Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1
January 2018
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 33936
Name: Griffin, Charles N.
Address 1: PO BOX 347
Address 2:
City: PRATT State: KS Zip: 67124 + 0347
Contact Person: Charles Griffin
Phone: (620) 672-9700
CONTRACTOR: License # 33575
Name: WW Drilling, LLC
Wellsite Geologist: Felts & Reed
Purchaser: Plains Marketing

Designate Type of Completion:
☑ New Well ☐ Re-Entry ☐ Workover
☑ Oil ☐ WSW ☐ SWD
☐ Gas ☐ DH ☐ EOR
☐ OG ☐ GSW
☐ CM *(Coal Bed Methane)*
☐ Cathodic ☐ Other *(Core, Expl., etc.)*:

If Workover/Re-entry: Old Well Info as follows:
Operator:
Well Name:
Original Comp. Date: Original Total Depth:
☐ Deepening ☐ Re-perf. ☐ Conv. to EOR ☐ Conv. to SWD
☐ Plug Back ☐ Liner ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ EOR Permit #:
☐ GSW Permit #:

11/7/2017	11/22/2017	1/27/2018
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No.: 15-007-24322-01-00
Spot Description:
N2 - N2 - NE - NE Sec. 8 Twp. 33 S. R. 12 ☐ East ☑ West
150 Feet from ☑ North / ☐ South Line of Section
660 Feet from ☑ East / ☐ West Line of Section
Footages Calculated from Nearest Outside Section Corner:
☑ NE ☐ NW ☐ SE ☐ SW
GPS Location: Lat: *(e.g. xx.xxxxx)*, Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Barber
Lease Name: TERESE Well #: 1H
Field Name:
Producing Formation: Viola
Elevation: Ground: 1581 Kelly Bushing: 1596
Total Vertical Depth: 4761 Plug Back Total Depth: 9006
Amount of Surface Pipe Set and Cemented at: 352 Feet
Multiple Stage Cementing Collar Used? ☐ Yes ☑ No
If yes, show depth set: Feet
If Alternate II completion, cement circulated from:
feet depth to: w/ sx cmt.

Drilling Fluid Management Plan
(Data must be collected from the Reserve Pit)
Chloride content: 0 ppm Fluid volume: 0 bbls
Dewatering method used: Evaporated
Location of fluid disposal if hauled offsite:
Operator Name:
Lease Name: License #:
Quarter Sec. Twp. S. R. ☐ East ☐ West
County: Permit #:

AFFIDAVIT
I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY
☑ **Confidentiality Requested**
Date: 04/10/2018
☐ **Confidential Release Date:**
☑ **Wireline Log Received** ☐ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** Karen Ritter **Date:** 04/11/2018

Page Two

Operator Name: Griffin, Charles N. Lease Name: TERESE Well #: 1H

Sec. 8 Twp. 33 S. R. 12 ☐ East ☑ West County: Barber

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken ☐ Yes ☑ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☐ Yes ☑ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☑ Yes ☐ No

Geologist Report / Mud Logs ☑ Yes ☐ No

List All E. Logs Run:

Resistivity Gamma Ray

☐ Log Formation (Top), Depth and Datum ☑ Sample

Name	Top	Datum
Attached	Attached	Attached

CASING RECORD ☑ New ☐ Used
Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12.25	9.625	36	352	common	200	celloflake 0.25 pps Calcium Chloride 5%
Intermediate	8.75	7.00	26	5175	AA2	225	5% Gyp, 10% Salt, 5 pps Gilsonite
Liner	6.125	4.5	11.6	9100	H	470	10% salt 1/4# Defoamer

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
____ Perforate ____ Protect Casing ____ Plug Back TD ____ Plug Off Zone	-			
	-			

1. Did you perform a hydraulic fracturing treatment on this well? ☑ Yes ☐ No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☑ No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☐ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection: 1/27/2018

Producing Method: ☐ Flowing ☑ Pumping ☐ Gas Lift ☐ Other *(Explain)* _____

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity
	200		1000		

DISPOSITION OF GAS: ☐ Vented ☑ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION: ☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*

PRODUCTION INTERVAL:

Top	Bottom
5192	6362

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record *(Amount and Kind of Material Used)*
Attached	Attached	Attached	Attached	Attached	Attached

TUBING RECORD: Size: 3.5 Set At: 3818 Packer At:

