

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

OCT 25 2018

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

5. Lease Serial No.

NMSF0080379A

6. If Indian, Allottee or Tribe Name

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

SUBMIT IN TRIPLICATE - Other instructions on page 2.

1. Type of Well

☐ Oil Well

☒ Gas Well

☐ Other

7. If Unit of CA/Agreement, Name and/or No.

8. Well Name and No.

San Juan 29-6 Unit Com 601 1H

2. Name of Operator

Hilcorp Energy Company

9. API Well No.

30-039-31369

3a. Address

382 Road 3100, Aztec NM 87410

3b. Phone No. (include area code)

505-599-3400

10. Field and Pool or Exploratory Area

Basin Mancos

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Surface Unit E (SWNW), 2579' FNL & 18' FWL, Sec. 8, T29N, R6W
Bottomhole Unit G (SWNE), 2377' FNL & 1709' FEL, Sec. 9, T29N, R6W

11. Country or Parish, State

Rio Arriba, New Mexico

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

TYPE OF SUBMISSION

TYPE OF ACTION

☒ Notice of Intent

☐ Subsequent Report

☐ Final Abandonment Notice

☐ Acidize

☐ Alter Casing

☐ Casing Repair

☐ Change Plans

☐ Convert to Injection

☐ Deepen

☐ Fracture Treat

☐ New Construction

☐ Plug and Abandon

☐ Plug Back

☐ Production (Start/Resume)

☐ Reclamation

☐ Recomplete

☐ Temporarily Abandon

☐ Water Disposal

☐ Water Shut-Off

☐ Well Integrity

☒ Other Updated BH &
Technical Plan

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

Hilcorp Energy Company received verbal approval on 10/24/2018 from Kate Pickford, NMOCD & Jack Savage, BLM to change the BH location and the technical plan for the subject well. Attached is the updated C-102, Technical Plan, BOP/Choke Manifold diagram, Wellbore directional plan and plot.

BLM'S APPROVAL OR ACCEPTANCE OF THIS
ACTION DOES NOT RELIEVE THE LESSEE AND
OPERATOR FROM OBTAINING ANY OTHER
AUTHORIZATION REQUIRED FOR OPERATIONS
ON FEDERAL AND INDIAN LANDS

NMOCD

OCT 31 2018

DISTRICT III

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Tammy Jones

Title Operations/Regulatory Technician - Sr.

Signature

Tammy Jones

Date 10/25/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

[Signature]

Title PE

Date 10/30/18

Office FFD

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

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.

(Instruction on page 2)

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☐ AMENDED REPORT

JASON C. EDWARDS
Certificate Number 15269

Hilcorp Energy Company

Technical Plan

1. Location

SAN JUAN 29-6 UNIT COM 601 1H

SHL: 2579' FNL, 18' FWL -- T 29N, R 6W, Sec 8

BHL: 2377' FNL, 1709' FEL -- T 29N, R 6W, Sec 9

GL: 6782'

2. Geological Markers

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

Formation	Depth (TVD)	Remarks
San Jose	Surface	Wet
Ojo Alamo	2724'	Wet
Kirtland	2889'	Wet
Fruitland	3424'	Possible Gas/Water
Pictured Cliffs	3669'	Wet
Lewis Shale	3749'	
Massive Cliffhouse	5332'	Possible Gas/Water
Menefee	5531'	Possible Gas/Water
Point Lookout	5867'	Possible Gas/Water
Mancos	6273'	Oil/Gas
Mancos Lateral Target	6958'	Oil/Gas
Greenhorn – Pilot Hole	7860'	
TD of Pilot Hole	8000'	

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

3. Pressure Control Equipment

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

- BOPE will be nipped up on top of wellhead after surface casing is set and cemented.
- Pressure control configuration will be designed to meet and exceed 5M standards.
- All equipment will have 5M pressure ratings.
- A rotating head will be rigged up on top of annular as seen in attached diagram.

