



Andrews, David

From: Andrews, David
Sent: Wednesday, March 17, 2010 1:39 PM
To: 'Gurmendi, Aldo R.'; 'Rig302'; 'dsmith@bjsservices.com'; Keidel, Jannette E.
Cc: 'Schmitz, Steve H.'; Longworth, Mike; 'Shaun.Keller@state.co.us'; King, Kevin; Krabacher, Jay; Yokley, Bill
Subject: RE: Sidetrack option
Attachments: SIDE TRACK Guidance Document Rev. 09-29-2009.pdf; Sidetrack Plan and Documentation.pdf

Aldo,

Consider this your verbal approval to proceed with the plug back and sidetrack described on the attached document (Sidetrack Plan and Documentation.pdf). Janni should submit all of the other required documentation to Bill Yokley. I understand that Bill is also processing the name change Sundry Notice. As requested in my email below, please keep COGCC informed on your choice of either continuing with a sidetrack on this well after plug back or skidding to a different slot.

Thanks,

David D. Andrews, P.E., P.G.
Engineering Supervisor - Western Colorado

State of Colorado
Oil and Gas Conservation Commission
707 Wapiti Court, Suite 204
Rifle, Colorado 81650
Office Phone: (970) 625-2497 Ext. 1
Cell Phone: (970) 456-5262
Fax: (970) 625-5682
E-mail: David.Andrews@state.co.us
Website: <http://www.colorado.gov/cogcc>

From: Andrews, David
Sent: Tuesday, March 16, 2010 12:00 PM
To: 'Gurmendi, Aldo R.'; Rig302; dsmith@bjsservices.com
Cc: Schmitz, Steve H.; Longworth, Mike; Shaun.Keller@state.co.us; King, Kevin; Krabacher, Jay; Yokley, Bill
Subject: RE: Sidetrack option

Aldo,

Your geological prognosis is acceptable for estimated log tops. In a separate email, Leonard Clark provided the following:

Well : Chevron 20-30D
API # 05-045-12771-00
Approx. Top of Gas depth : 7,000'

According to COGCC's records, 05-045-12771-00 is the API Number for Chevron 20-28D. I haven't been able to locate a well designated Chevron 20-30D in COGCC's database.

BERRY SUBMITTED NAME CHANGE
SUNDRY NOTICE

D.A.

Bill Yokley (COGCC Permitting Tech) has informed me that Berry is considering a rig skid to the next slot. However, I understand that the next inline slot has not passed the submitted APD re-file. The permit for that well has expired. You are not authorized to spud the next slot until a valid permit is in place. Please work with Bill Yokley on the re-file permit if that option is still in your plans. Please keep COGCC informed on your choice of either continuing with a sidetrack on this well or skidding to a different slot.

If you skid and suspend operations on the current hole for more than 30 days, then a "preliminary" Form 5 is required per Rule 308A to document the wellbore configuration after the plug back and your plans for future operations. Additional sidetrack documentation requirements are shown on the attached file.

With regard to the plug back, two plugs will suffice, considering that the TOF (6490') is above the Ohio Creek prog top. Set Plug #1 above the TOF and Plug #2 for the kick off.

Thanks,

Dave

From: Gurmendi, Aldo R. [mailto:arg@bry.com]
Sent: Tuesday, March 16, 2010 11:40 AM
To: Andrews, David; Rig302; dsmith@bjservices.com
Cc: Schmitz, Steve H.; Longworth, Mike; Shaun.Keller@state.co.us; King, Kevin; Krabacher, Jay; Yokley, Bill
Subject: RE: Sidetrack option

David -

Attached is our geoprognosis for the Chevron 20-30D. We did not log this well, will these correlated depth suffice for formation tops? The API number is located on the geoprog as well (05045127690000). We are currently waiting on our cement program, will get that to you soon.

Thank you.

Aldo R. Gurmendi
Sr. Drilling Engineer

Berry Petroleum
Office: 303 999 4220
Cell: 303 565 6726

From: Andrews, David [mailto:David.Andrews@state.co.us]
Sent: Tuesday, March 16, 2010 11:14 AM
To: Rig302
Cc: Schmitz, Steve H.; Gurmendi, Aldo R.; Longworth, Mike; Shaun.Keller@state.co.us; King, Kevin; Krabacher, Jay; Yokley, Bill
Subject: RE: Sidetrack option

Leonard or Aldo,

I received both of your voice mails while I was on a conference call.

Please reply with the API Number for this well, the depth to top of gas, and formation log tops. At a minimum, you will have to set Plug #1 above top of fish, Plug #2 above top of Williams Fork Formation, and Plug #3 kick-off plug. Please "reply to all" with your proposed cement volumes, yields, slurry weights, depths, and plug lengths.

Thanks,

David D. Andrews, P.E., P.G.
Engineering Supervisor - Western Colorado

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Oil and Gas Conservation Commission
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Rifle, Colorado 81650
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E-mail: David.Andrews@state.co.us
Website: <http://www.colorado.gov/cogcc>

From: Rig302 [mailto:rig302@bry.com]
Sent: Tuesday, March 16, 2010 10:19 AM
To: Andrews, David
Cc: Schmitz, Steve H.; Gurmendi, Aldo R.; Longworth, Mike; Shaun.Keller@state.co.us
Subject: Sidetrack option

David,

I am e-mailing you regarding options to the P&A of our current well Chevron 20-30D in the Garden Gulth field. We have been unsuccessful in our attempt to fish & recover 3368' of 4 1/2" long string.

