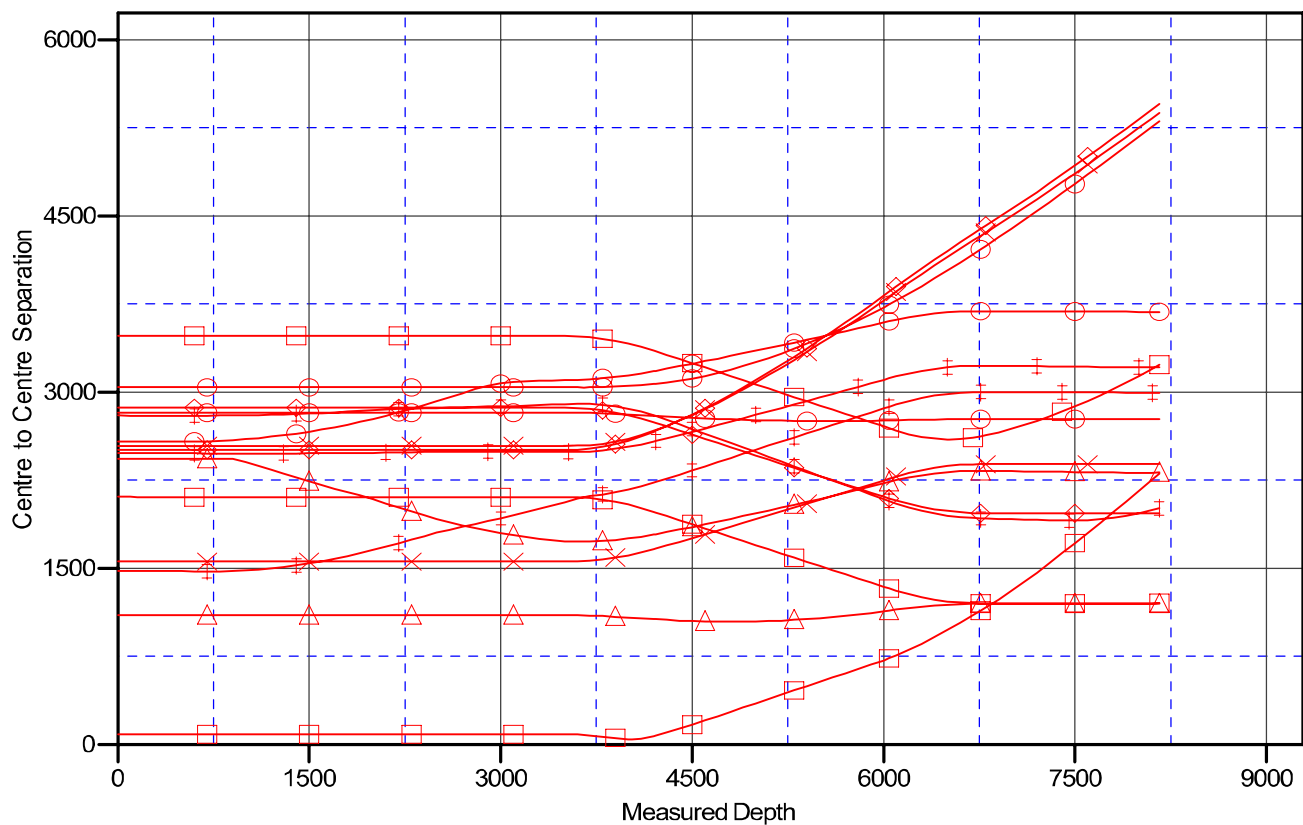
Central Meridian is -107.8333334

Coordinates are relative to: San Juan 27-5 Unit NP 330

Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30

Grid Convergence at Surface is: 0.27°

Ladder Plot



LEGEND

San Juan 27-5 UN 053, OH, OH V0	San Juan 27-5 UN 076, OH, OH V0	San Juan 27-5 UN 150R, OH, OH V0
San Juan 27-5 UN 059B, OH, OH V0	San Juan 27-5 UN 085, OH, OH V0	San Juan 27-5 UN 901, OH, OH V0
San Juan 27-5 UN 059G, OH, OH V0	San Juan 27-5 UN 112M, OH, OH V0	San Juan 27-5 UN 902, OH, OH V0
San Juan 27-5 UN 059M, OH, OH V0	San Juan 27-5 UN 149, OH, OH V0	San Juan 27-5 UN 904, OH, OH V0
San Juan 27-5 UN 069, OH, OH V0	San Juan 27-5 UN 150, OH, OH V0	San Juan 27-5 UN 905, OH, OH V0