Mail to: KCC - Conservation Division, 266 N. Main, Suite 220, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	Griffin, Charles N.
Well Name	TERESE 1H
Doc ID	1405441

Tops

Name	Top	Datum
LeCompton	3499	-1903
Elgin	3533	-1937
Heebner	3716	-2120
Lansing	3910	-2314
Stark	4293	-2388
B/KC	4379	-2783
Mississippian	4485	-2889
Kinderhook	4643	-3047
Viola	4751	-3162

Form	ACO1 - Well Completion
Operator	Griffin, Charles N.
Well Name	TERESE 1H
Doc ID	1405441

Perforations

Shots Per Foot	Perforation Top	Perforation Bottom	BridgePlugType	BridgePlugSetAt	Material Record
4	8044	8810			10000 gal 15% NeFe Acid, frac w/2,860,000 N2, 3707 bbl SW with 230,000# 20/40 sd
4	6131	6362			1000 gal 15% CAS Acid, 685,000 N2, 1642 bbl SW, 35,780 #20/40
4	5945	6076			3000 gal 15% CAS Acid, 1,005,000 N2,1153 bbl SW, 50,061# 20/40
4	5752	5910			2000 gal 15% CAS acid, 859,710 N2, 1115 Bbl SW, 55,484# 20/40
4	5565	5584			2000 Gal 15% CAS, 934,996 N2, 1064 bbl SW, 54,756# 20/40

Form	ACO1 - Well Completion
Operator	Griffin, Charles N.
Well Name	TERESE 1H
Doc ID	1405441

Perforations

Shots Per Foot	Perforation Top	Perforation Bottom	BridgePlugType	BridgePlugSetAt	Material Record
4	5358	5360			2000 gal 15% CAS, 257,414 N2, 839 bbl SW, 7,334# 20/40
4	5192	5280			942 bbl SW, 222,348 N2

Form	ACO1 - Well Completion
Operator	Griffin, Charles N.
Well Name	TERESE 1H
Doc ID	1405441

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	9.625	36	352	common	200	celloflake 0.25 pps Calcium Chloride 5%
Intermediate	8.75	7.00	26	5175	AA2	225	5% Gyp, 10% Salt, 5 pps Gilsonite
Liner	6.125	4.5	11.6	9100	H	470	10% salt 1/4# Defoamer

BASIC ENERGY SERVICES
PRESSURE PUMPING & WIRELINE

10244 NE Hwy. 61
P.O. Box 8613
Pratt, Kansas 67124
Phone 620-672-1201

TT MH (46)

FIELD SERVICE TICKET

1718 15524 A

Invoice # 92573206

DATE TICKET NO.

DATE OF JOB 11-15-17 DISTRICT Pratt	NEW WELL ☒ OLD WELL ☐ PROD ☐ INJ ☐ WDW ☐ CUSTOMER ORDER NO.:
CUSTOMER Griffin Management	LEASE Terese WELL NO. 1-H
ADDRESS	COUNTY Barber STATE Ks
CITY STATE	SERVICE CREW Mattai, Marquez, Gomez, Osborn
AUTHORIZED BY	JOB TYPE: 2-42 7" intermediate

EQUIPMENT#	HRS	EQUIPMENT#	HRS	EQUIPMENT#	HRS
* 20920	1				
21010	.5				

	DATE		TIME
TRUCK CALLED	11-15-17	AM PM	11:00
ARRIVED AT JOB		AM PM	3:30
START OPERATION		AM PM	10:01
FINISH OPERATION		AM PM	11:03
RELEASED	11:16	AM PM	12:15
MILES FROM STATION TO WELL	35		

CONTRACT CONDITIONS: (This contract must be signed before the job is commenced or merchandise is delivered).
The undersigned is authorized to execute this contract as an agent of the customer. As such, the undersigned agrees and acknowledges that this contract for services, materials, products, and/or supplies includes all of and only those terms and conditions appearing on the front and back of this document. No additional or substitute terms and/or conditions shall become a part of this contract without the written consent of an officer of Basic Energy Services LP.