4. Casing & Cement Program

A) The proposed casing program is outlined below:

Proposed Casing				
Casing	Hole Size	Casing Size	Weight/Grade	Depth
Surface	17-1/2"	13-3/8"	54.5#, J-55, BTC, New	0' - 340' (MD)
Intermediate	12-1/4"	9-5/8"	40.0#, P-110 IC, LTC, New	0' - 6378' (MD)
Production	8-1/2"	5-1/2"	20.0#, P-110, BTC, New	0' - 15750' (MD)

The production casing will be run from total MD to surface. If the 8-1/2" hole is not drilled to total MD, the production casing setting depth and length will be adjusted accordingly. A toe initiation sliding sleeve will be installed at the toe of the production casing.

B) The proposed cement program is shown below:

Cement Program						
Interval	Depth (MD)	Sacks	Slurry	Excess	Volume	Planned Cement Top
Surface	340'	460	Lead Cmt: Premium Cement 2% CaCl, 0.125 lb/sk Poley E flake 1.175 ft ³ /sk -- 5.14 gal/sk, 15.8 ppg	100%	540 ft ³	Surface
Intermediate	5000'	991	Lead Cmt: Halcem Sytem 0.3% HR-5, 0.125 lb/sk Poly E flake, 1.974 ft ³ /sk -- 10.28 gal/sk, 12.3 ppg	25%	1957 ft ³	Surface
	6378'	442	Tail Cmt: Varicem Cement 0.1% HR-5, 0.125 lb/sk Poly E flake, 1.295 ft ³ /sk -- 5.69 gal/sk, 13.5 ppg	25%	572 ft ³	5000'
Production	15750'	2200	Tail Cmt: Bondcem 0.3% Super CBL, 0.1% HR -601, 6.08 gal/sk FW. 13.3 ppg, 1.356 ft ³ /sk	10%	3002 ft ³	5000'

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

C) The proposed centralizer program is shown below:

Centralizer Program	
Interval	Centralizers
Surface	1 per joint on bottom 3 joints
Intermediate	1 above intermediate shoe joint with collar clamp 1 every 3 rd joint to surface
Production	1 per joint in horizontal section of production interval 1 every 3 rd joint in vertical section of production interval

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

5. Drilling Fluids

A) The proposed drilling fluid program is outlined below:

Mud Program					
Interval	Mud Type	Weight (ppg)	Fluid Loss (cc)	Invert Ratio (Diesel/Brine)	Depth (MD)
Surface	Water / Gel System	8.3 - 9.2	NC		0-340'
Intermediate	LSND / Gel system	8.4 - 9	<6		340 – 6378'
Pilot Hole	LSND / Gel system	9 - 11	<6		6378' – 8000'
Production	Oil Based Mud	10 - 12	6-8	70/30 – 75/25	6378 – 15750'

Oil based mud will be an Invert Mud. Base fluid will be diesel. Brine fluid will be CaCl or KCl.

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

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

6. Abnormal Pressures & Hazards

- No over-pressured intervals expected.
- Estimated Reservoir Pressure = 3012 psi. (Based on a pore pressure gradient of 0.43 psi/ft from layer pressure tests of Mancos formation in offset well)
- There is some offset Fruitland Coal, Mesa Verde, and Picture Cliffs production within the area which could result in these respective formations being under pressured.
- No hydrogen sulfide gas is expected based on nearby well production.

7. Pilot Hole

- Pilot Hole will be drilled through Mancos Section from intermediate casing at 6378' MD to planned TD of 8000'
- Whole core, sidewall cores, and Openhole logs are planned in the pilot hole section.
- After coring and Openhole logging have been completed, three cement plugs with viscous gel spacers will be pumped and the top of cement will be at ~6000'. Will utilize cement plugs to kick off and begin drilling production interval.
- Plug 1 will be from TD to ~7300'. The second plug will be from 7300- 6600'. The third plug will be from 6600-6000'.

8. Testing, Logging, Coring

- Mud Logs: Mud loggers will be rigged up from KOP to production hole TD.
- MWD: Directional tools from KOP to production hole TD.
- LWD: Gamma Ray will be utilized in production hole for well placement.
- Core: Whole Core and Sidewall Cores planned in Pilot Hole section of well
- Logs: Triple Combo, Dipole Sonic, and image log planned in the Pilot Hole Section of well
- Cased Hole Logs: A Temp Survey or CBL will be ran on the intermediate hole if cement is not circulated to surface during intermediate cement job.