- 9 5/8" 36# J-55 casing set to 2375
- 8.75 open hole to 7470' MD, 7.875 open hole to TD of 9890' MD
- 77 joints of 4.5 P-110 in hole: length of 3368, with TOF tagged up at ~ 6490.

We will need a P&A procedure and or a Open hole Sidetrack procedure. We are weighing options of the OH Sidetrack starting just below the 9 5/8" Surface casing at 2375'.

Please contact me regarding this procedure. I have left messages regarding this procedure on your office & cell phones.

Regards

Leonard Clark
Drill Site Consultant
Representing Berry Petroleum
Office # 281-605-2057
rig302@bry.com

➤

Berry Petroleum Company

1999 Broadway, Suite 3700

Denver, CO 80202

Phone (303) 999-4400

March 16, 2010

COGCC,

The Chevron 20-30D was drilled to 9890' MD total depth on March 13, 2010. While running our 4.5" 11.6# P-110 production casing, we had 77joints (3368 feet) drop to the bottom of the well. The top of the 'fish' has been determined to be 6487' MD, via tagging with attempted fishing assemblies. Our fishing attempts have been unsuccessful and hole conditions worsened, warranting a sidetrack. Below is our outlined plan to sidetrack Chevron 20-30D and attached are the cementing and directional programs to said sidetrack.

- Note: 9 5/8" 36# J55 surface casing is set to 2237' MD
- TIH and set plug #1 (100' of 13.2# of top of fish plug).
- POOH to 3037' MD and set plug #2 (600' of 12.5# balanced plug).
- POOH and let cement set for 12 hours.
- TIH and dress off plug #2 down to 2637' MD
- POOH, L/D drill bit and heavy pipe
- TIH open-ended and set plug #3 (400' of 17.0# heavy cement KOP plug).
- POOH and let plug set for 24 hours
- TIH dress plug 100' and timedrill off cement plug, sidetrack hole ~ 2298' MD
- POOH for new directional BHA, drill to TD.

Cement Plug Properties					
Plug #	Top (MD)	Bottom (MD)	Wt (ppg)	Yield (CuFt/Sk)	Hole Size (inch)
#1 Top of Fish Plug	6,387	6,487	13.2	2.15	8.75
#2 Balanced Plug	2,437	3,037	12.5	2.53	8.75
#3 Heavy KOP Plug	2,237	2,637	17.0	.99	8.75

If you need any other data or have questions please feel free to call any time.

Regards,

Aldo R. Gurmendi
Sr. Drilling Engineer

Berry Petroleum Company

Cc: Steve Schmitz
Cc: Jani Keidel

**BERRY PETROLEUM COMPANY
 PICEANCE BASIN - COLORADO
 GARFIELD, COUNTY
 CHEVRON 20-30D**

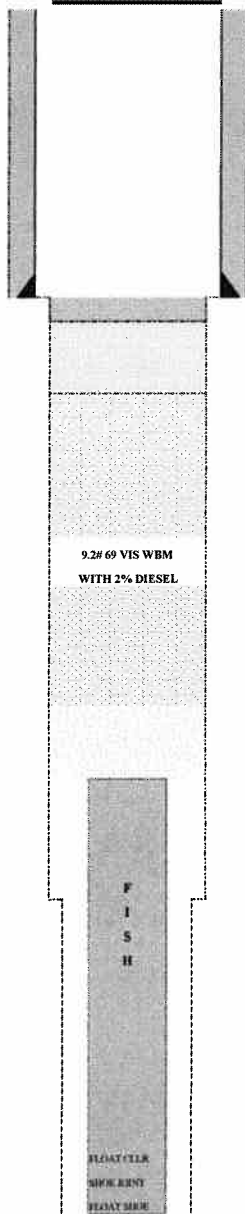


Comments

16" SURFACE HOLE.
 1.9" PARASITE STRING COUPLED TO SURFACE
 CASING

8.3/4" PRODUCTION HOLE
 8.3/4" hole drilled to 7470' MD
 - BASE OF HEAVY PLUG
 - BASE OF BALANCE PLUG

7.7/8" PRODUCTION HOLE - 3500
 7.7/8" hole drilled from 7470' to 9890' MD
 FISH: 77 JOINTS OF 4.5" 11.6, P-110 CASING



WELL GEOMETRY		DRILLING FLUID			FORMATION DEPTHS		
BIT / HOLE	CASING	TYPE	MW#	VISC	TOPS	(TYD)	(MD)
SURFACE CEMENT: LEAD 2965 CuFt, 1422 SXS 35:65 Poz / Type 3 cement 12.3ppg, 2.09 CuFt/sx							
SURFACE CEMENT: TAIL 147 CuFt, 100 SXS Type 3 cmt 12.3ppg, 2.09 CuFt/sx							
16" HOLE	9 5/8" 36# J55	WBM	8.40	26 - 28	GREEN RIVER		
PLUG #3 149 SXS OF 35:65 Poz / Type 3 12.5 ppg, 2.53 CuFt/sx							
PLUG #2 BASE AT 3037' MD 194 SXS OF Class G cement 17.0 ppg, 0.99 CuFt/sx			8.4 - 8.6	26 - 28	WASATCH		3035
PLUG #1 BASE AT 6487' MD 25 SXS OF 35:65 Poz / Type 3 13.2 ppg, 2.15 CuFt/sx					FORT UNION		4985
TOP OF FISH @ 6487					BASE FT UNION		5485
8.3/4" HOLE		WBM			OHIO CREEK		6515
					WILLIAMS FRK		6815
					TOP OF GAS		7015
					CAMEO		9315
					ROLLINS		9715
					DRILLER TD		9890
7.7/8" HOLE	4 1/2" 11.6# P-110	WBM	8.5 - 9.0	26 - 30			