SIGNED: X
(WELL OWNER, OPERATOR, CONTRACTOR OR AGENT)

ITEM/PRICE REF. NO.	MATERIAL, EQUIPMENT AND SERVICES USED	UNIT	QUANTITY	UNIT PRICE	$ AMOUNT
CP 105	AA-2 CMT	SK	225		3,825 00
CC 105	C-41 P	lb	43		172 00
CC 111	SALT	lb	1070		535 00
CC 112	CMT Friction reducer	lb	64		384 00
CC 129	FLA 322	lb	106		795 00
CC 201	Gilsonite	lb	1128		755 76
CF 104	Top rubber plug 7"	EA	1		110 00
CF 809	Buttress thread float shoe 7"	EA	1		946 00
CF 907	Buttress thread collar 7"	EA	1		1,147 00
CF 1653	Strait vane turbo 7"	EA	10		4,000 00
CC 151	Mud flush	gal	420		630 00
E 100	P.U. miles	mi	35		157 50
E 101	heavy eq. miles	mi	70		525 00
E 113	Prop + bulk del	tm	371		927 50
CE 206	depth charge 5001-6000'	4hr	1		2,880 00
CE 240	blend + mix	SK	225		315 00
CE 504	Plug cont	JOB	1		250 00
S003	Supervisor	EA	1		175 00

CHEMICAL / ACID DATA:			

SUB TOTAL	18529	76
SERVICE & EQUIPMENT %TAX ON $		
MATERIALS %TAX ON $		
TOTAL	11,117	86

JWW

SERVICE REPRESENTATIVE Mike Mattai

THE ABOVE MATERIAL AND SERVICE ORDERED BY CUSTOMER AND RECEIVED BY: X
(WELL OWNER OPERATOR CONTRACTOR OR AGENT)

FIELD SERVICE ORDER NO.

CLOUD LITHO - Abilene, TX

BASiC energy services, L.P.

TREATMENT REPORT

Customer: Griffin Management	Lease No.	Date: 11-15-17	
Lease: Teresa	Well #: 1-H		
Field Order #: 15524	Station: Pratt	Casing: 7	Depth: 5177.65
County: Barber	State: KS		
Type Job: Z 42 7" intermediate	Formation	Legal Description: 8-33S-12W	

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size: 7"	Tubing Size	Shots/Ft		Acid: 225 sks AA-2	RATE	PRESS	ISIP
Depth: 5177.65	Depth	From	To	Pre Pad: 5% gyp	Max: .2% defoamer	1000	5 Min. SALT
Volume: 198	Volume	From	To	Pad: .3% Friction	Min: .5% fluid	loss	10 Min. 5 PPS silsonite
Max Press: 2,000	Max Press	From	To	Frac	Avg		15 Min.
Well Connection: PC	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth: 5132.03	Packer Depth	From	To	Flush: 196.4	Gas Volume		Total Load

Customer Representative: Charles Griffin | Station Manager: Westerman | Treater: Mattai

Service Units	83353		84980	20926		19889	21010				
Driver Names	Mattai		Marquez			Gomez	Osborn				

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
4:00					On location / safety meeting
					Run 7" 26# csng float shoe + collar
8:15					csng on bottom / break circ w. rig
9:45					Hook to csng / ~~break circ w. rig~~
10:01	250		3	4	Pump 3 bbl water
10:02	250		10	4	Pump 10 bbl mud flush
10:05	250		5	4	Pump 5 bbl water
10:06	200		55	3	Mix 225 sks AA-2 cmt
10:26			4	3	Wash pump + line / release plug
10:29	200		—	5.5	Start displacement
10:49	300		125	5.5	Lift pressure
11:00	900		185	3	Slow rate
11:03	1500		196.4		Plug down, released + held
					Job complete
					Thank You!
					Mike Mattai
					Edmundo, Jose, Riley

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Taylor Printing, Inc. 620-672-3656

TT MH JS

BASIC ENERGY SERVICES
PRESSURE PUMPING & WIRELINE

10244 NE Hwy. 61
P.O. Box 8613
Pratt, Kansas 67124
Phone 620-672-1201

FIELD SERVICE TICKET

1718 16132 A

Inv. 9256465

DATE TICKET NO.