9. Directional Plan

The planned wellbore directional plan and plot is attached.

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



10. Completion

a) Pressure Test

- Pressure test 5-1/2" production casing to allowable frac pressure. Hold test for 30 minutes. Cycle pressure to activate toe sleeve

b) Stimulation

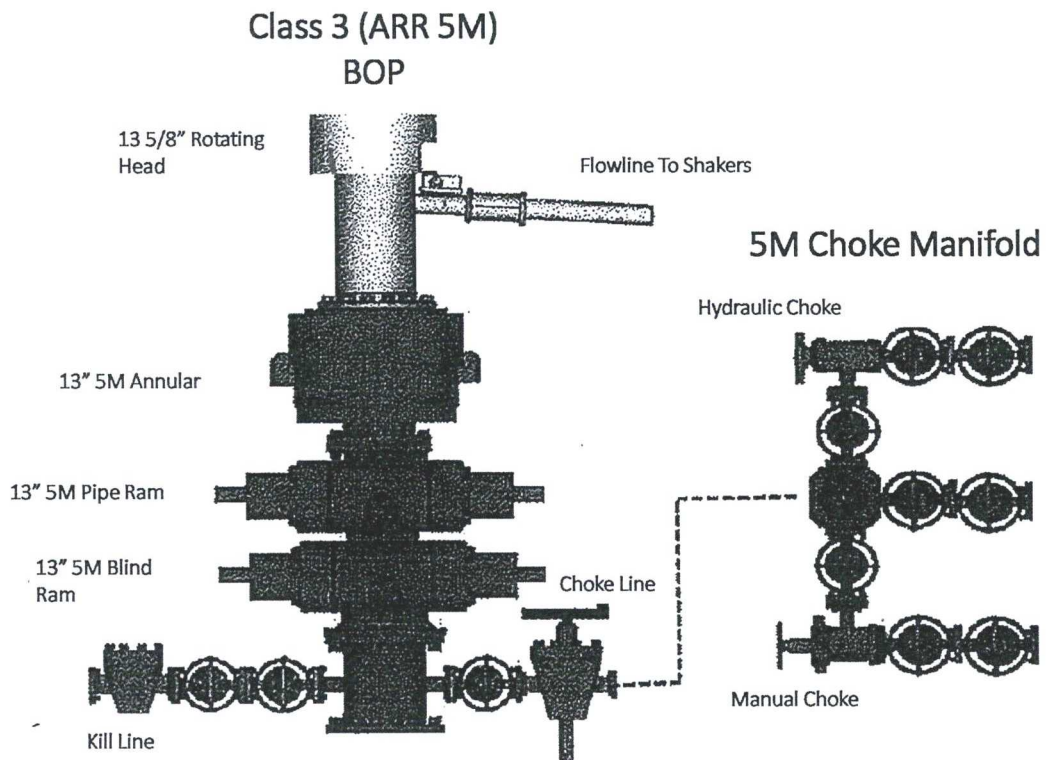
- Stimulate with approximately 19,000,000 pounds of proppant in 400,000 bbls of water; the number of stages and amount of proppant will be adjusted based on real-time pumping conditions during the stimulation
- Stages will be perforated using wireline and isolated using frac plugs
- Plugs will be drilled out and stimulation fluid will be flowed back

c) Running Tubing

- Production tubing will be run and landed at the top of the horizontal section of the well

BOPE & Choke Manifold Schematic

13-5/8" BOPE





Company: Hilcorp Energy Corp.
Project: Rio Arriba, NM NAD27
Site: San Juan 29-6 Pad
Well: San Juan 29-6 Unit Com 601 A 1H
Wellbore: OH
Design: Plan #7

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
Local North: True



Azimuths to True North
Magnetic North: 8.98

Magnetic Field
Strength: 49920.3sn
Dip Angle: 63.33
Date: 2/14/2011
Model: HDGM

WELL DETAILS: San Juan 29-6 Unit Com 601 A 1H

GL 6782' & RKB 16.5' @ 6798.50usft
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 2088921.13 599231.13 36.7403560 -107.4946670 A01