F
I
S
H



Proposal No: 1001129685D

**Berry Petroleum Co
Chevron 20-30D**

Patterson 302 Rig

Grand Valley Field

Garfield County, Colorado
March 16, 2010

Cement Proposal

Prepared for:
Steve Schmitz
Berry Petroleum

Prepared by:
RYAN P SPENCE
Technical Field Rep.
Grand Junction, Colorado



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Service Point:
Grand Junction
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Service Representatives:
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Grand Junction, Colorado
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Dave Hencke
Senior Account Manager
Denver, Colorado
Bus Phone: (303) 832-3722
Fax: (303) 831-7332

Operator Name: Berry Petroleum Co
Well Name: Chevron 20-30D
Job Description: OH Whipstock @ 2237'
Date: March 16, 2010



Proposal No: 1001129685D

JOB AT A GLANCE

Depth (TVD)	9,890 ft
Depth (MD)	9,890 ft
Hole Size	7.875 in 8.75 in
Casing Size/Weight :	9 5/8 in, 36 lbs/ft
Pump Via	Drill Pipe 4 1/2" O.D. (3.640" I.D) 20
Total Mix Water Required	2,962 gals

Plug No: 1

Plug Slurry

Premium Lite High Strength	25 sacks
Density	13.2 ppg
Yield	2.15 cf/sack

Plug No: 2

Plug Slurry

Premium Lite High Strength	149 sacks
Density	12.5 ppg
Yield	2.53 cf/sack

Plug No: 3

Plug Slurry

Class G Cement w/additives	194 sacks
Density	17.0 ppg
Yield	0.99 cf/sack

Operator Name: Berry Petroleum Co
 Well Name: Chevron 20-30D
 Job Description: OH Whipstock @ 2237'
 Date: March 16, 2010



Proposal No: 1001129685D

FLUID SPECIFICATIONS

<u>PLUG NO.</u>	<u>VOLUME CU-FT</u>	<u>VOLUME FACTOR</u>	<u>AMOUNT AND TYPE OF CEMENT</u>
1	54	/ 2.15	= 25 sacks (35:65) Poz (Fly Ash):Type III Cement + 0.04 lbs/sack Static Free + 0.3% bwoc R-3 + 0.25 lbs/sack Cello Flake + 0.5% bwoc CD-32 + 3 lbs/sack Kol Seal + 0.2% bwoc Sodium Metasilicate + 20% bwoc Silica Flour + 0.3% bwoc BA-59 + 0.5 gals/100 sack FP-13L + 10 lbs/sack CSE-2 + 0.7% bwoc FL-52A + 6% bwoc Bentonite II + 100.2% Fresh Water
2	378	/ 2.53	= 149 sacks (35:65) Poz (Fly Ash):Type III Cement + 0.04 lbs/sack Static Free + 2% bwoc Calcium Chloride + 0.3% bwoc R-3 + 0.25 lbs/sack Cello Flake + 0.5% bwoc CD-32 + 3 lbs/sack Kol Seal + 0.2% bwoc Sodium Metasilicate + 20% bwoc Silica Flour + 0.3% bwoc BA-59 + 0.5 gals/100 sack FP-13L + 10 lbs/sack CSE-2 + 0.7% bwoc FL-52A + 6% bwoc Bentonite II + 127.1% Fresh Water
3	192	/ .99	= 194 sacks Class G Cement + 0.04 lbs/sack Static Free + 0.8% bwoc CD-32 + 0.5 gals/100 sack FP-13L + 33.2% Fresh Water

CEMENT PROPERTIES

	PLUG NO. 1	PLUG NO. 2	PLUG NO. 3
Slurry Weight (ppg)	13.20	12.50	17.00
Slurry Yield (cf/sack)	2.15	2.53	0.99
Amount of Mix Water (gps)	10.45	13.25	3.74
Amount of Mix Fluid (gps)	10.46	13.26	3.75

PLUG GEOMETRY

	PLUG TOP		PLUG BOTTOM	
1	6387 ft	to	6487 ft	with 8.75 inch Open Hole
2	2437 ft	to	3037 ft	with 8.75 inch Open Hole
3	2237 ft	to	2637 ft	with 8.75 inch Open Hole

Operator Name: Berry Petroleum Co
Well Name: Chevron 20-30D
Job Description: OH Whipstock @ 2237'
Date: March 16, 2010



Proposal No: 1001129685D

FLUID SPECIFICATIONS (Continued)

Slurry will be tested in Grand Junction Laboratory, design may change based on results.

Plug #1- Pump 100' plug plus 25% excess on top of the fish @ 6487-6387'.

Plug #2- Pump 600' plug plus 50% excess @ 2437-3037' and WOC 12 hours. Dress off to 2637' (400' below surface casing shoe)

Plug #3- Pump 400' plug plus 15% excess of densified slurry (17.0 ppg) @ 2237-2637'. WOC 24 hours, then attempt kick-off.