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



Scientific Drilling Anticollision Report

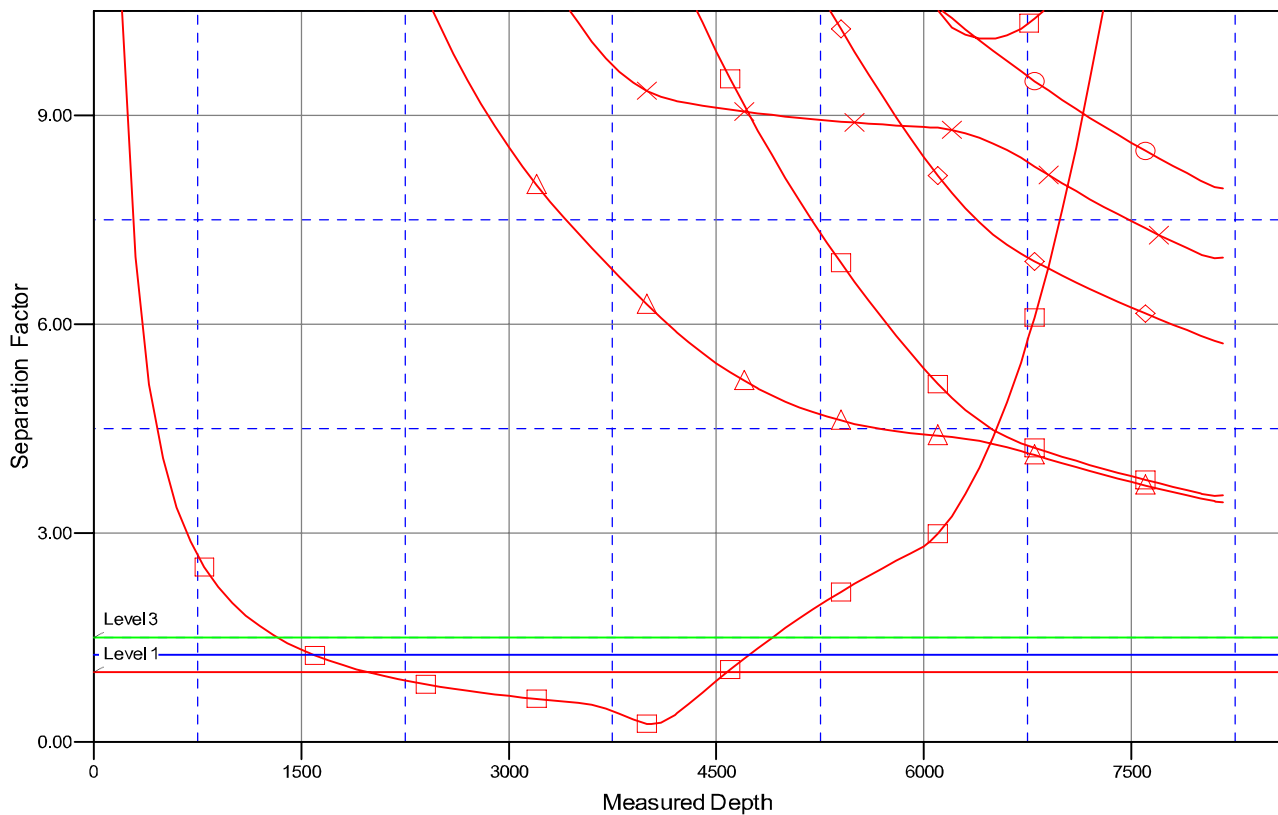


Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 27-5 Unit NP 330
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6678' @ 6678.00ft
Reference Site:	San Juan 27-5 Unit NP 330	MD Reference:	GL 6678' @ 6678.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 27-5 Unit NP 330	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6678' @ 6678.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: San Juan 27-5 Unit NP 330
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.27°

Separation Factor Plot



LEGEND

San Juan 27-5 UN 053, OH, OH V0	San Juan 27-5 UN 076, OH, OH V0	San Juan 27-5 UN 150R, OH, OH V0
San Juan 27-5 UN 059B, OH, OH V0	San Juan 27-5 UN 085, OH, OH V0	San Juan 27-5 UN 901, OH, OH V0
San Juan 27-5 UN 059G, OH, OH V0	San Juan 27-5 UN 112M, OH, OH V0	San Juan 27-5 UN 902, OH, OH V0
San Juan 27-5 UN 059M, OH, OH V0	San Juan 27-5 UN 149, OH, OH V0	San Juan 27-5 UN 904, OH, OH V0
San Juan 27-5 UN 069, OH, OH V0	San Juan 27-5 UN 150, OH, OH V0	San Juan 27-5 UN 905, OH, OH V0

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<https://www.emnrd.nm.gov/ocd/contact-us>

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

CONDITIONS

Action 403303

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 403303
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	If cement is not circulated to surface during cementing operations, a Cement Bond Log (CBL) is required.	11/14/2024
ward.rikala	DHC permit must be in effect prior to DHC.	11/14/2024