Plan: Plan #7 (San Juan 29-6 Unit Com 601 A 1H/OH)

Created By: Janie Collins Date: 9:30, October 24 2018

DESIGN TARGET DETAILS

SECTION DETAILS

CASING DETAILS

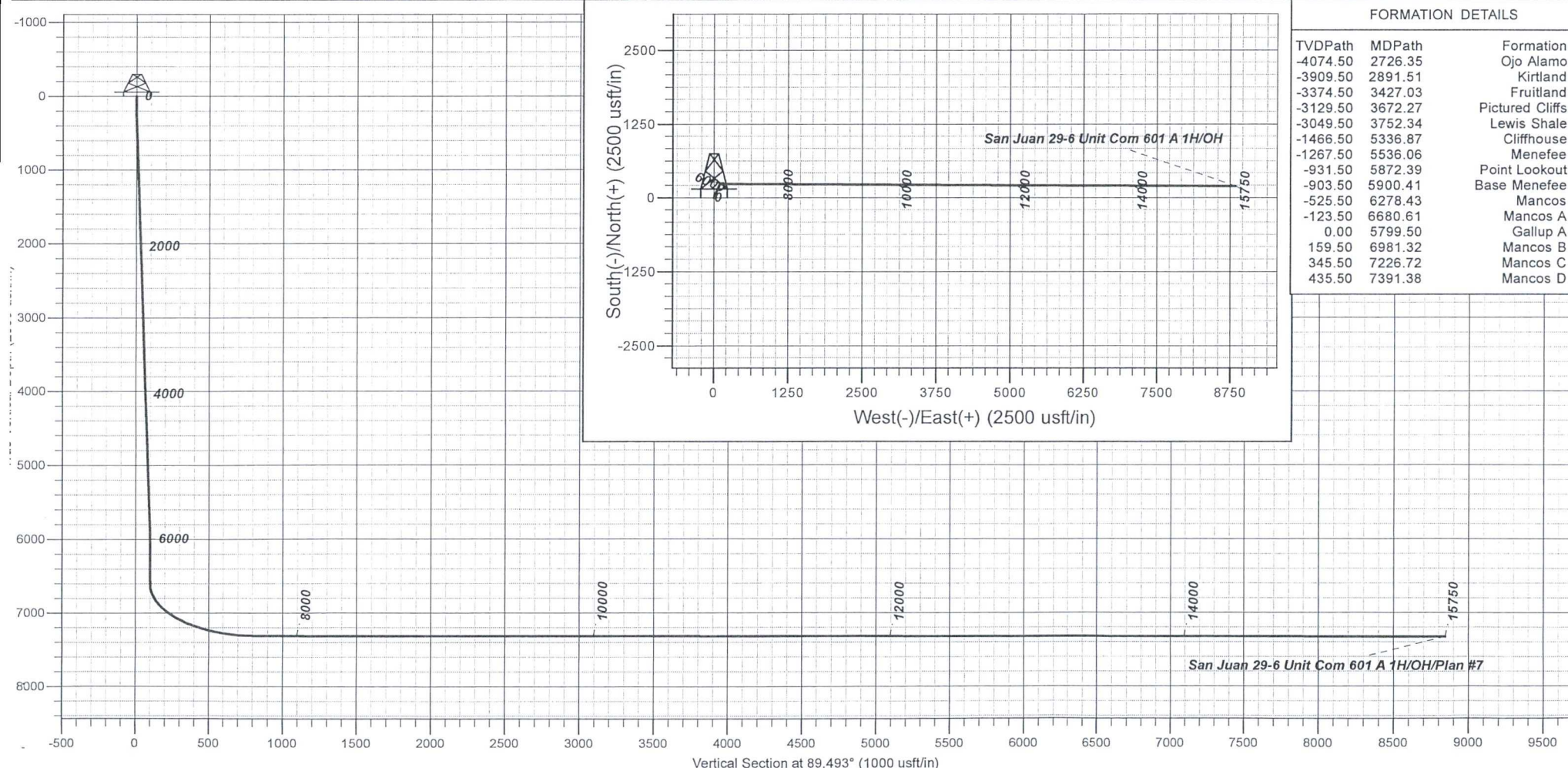
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SJ 601 A 1H BHL	7325.50	190.48	8841.96	2089142.88	608072.36	36.7408754	-107.4644904
SJ 601 A 1H LP Rev	7310.50	218.91	750.33	2089142.69	599980.68	36.7409573	-107.4921062