Static Temperatures:

Plug #1- 185F

Plug #2- 129F

Plug #3- 123F

Take Calcium Chloride out on the side and add to mix water for the 2nd plug @ 2% BWOC.

Operator Name: Berry Petroleum Co
 Well Name: Chevron 20-30D
 Job Description: OH Whipstock @ 2237'
 Date: March 16, 2010



Proposal No: 1001129685D

PRICE ESTIMATE

Product Material

QTY	UNIT	PRODUCT DESCRIPTION	UNIT PRICE	GROSS AMOUNT	DISC (%)	NET AMOUNT
194	94lbs	Class G Cement	39.30	7,624.20	72.0	2,134.78
260	lbs	Calcium Chloride	1.44	374.40	72.0	104.83
3028	lbs	Silica Flour	0.50	1,514.00	72.0	423.92
31	lbs	Sodium Metasilicate	3.67	113.77	72.0	31.86
46	lbs	R-3	3.29	151.34	72.0	42.38
44	lbs	Cello Flake	4.57	201.08	72.0	56.30
61	74lbs	Poz (Fly Ash)	18.50	1,128.50	72.0	315.98
106	lbs	FL-52A	24.10	2,554.60	72.0	715.29
2	gals	FP-13L	168.00	336.00	72.0	94.08
46	lbs	BA-59	32.20	1,481.20	72.0	414.74
222	lbs	CD-32	11.90	2,641.80	72.0	739.70
1740	lbs	CSE-2	1.51	2,627.40	72.0	735.67
909	lbs	Bentonite II	0.47	427.23	72.0	119.62
522	lbs	Kol Seal	1.06	553.32	72.0	154.93
15	lbs	Static Free	35.80	537.00	72.0	150.36
114	94lbs	Type III Cement	44.10	5,027.40	72.0	1,407.67
Product Material Subtotal:				\$27,293.24		\$7,642.11

Service Charges

QTY	UNIT	PRODUCT DESCRIPTION	UNIT PRICE	GROSS AMOUNT	DISC (%)	NET AMOUNT
1	ea	Personnel Surcharge - Cement Svc	152.00	152.00	0.0	152.00
511	cu ft	Bulk Materials Service Charge	3.93	2,008.23	72.0	562.30
1	job	Automatic Density System	1,440.00	1,440.00	72.0	403.20
Service Charges Subtotal:				\$3,600.23		\$1,117.50

Customer will be charged for all 'SPECIAL PROPPANTS' delivered to location, whether they are pumped or not. All proppants other than standard grade frac sand are considered 'SPECIAL PROPPANTS'.
 The technical data contained in this proposal is based on the best information available at the time of writing and is subject to further analysis and testing. The pricing data contained in this proposal are estimates only and may vary depending on the work actually performed. Pricing does not include federal, state and local taxes or royalties.
 This quotation is based on BJ Services Company being awarded the work on a first call basis and within thirty (30) days of the proposal date. These prices will be subject to review if the work is done after thirty (30) days from the proposal date, or on a second or third call basis.

Operator Name: Berry Petroleum Co
 Well Name: Chevron 20-30D
 Job Description: OH Whipstock @ 2237'
 Date: March 16, 2010



Proposal No: 1001129685D

PRICE ESTIMATE

Equipment

QTY	UNIT	PRODUCT DESCRIPTION	UNIT PRICE	GROSS AMOUNT	DISC (%)	NET AMOUNT
1	6hrs	Cement Pump Tubing, 6001 - 7000 ft	8,750.00	8,750.00	72.0	2,450.00
1	job	Data Acquisition, Cement, Standard	1,540.00	1,540.00	72.0	431.20
140	miles	Mileage, Heavy Vehicle	8.55	1,197.00	72.0	335.16
140	miles	Mileage, Auto, Pick-Up or Treating Van	4.83	676.20	72.0	189.34
1	job	Field Storage Bin, Up To 5 Days	1,195.00	1,195.00	72.0	334.60
Equipment Subtotal:				\$13,358.20		\$3,740.30

Freight/Delivery Charges

QTY	UNIT	PRODUCT DESCRIPTION	UNIT PRICE	GROSS AMOUNT	DISC (%)	NET AMOUNT
1412	tonmi	Bulk Delivery, Dry Products	2.85	4,024.20	72.0	1,126.78
Freight/Delivery Charges Subtotal:				\$4,024.20		\$1,126.78
TOTAL:				\$48,275.87		\$13,626.69

Notes

Mileage is estimated, actual mileage will be charged.

Customer will be charged for all 'SPECIAL PROPPANTS' delivered to location, whether they are pumped or not. All proppants other than standard grade frac sand are considered 'SPECIAL PROPPANTS'.

The technical data contained in this proposal is based on the best information available at the time of writing and is subject to further analysis and testing. The pricing data contained in this proposal are estimates only and may vary depending on the work actually performed. Pricing does not include federal, state and local taxes or royalties.

This quotation is based on BJ Services Company being awarded the work on a first call basis and within thirty (30) days of the proposal date. These prices will be subject to review if the work is done after thirty (30) days from the proposal date, or on a second or third call basis.



CONDITIONS

BJ Services' performance of services and sale of materials is expressly conditioned upon the applicability of the Terms and Conditions contained in the current BJ Services Price Book. The Terms and Conditions include, among other things, an indemnity in favor of BJ Services from Customer for damage to the well bore, reservoir damage, loss of the hole, blowouts and loss of control of the well, even if caused by the negligence or other fault of BJ Services. The Terms and Conditions also limit the warranties provided by the BJ Services and the remedies to which Customer may be entitled in the event of a breach of warranty by BJ Services. For these reasons, we strongly recommend that you carefully review a copy of the Terms and Conditions. If you do not have a copy of the BJ Services Price Book, you can view the Terms and Conditions on BJ Services Web Site, www.bjservices.com. By requesting that BJ Services perform the services described herein, Customer acknowledges that such Terms and Conditions are applicable to the services. Further, by requesting the services, Customer warrants that its representative on the well location or other service site will be fully authorized to acknowledge such Terms and Conditions by executing a Field Receipt or other document presented by BJ Services containing such Terms and Conditions.

In the event that Customer and BJ Services have executed a Master Services Agreement covering the work to be performed, such Master Services Agreement shall govern in place of the Terms and Conditions. If you are interested in entering into Master Services Agreement with BJ Services, please contact us through the "Go BJ" button on the BJ Services Web Site.