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
6599.00	0.00	0.000	6593.57	228.34	100.00	0.00	0.00	102.02	
7722.75	89.87	90.275	7310.00	224.91	814.80	8.00	90.28	816.76	
15750.00	89.91	90.216	7325.50	190.48	8841.96	0.00	-56.50	8843.30	SJ 601 A 1H BHL

No casing data is available

FORMATION DETAILS

TVDPath	MDPath	Formation
-4074.50	2726.35	Ojo Alamo
-3909.50	2891.51	Kirtland
-3374.50	3427.03	Fruitland
-3129.50	3672.27	Pictured Cliffs
-3049.50	3752.34	Lewis Shale
-1466.50	5336.87	Cliffhouse
-1267.50	5536.06	Menefee
-931.50	5872.39	Point Lookout
-903.50	5900.41	Base Menefee
-525.50	6278.43	Mancos
-123.50	6680.61	Mancos A
0.00	5799.50	Gallup A
159.50	6981.32	Mancos B
345.50	7226.72	Mancos C
435.50	7391.38	Mancos D





Hilcorp Energy Corp.

Rio Arriba, NM NAD27

San Juan 29-6 Pad

San Juan 29-6 Unit Com 601 A 1H - Slot A01

OH

Plan: Plan #7

Standard Planning Report

24 October, 2018



www.scientificdrilling.com



Scientific Drilling, Intl

Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well San Juan 29-6 Unit Com 601 A 1H - Slot A01
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6782' & RKB 16.5' @ 6798.50usft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6782' & RKB 16.5' @ 6798.50usft
Site:	San Juan 29-6 Pad	North Reference:	True
Well:	San Juan 29-6 Unit Com 601 A 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

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 29-6 Pad				
Site Position:		Northing:	2,088,907.82 usft	Latitude:	36.7403199
From:	Lat/Long	Easting:	599,185.38 usft	Longitude:	-107.4948233
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.20

Well	San Juan 29-6 Unit Com 601 A 1H - Slot A01					
Well Position	+N/-S	13.14 usft	Northing:	2,088,921.13 usft	Latitude:	36.7403560
	+E/-W	45.80 usft	Easting:	599,231.13 usft	Longitude:	-107.4946670
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,782.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/14/2018	8.98	63.33	49,920

Design	Plan #7			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	6,599.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	89.493

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
6,599.00	0.00	0.000	6,593.57	228.34	100.00	0.00	0.00	0.00	0.00	
7,722.75	89.87	90.275	7,310.00	224.91	814.80	8.00	8.00	0.00	90.28	
15,750.00	89.91	90.216	7,325.50	190.48	8,841.96	0.00	0.00	0.00	-56.50	SJ 601 A 1H BHL