Operator Name: Berry Petroleum Co
Well Name: Chevron 20-30D
Date: March 16, 2010

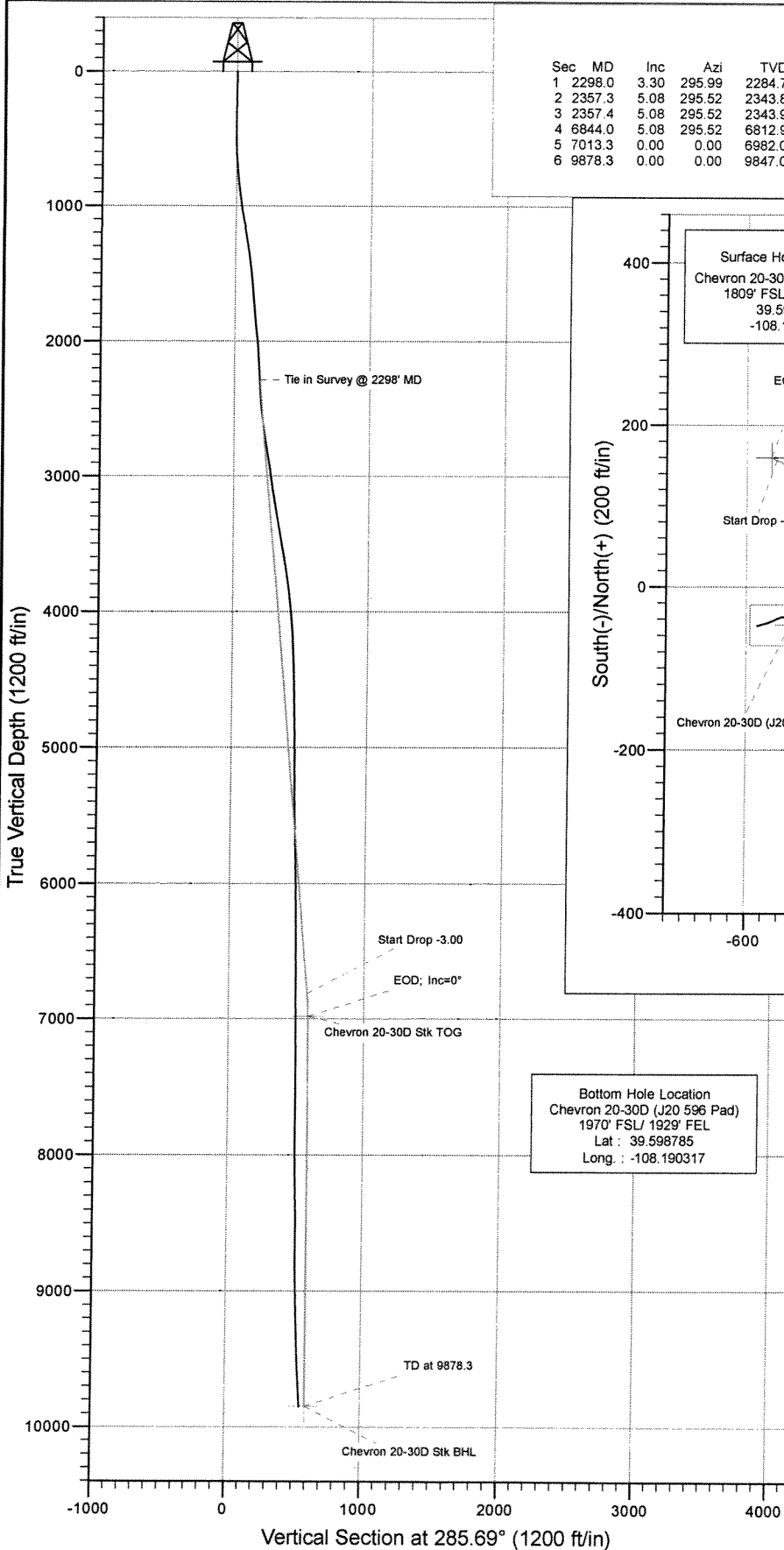


Proposal No: 1001129685D

End of Report

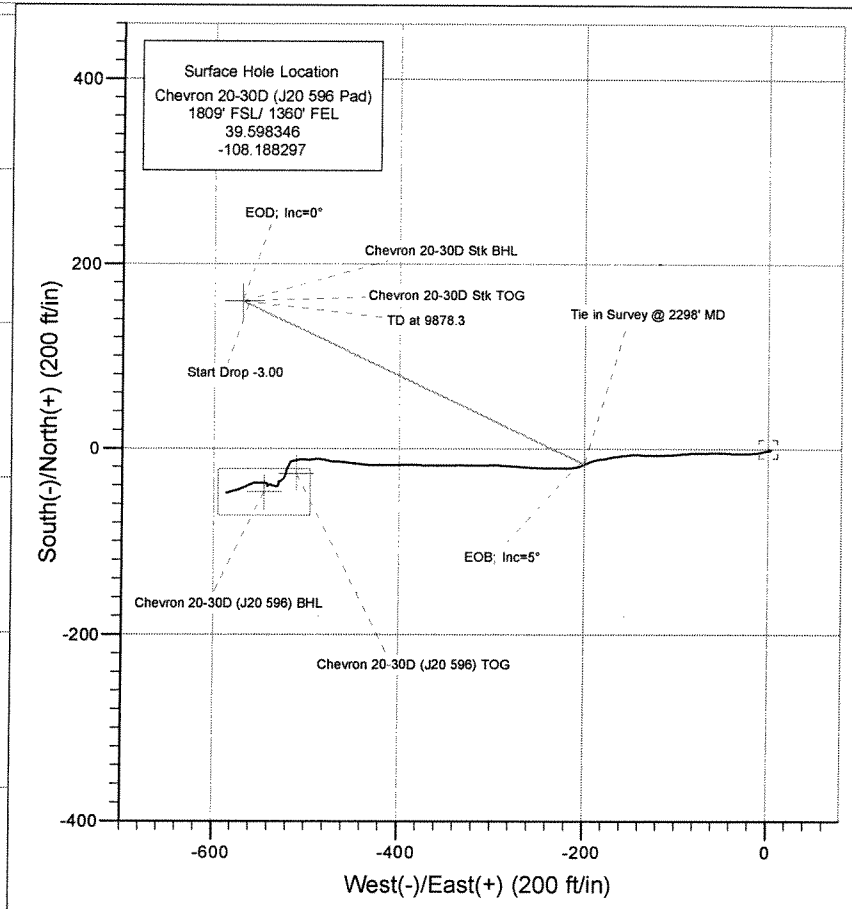


Project: Garfield County
 Site: NWSE S20-T5S-R96W (Chevron J20 596)
 Well: Chevron 20-30D (J20 596 Pad)
 Wellbore: Stk
 Design: Plan #1



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	2298.0	3.30	295.99	2284.7	-16.4	-199.9	0.00	0.00	188.1	
2	2357.3	5.08	295.52	2343.8	-14.5	-203.9	3.00	-1.34	192.3	
3	2357.4	5.08	295.52	2343.9	-14.5	-203.9	3.00	16.97	192.3	
4	6844.0	5.08	295.52	6812.9	156.7	-562.4	0.00	0.00	583.9	
5	7013.3	0.00	0.00	6982.0	159.9	-569.2	3.00	180.00	591.3	Chevron 20-30D Stk TOG
6	9878.3	0.00	0.00	9847.0	159.9	-569.2	0.00	0.00	591.3	Chevron 20-30D Stk BHL



Bottom Hole Location
 Chevron 20-30D (J20 596 Pad)
 1970' FSL/ 1929' FEL
 Lat : 39.598785
 Long. : -108.190317



Azimuths to True North
 Magnetic North: 10.59°

Magnetic Field
 Strength: 52419.3snT
 Dip Angle: 65.83°
 Date: 3/16/2010
 Model: IGRF200510

DESIGN DETAILS: Plan #1

KBE @ 8005.0ft (Patterson #302)

Target	Azimuth	Origin	N/S	E/W	From TVD
Chevron 20-30D Stk BHL	285.69	Slot	0.0	0.0	0.0

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Chevron 20-30D (J20 596 Pad)
Company:	Berry Petroleum Company (NAD 83)	TVD Reference:	KBE @ 8005.0ft (Patterson #302)
Project:	Garfield County	MD Reference:	KBE @ 8005.0ft (Patterson #302)
Site:	NWSE S20-T5S-R96W (Chevron J20 596)	North Reference:	True
Well:	Chevron 20-30D (J20 596 Pad)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Stk		
Design:	Plan #1		

Project	Garfield County		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	NWSE S20-T5S-R96W (Chevron J20 596)				
Site Position:		Northing:	1,654,098.24 ft	Latitude:	39.598520
From:	Lat/Long	Easting:	2,242,645.04 ft	Longitude:	-108.188071
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.70 °

Well	Chevron 20-30D (J20 596 Pad)					
Well Position	+N/-S	0.0 ft	Northing:	1,654,036.76 ft	Latitude:	39.598346
	+E/-W	0.0 ft	Easting:	2,242,579.51 ft	Longitude:	-108.188297
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,990.0 ft

Wellbore	Stk				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	3/16/2010	10.59	65.83	52,419

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	2,298.0	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	285.69	

Plan Sections											
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target	
2,298.0	3.30	241.20	2,284.7	-16.4	-199.9	0.00	0.00	0.00	0.00		
2,396.3	3.12	295.85	2,382.9	-16.6	-204.8	3.00	-0.18	55.57	120.40		
2,396.6	3.13	295.85	2,383.1	-16.6	-204.8	3.00	3.00	-0.37	-0.38		
9,767.3	3.13	295.85	9,742.8	158.7	-566.7	0.00	0.00	0.00	0.00		
9,871.5	0.00	0.00	9,847.0	159.9	-569.2	3.00	-3.00	0.00	180.00	Chevron 20-30D Stk E	

Cathedral Energy Services

Planning Report

Database: EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference: Well Chevron 20-30D (J20 596 Pad)
Company: Berry Petroleum Company (NAD 83)	TVD Reference: KBE @ 8005.0ft (Patterson #302)
Project: Garfield County	MD Reference: KBE @ 8005.0ft (Patterson #302)
Site: NWSE S20-T5S-R96W (Chevron J20 596)	North Reference: True
Well: Chevron 20-30D (J20 596 Pad)	Survey Calculation Method: Minimum Curvature
Wellbore: Stk	
Design: Plan #1	

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
2,298.0	3.30	241.20	2,284.7	-16.4	-199.9	188.1	0.00	0.00	Tie in Survey @ 2298' MD
2,300.0	3.27	242.11	2,286.7	-16.5	-200.1	188.1	3.00	-1.50	
2,396.3	3.12	295.85	2,382.9	-16.6	-204.8	192.7	3.00	-0.16	
2,396.6	3.13	295.85	2,383.1	-16.6	-204.8	192.7	3.00	3.00	
2,400.0	3.13	295.85	2,386.5	-16.5	-205.0	192.9	0.00	0.00	
2,500.0	3.13	295.85	2,486.4	-14.1	-209.9	198.3	0.00	0.00	
2,600.0	3.13	295.85	2,586.2	-11.8	-214.8	203.6	0.00	0.00	
2,700.0	3.13	295.85	2,686.1	-9.4	-219.7	209.0	0.00	0.00	
2,800.0	3.13	295.85	2,785.9	-7.0	-224.7	214.4	0.00	0.00	
2,900.0	3.13	295.85	2,885.8	-4.6	-229.6	219.8	0.00	0.00	
3,000.0	3.13	295.85	2,985.6	-2.3	-234.5	225.1	0.00	0.00	
3,100.0	3.13	295.85	3,085.5	0.1	-239.4	230.5	0.00	0.00	
3,200.0	3.13	295.85	3,185.3	2.5	-244.3	235.9	0.00	0.00	
3,300.0	3.13	295.85	3,285.2	4.9	-249.2	241.2	0.00	0.00	
3,400.0	3.13	295.85	3,385.0	7.3	-254.1	246.6	0.00	0.00	
3,500.0	3.13	295.85	3,484.9	9.6	-259.0	252.0	0.00	0.00	
3,600.0	3.13	295.85	3,584.7	12.0	-263.9	257.3	0.00	0.00	
3,700.0	3.13	295.85	3,684.6	14.4	-268.8	262.7	0.00	0.00	
3,800.0	3.13	295.85	3,784.4	16.8	-273.7	268.1	0.00	0.00	
3,900.0	3.13	295.85	3,884.3	19.1	-278.6	273.4	0.00	0.00	
4,000.0	3.13	295.85	3,984.1	21.5	-283.6	278.8	0.00	0.00	
4,100.0	3.13	295.85	4,084.0	23.9	-288.5	284.2	0.00	0.00	
4,200.0	3.13	295.85	4,183.8	26.3	-293.4	289.5	0.00	0.00	
4,300.0	3.13	295.85	4,283.7	28.7	-298.3	294.9	0.00	0.00	
4,400.0	3.13	295.85	4,383.5	31.0	-303.2	300.3	0.00	0.00	
4,500.0	3.13	295.85	4,483.4	33.4	-308.1	305.7	0.00	0.00	
4,600.0	3.13	295.85	4,583.3	35.8	-313.0	311.0	0.00	0.00	
4,700.0	3.13	295.85	4,683.1	38.2	-317.9	316.4	0.00	0.00	
4,800.0	3.13	295.85	4,783.0	40.6	-322.8	321.8	0.00	0.00	
4,900.0	3.13	295.85	4,882.8	42.9	-327.7	327.1	0.00	0.00	
5,000.0	3.13	295.85	4,982.7	45.3	-332.6	332.5	0.00	0.00	
5,100.0	3.13	295.85	5,082.5	47.7	-337.6	337.9	0.00	0.00	
5,200.0	3.13	295.85	5,182.4	50.1	-342.5	343.2	0.00	0.00	
5,300.0	3.13	295.85	5,282.2	52.4	-347.4	348.6	0.00	0.00	
5,400.0	3.13	295.85	5,382.1	54.8	-352.3	354.0	0.00	0.00	
5,500.0	3.13	295.85	5,481.9	57.2	-357.2	359.3	0.00	0.00	
5,600.0	3.13	295.85	5,581.8	59.6	-362.1	364.7	0.00	0.00	
5,700.0	3.13	295.85	5,681.6	62.0	-367.0	370.1	0.00	0.00	
5,800.0	3.13	295.85	5,781.5	64.3	-371.9	375.5	0.00	0.00	
5,900.0	3.13	295.85	5,881.3	66.7	-376.8	380.8	0.00	0.00	
6,000.0	3.13	295.85	5,981.2	69.1	-381.7	386.2	0.00	0.00	
6,100.0	3.13	295.85	6,081.0	71.5	-386.6	391.6	0.00	0.00	
6,200.0	3.13	295.85	6,180.9	73.8	-391.5	396.9	0.00	0.00	
6,300.0	3.13	295.85	6,280.7	76.2	-396.5	402.3	0.00	0.00	
6,400.0	3.13	295.85	6,380.6	78.6	-401.4	407.7	0.00	0.00	
6,500.0	3.13	295.85	6,480.4	81.0	-406.3	413.0	0.00	0.00	
6,600.0	3.13	295.85	6,580.3	83.4	-411.2	418.4	0.00	0.00	
6,700.0	3.13	295.85	6,680.1	85.7	-416.1	423.8	0.00	0.00	
6,800.0	3.13	295.85	6,780.0	88.1	-421.0	429.1	0.00	0.00	
6,900.0	3.13	295.85	6,879.8	90.5	-425.9	434.5	0.00	0.00	
7,000.0	3.13	295.85	6,979.7	92.9	-430.8	439.9	0.00	0.00	
7,100.0	3.13	295.85	7,079.5	95.3	-435.7	445.2	0.00	0.00	