Scientific Drilling, Intl Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well San Juan 29-6 Unit Com 601 A 1H - Slot A01
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6782' & RKB 16.5' @ 6798.50usft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6782' & RKB 16.5' @ 6798.50usft
Site:	San Juan 29-6 Pad	North Reference:	True
Well:	San Juan 29-6 Unit Com 601 A 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,599.00	0.00	0.000	6,593.57	228.34	100.00	102.02	0.00	0.00	0.00
6,600.00	0.08	90.275	6,594.57	228.34	100.00	102.02	8.00	8.00	0.00
6,700.00	8.08	90.275	6,694.23	228.31	107.11	109.13	8.00	8.00	0.00
6,800.00	16.07	90.275	6,791.94	228.21	128.01	130.03	8.00	8.00	0.00
6,900.00	24.07	90.275	6,885.79	228.04	162.31	164.32	8.00	8.00	0.00
7,000.00	32.07	90.275	6,973.96	227.82	209.32	211.33	8.00	8.00	0.00
7,100.00	40.07	90.275	7,054.72	227.53	268.15	270.15	8.00	8.00	0.00
7,200.00	48.06	90.275	7,126.52	227.20	337.64	339.64	8.00	8.00	0.00
7,300.00	56.06	90.275	7,187.95	226.82	416.44	418.44	8.00	8.00	0.00
7,400.00	64.06	90.275	7,237.82	226.41	503.03	505.01	8.00	8.00	0.00
7,500.00	72.06	90.275	7,275.15	225.96	595.71	597.68	8.00	8.00	0.00
7,600.00	80.05	90.275	7,299.23	225.50	692.68	694.65	8.00	8.00	0.00
7,700.00	88.05	90.275	7,309.59	225.02	792.06	794.02	8.00	8.00	0.00
7,722.75	89.87	90.275	7,310.00	224.91	814.80	816.76	8.00	8.00	0.00
7,800.00	89.87	90.275	7,310.18	224.54	892.05	894.01	0.00	0.00	0.00
7,900.00	89.87	90.274	7,310.40	224.06	992.05	994.00	0.00	0.00	0.00
8,000.00	89.87	90.274	7,310.63	223.58	1,092.05	1,093.99	0.00	0.00	0.00
8,100.00	89.87	90.273	7,310.85	223.11	1,192.05	1,193.98	0.00	0.00	0.00
8,200.00	89.87	90.272	7,311.07	222.63	1,292.05	1,293.97	0.00	0.00	0.00
8,300.00	89.87	90.272	7,311.30	222.16	1,392.05	1,393.96	0.00	0.00	0.00
8,400.00	89.87	90.271	7,311.52	221.69	1,492.04	1,493.95	0.00	0.00	0.00
8,500.00	89.87	90.270	7,311.74	221.22	1,592.04	1,593.94	0.00	0.00	0.00
8,600.00	89.87	90.269	7,311.96	220.75	1,692.04	1,693.93	0.00	0.00	0.00
8,700.00	89.87	90.269	7,312.18	220.28	1,792.04	1,793.92	0.00	0.00	0.00
8,800.00	89.87	90.268	7,312.40	219.81	1,892.04	1,893.91	0.00	0.00	0.00
8,900.00	89.88	90.267	7,312.61	219.35	1,992.04	1,993.90	0.00	0.00	0.00
9,000.00	89.88	90.266	7,312.83	218.88	2,092.04	2,093.89	0.00	0.00	0.00
9,100.00	89.88	90.266	7,313.05	218.42	2,192.04	2,193.88	0.00	0.00	0.00
9,200.00	89.88	90.265	7,313.26	217.96	2,292.03	2,293.87	0.00	0.00	0.00
9,300.00	89.88	90.264	7,313.47	217.50	2,392.03	2,393.86	0.00	0.00	0.00
9,400.00	89.88	90.263	7,313.69	217.04	2,492.03	2,493.86	0.00	0.00	0.00
9,500.00	89.88	90.263	7,313.90	216.58	2,592.03	2,593.85	0.00	0.00	0.00
9,600.00	89.88	90.262	7,314.11	216.12	2,692.03	2,693.84	0.00	0.00	0.00
9,700.00	89.88	90.261	7,314.32	215.67	2,792.03	2,793.83	0.00	0.00	0.00
9,800.00	89.88	90.261	7,314.53	215.21	2,892.03	2,893.82	0.00	0.00	0.00
9,900.00	89.88	90.260	7,314.74	214.76	2,992.02	2,993.81	0.00	0.00	0.00
10,000.00	89.88	90.259	7,314.95	214.31	3,092.02	3,093.80	0.00	0.00	0.00
10,100.00	89.88	90.258	7,315.16	213.86	3,192.02	3,193.79	0.00	0.00	0.00
10,200.00	89.88	90.258	7,315.36	213.41	3,292.02	3,293.78	0.00	0.00	0.00
10,300.00	89.88	90.257	7,315.57	212.96	3,392.02	3,393.77	0.00	0.00	0.00
10,400.00	89.88	90.256	7,315.77	212.51	3,492.02	3,493.76	0.00	0.00	0.00
10,500.00	89.88	90.255	7,315.98	212.07	3,592.02	3,593.75	0.00	0.00	0.00
10,600.00	89.88	90.255	7,316.18	211.63	3,692.02	3,693.75	0.00	0.00	0.00
10,700.00	89.88	90.254	7,316.38	211.18	3,792.02	3,793.74	0.00	0.00	0.00
10,800.00	89.88	90.253	7,316.58	210.74	3,892.01	3,893.73	0.00	0.00	0.00
10,900.00	89.88	90.253	7,316.78	210.30	3,992.01	3,993.72	0.00	0.00	0.00
11,000.00	89.89	90.252	7,316.98	209.86	4,092.01	4,093.71	0.00	0.00	0.00
11,100.00	89.89	90.251	7,317.18	209.42	4,192.01	4,193.70	0.00	0.00	0.00
11,200.00	89.89	90.250	7,317.38	208.99	4,292.01	4,293.69	0.00	0.00	0.00
11,300.00	89.89	90.250	7,317.58	208.55	4,392.01	4,393.68	0.00	0.00	0.00
11,400.00	89.89	90.249	7,317.77	208.12	4,492.01	4,493.67	0.00	0.00	0.00
11,500.00	89.89	90.248	7,317.97	207.69	4,592.01	4,593.67	0.00	0.00	0.00
11,600.00	89.89	90.247	7,318.16	207.26	4,692.00	4,693.66	0.00	0.00	0.00



Scientific Drilling, Intl Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well San Juan 29-6 Unit Com 601 A 1H - Slot A01
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6782' & RKB 16.5' @ 6798.50usft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6782' & RKB 16.5' @ 6798.50usft
Site:	San Juan 29-6 Pad	North Reference:	True
Well:	San Juan 29-6 Unit Com 601 A 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,700.00	89.89	90.247	7,318.36	206.83	4,792.00	4,793.65	0.00	0.00	0.00
11,800.00	89.89	90.246	7,318.55	206.40	4,892.00	4,893.64	0.00	0.00	0.00
11,900.00	89.89	90.245	7,318.74	205.97	4,992.00	4,993.63	0.00	0.00	0.00
12,000.00	89.89	90.245	7,318.94	205.54	5,092.00	5,093.62	0.00	0.00	0.00
12,100.00	89.89	90.244	7,319.13	205.12	5,192.00	5,193.61	0.00	0.00	0.00
12,200.00	89.89	90.243	7,319.32	204.69	5,292.00	5,293.60	0.00	0.00	0.00
12,300.00	89.89	90.242	7,319.50	204.27	5,392.00	5,393.59	0.00	0.00	0.00
12,400.00	89.89	90.242	7,319.69	203.85	5,492.00	5,493.59	0.00	0.00	0.00
12,500.00	89.89	90.241	7,319.88	203.43	5,592.00	5,593.58	0.00	0.00	0.00
12,600.00	89.89	90.240	7,320.07	203.01	5,691.99	5,693.57	0.00	0.00	0.00
12,700.00	89.89	90.239	7,320.25	202.60	5,791.99	5,793.56	0.00	0.00	0.00
12,800.00	89.89	90.239	7,320.44	202.18	5,891.99	5,893.55	0.00	0.00	0.00
12,900.00	89.89	90.238	7,320.62	201.76	5,991.99	5,993.54	0.00	0.00	0.00
13,000.00	89.89	90.237	7,320.80	201.35	6,091.99	6,093.53	0.00	0.00	0.00
13,100.00	89.90	90.237	7,320.98	200.94	6,191.99	6,193.53	0.00	0.00	0.00
13,200.00	89.90	90.236	7,321.16	200.53	6,291.99	6,293.52	0.00	0.00	0.00
13,300.00	89.90	90.235	7,321.35	200.12	6,391.99	6,393.51	0.00	0.00	0.00
13,400.00	89.90	90.234	7,321.52	199.71	6,491.99	6,493.50	0.00	0.00	0.00
13,500.00	89.90	90.234	7,321.70	199.30	6,591.99	6,593.49	0.00	0.00	0.00
13,600.00	89.90	90.233	7,321.88	198.90	6,691.98	6,693.48	0.00	0.00	0.00
13,700.00	89.90	90.232	7,322.06	198.49	6,791.98	6,793.47	0.00	0.00	0.00
13,800.00	89.90	90.231	7,322.23	198.09	6,891.98	6,893.47	0.00	0.00	0.00
13,900.00	89.90	90.231	7,322.41	197.69	6,991.98	6,993.46	0.00	0.00	0.00
14,000.00	89.90	90.230	7,322.58	197.29	7,091.98	7,093.45	0.00	0.00	0.00
14,100.00	89.90	90.229	7,322.76	196.89	7,191.98	7,193.44	0.00	0.00	0.00
14,200.00	89.90	90.229	7,322.93	196.49	7,291.98	7,293.43	0.00	0.00	0.00
14,300.00	89.90	90.228	7,323.10	196.09	7,391.98	7,393.42	0.00	0.00	0.00
14,400.00	89.90	90.227	7,323.27	195.70	7,491.98	7,493.42	0.00	0.00	0.00
14,500.00	89.90	90.226	7,323.44	195.30	7,591.98	7,593.41	0.00	0.00	0.00
14,600.00	89.90	90.226	7,323.61	194.91	7,691.97	7,693.40	0.00	0.00	0.00
14,700.00	89.90	90.225	7,323.78	194.52	7,791.97	7,793.39	0.00	0.00	0.00
14,800.00	89.90	90.224	7,323.95	194.13	7,891.97	7,893.38	0.00	0.00	0.00
14,900.00	89.90	90.223	7,324.12	193.74	7,991.97	7,993.37	0.00	0.00	0.00
15,000.00	89.90	90.223	7,324.28	193.35	8,091.97	8,093.37	0.00	0.00	0.00
15,100.00	89.91	90.222	7,324.45	192.96	8,191.97	8,193.36	0.00	0.00	0.00
15,200.00	89.91	90.221	7,324.61	192.58	8,291.97	8,293.35	0.00	0.00	0.00
15,300.00	89.91	90.220	7,324.78	192.19	8,391.97	8,393.34	0.00	0.00	0.00
15,400.00	89.91	90.220	7,324.94	191.81	8,491.97	8,493.33	0.00	0.00	0.00
15,500.00	89.91	90.219	7,325.10	191.43	8,591.97	8,593.33	0.00	0.00	0.00
15,600.00	89.91	90.218	7,325.26	191.05	8,691.97	8,693.32	0.00	0.00	0.00
15,700.00	89.91	90.218	7,325.42	190.67	8,791.96	8,793.31	0.00	0.00	0.00
15,750.00	89.91	90.216	7,325.50	190.48	8,841.96	8,843.30	0.00	0.00	0.00