Cathedral Energy Services

Planning Report

Database: EDM 5000.1 US Multi Users DB
Company: Berry Petroleum Company (NAD 83)
Project: Garfield County
Site: NWSE S20-T5S-R96W (Chevron J20 596)
Well: Chevron 20-30D (J20 596 Pad)
Wellbore: Stk
Design: Plan #1

Local Co-ordinate Reference: Well Chevron 20-30D (J20 596 Pad)
TVD Reference: KBE @ 8005.0ft (Patterson #302)
MD Reference: KBE @ 8005.0ft (Patterson #302)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate ("/100ft)	Build Rate ("/100ft)	Comments / Formations
7,200.0	3.13	295.85	7,179.4	97.6	-440.6	450.6	0.00	0.00	
7,300.0	3.13	295.85	7,279.2	100.0	-445.5	456.0	0.00	0.00	
7,400.0	3.13	295.85	7,379.1	102.4	-450.5	461.4	0.00	0.00	
7,500.0	3.13	295.85	7,478.9	104.8	-455.4	466.7	0.00	0.00	
7,600.0	3.13	295.85	7,578.8	107.1	-460.3	472.1	0.00	0.00	
7,700.0	3.13	295.85	7,678.6	109.5	-465.2	477.5	0.00	0.00	
7,800.0	3.13	295.85	7,778.5	111.9	-470.1	482.8	0.00	0.00	
7,900.0	3.13	295.85	7,878.3	114.3	-475.0	488.2	0.00	0.00	
8,000.0	3.13	295.85	7,978.2	116.7	-479.9	493.6	0.00	0.00	
8,100.0	3.13	295.85	8,078.0	119.0	-484.8	498.9	0.00	0.00	
8,200.0	3.13	295.85	8,177.9	121.4	-489.7	504.3	0.00	0.00	
8,300.0	3.13	295.85	8,277.7	123.8	-494.6	509.7	0.00	0.00	
8,400.0	3.13	295.85	8,377.6	126.2	-499.5	515.0	0.00	0.00	
8,500.0	3.13	295.85	8,477.4	128.5	-504.4	520.4	0.00	0.00	
8,600.0	3.13	295.85	8,577.3	130.9	-509.4	525.8	0.00	0.00	
8,700.0	3.13	295.85	8,677.1	133.3	-514.3	531.2	0.00	0.00	
8,800.0	3.13	295.85	8,777.0	135.7	-519.2	536.5	0.00	0.00	
8,900.0	3.13	295.85	8,876.9	138.1	-524.1	541.9	0.00	0.00	
9,000.0	3.13	295.85	8,976.7	140.4	-529.0	547.3	0.00	0.00	
9,100.0	3.13	295.85	9,076.6	142.8	-533.9	552.6	0.00	0.00	
9,200.0	3.13	295.85	9,176.4	145.2	-538.8	558.0	0.00	0.00	
9,300.0	3.13	295.85	9,276.3	147.6	-543.7	563.4	0.00	0.00	
9,400.0	3.13	295.85	9,376.1	149.9	-548.6	568.7	0.00	0.00	
9,500.0	3.13	295.85	9,476.0	152.3	-553.5	574.1	0.00	0.00	
9,600.0	3.13	295.85	9,575.8	154.7	-558.4	579.5	0.00	0.00	
9,700.0	3.13	295.85	9,675.7	157.1	-563.4	584.8	0.00	0.00	
9,767.3	3.13	295.85	9,742.9	158.7	-566.7	588.5	0.00	0.00	Start Drop -3.00
9,800.0	2.14	295.85	9,775.5	159.3	-568.0	589.9	3.00	-3.00	
9,871.5	0.00	0.00	9,847.0	159.9	-569.2	591.3	3.00	-3.00	Chevron 20-30D Stk BHL

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Chevron 20-30D Stk BH - plan hits target center - Point	0.00	0.00	9,847.0	159.9	-569.2	1,654,213.46	2,242,015.28	39.598785	-108.190317

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,298.0	2,284.7	-16.4	-199.9	Tie in Survey @ 2298' MD
9,767.3	9,742.8	-16.6	-204.8	Start Drop -3.00
9,871.5	9,847.0	158.7	-566.7	TD at 9871.5