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Wellbore:	OH		
Design:	Plan #7		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
SJ 601 A 1H LP Rev	0.00	0.000	7,310.50	218.91	750.33	2,089,142.69	599,980.68	36.7409573	-107.4921062
- plan misses target center by 7.23usft at 7658.59usft MD (7306.98 TVD, 225.22 N, 750.73 E)									
- Point									
SJ 601 A 1H BHL	0.00	0.000	7,325.50	190.48	8,841.96	2,089,142.87	608,072.36	36.7408754	-107.4644904
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
2,726.35	-4,074.50	Ojo Alamo		0.00	0.000	
2,891.51	-3,909.50	Kirtland		0.00	0.000	
3,427.03	-3,374.50	Fruitland		0.00	0.000	
3,672.27	-3,129.50	Pictured Cliffs		0.00	0.000	
3,752.34	-3,049.50	Lewis Shale		0.00	0.000	
5,336.87	-1,466.50	Cliffhouse		0.00	0.000	
5,536.06	-1,267.50	Menefee		0.00	0.000	
5,872.39	-931.50	Point Lookout		0.00	0.000	
5,900.41	-903.50	Base Menefee		0.00	0.000	
6,278.43	-525.50	Mancos		0.00	0.000	
6,680.61	-123.50	Mancos A		0.00	0.000	
5,799.50	0.00	Gallup A		0.00	0.000	
6,981.32	159.50	Mancos B		0.00	0.000	
7,226.72	345.50	Mancos C		0.00	0.000	
7,391.38	435.50	Mancos D		0.00	0.000	