DATE OF JOB 11/7/17 DISTRICT	NEW WELL ☒ OLD WELL ☐ PROD ☐ INJ ☐ WDW ☐ CUSTOMER ORDER NO.:
CUSTOMER Griffin Management	LEASE Terese WELL NO. 1-H
ADDRESS	COUNTY Barber STATE KS
CITY STATE	SERVICE CREW Scott, Riley, Eddy
AUTHORIZED BY Charles Griffin	JOB TYPE: 9 5/8 Surface Pipe Z42

EQUIPMENT#	HRS	EQUIPMENT#	HRS	EQUIPMENT#	HRS
86775	.5				
73768	.25				

	DATE	AM PM	TIME
TRUCK CALLED			
ARRIVED AT JOB	11/7/17	AM PM	1:15
START OPERATION	11/7/17	AM PM	8:30
FINISH OPERATION	11/7/17	AM PM	9:00
RELEASED	11/7/17	AM PM	10:00
MILES FROM STATION TO WELL			

CONTRACT CONDITIONS: (This contract must be signed before the job is commenced or merchandise is delivered).
The undersigned is authorized to execute this contract as an agent of the customer. As such, the undersigned agrees and acknowledges that this contract for services, materials, products, and/or supplies includes all of and only those terms and conditions appearing on the front and back of this document. No additional or substitute terms and/or conditions shall become a part of this contract without the written consent of an officer of Basic Energy Services LP.

SIGNED: X
(WELL OWNER, OPERATOR, CONTRACTOR OR AGENT)

ITEM/PRICE REF. NO.	MATERIAL, EQUIPMENT AND SERVICES USED	UNIT	QUANTITY	UNIT PRICE	$ AMOUNT
CP100C	Common Cement	SK	200		3200.00
CC102	Cellflake	lb	50		185.00
CC109	Calcium Chloride	lb	376		394.80
CF106	Top Rubber Cement Plug 9 5/8	Ea	1		260.00
CF804	Float Shoe 9 5/8	Ea	1		650.00
CF904	Float Collar 9 5/8	Ea	1		1000.00
CF1704	Centralizers 9 5/8	Ea	3		300.00
E100	Unit Mileage Pickup	MI	35		157.50
E101	Heavy Equipment Mileage	MI	70		525.00
E113	Prop & Bulk Delivery	TM	329		822.50
CE200	Depth Charge 0-500'	Hr.	1		1000.00
CE240	Blending & Mixing Charge	SK	200		280.00
CE504	Plug Container Utilization	Job	1		250.00
S003	Service Supervisor	Ea	1		175.00

SUB TOTAL 9199.80

CHEMICAL / ACID DATA:			

SERVICE & EQUIPMENT	%TAX ON $	
MATERIALS	%TAX ON $	
TOTAL		5519.88

SERVICE REPRESENTATIVE

THE ABOVE MATERIAL AND SERVICE ORDERED BY CUSTOMER AND RECEIVED BY: X
(WELL OWNER OPERATOR CONTRACTOR OR AGENT)

FIELD SERVICE ORDER NO.

CLOUD LITHO - Abilene, TX

BASiC energy services, L.P.

TREATMENT REPORT

Customer	Lease No.	Date
Griffin Management		11/7/17
Lease Torse	**Well #** 1-H	

Field Order #	Station	Casing	Depth	County	State
16132 A	Pratt KS	9 5/8	351.55	Barber	KS

Type Job	Formation	Legal Description
9 5/8 Surface Pipe		

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size 9 5/8	Tubing Size	Shots/Ft		Acid	RATE	PRESS	ISIP 242
Depth 351.55	Depth	From	To	Pre Pad	Max		5 Min.
Volume 77.18	Volume	From	To	Pad	Min		10 Min.
Max Press 500	Max Press	From	To	Frac	Avg		15 Min.
Well Connection 9 5/8	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth	Packer Depth	From	To	Flush	Gas Volume		Total Load

Customer Representative	Station Manager	Treater
Charles Griffin	Justin Wolstermann	Scott Gomez

Service Units	35950	78952	51779								
Driver Names	Scott	Rita		Eddy							

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
1:15					On location Safety Meeting Rig up
6:00					Run Float Equipment
8:10				4	Break Circulation
8:37	150			4	Pump H2O Spacer
8:38	150		5	4	Start Common Cement 15.6#
8:50	0		41.7	0	Shut down
8:51	0			0	Release plug
8:52	50			4	Start Displacement
8:59	200		21	3	Reduce Rate
9:00	700		2.7	3	Plug landed Shut down
					Wash up Equipment
					Cellar Full of Cement
					Job Complete

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Geologic Report

Terese 1H
API
15-007-24322-0100

N2 N2 NE NE Section 8

Township 33 South Range 12 West

Barber County, Kansas

GRIFFIN MANAGEMENT

Geologists:

Felts & Reed

Bruce A. Reed

Eli J. Felts

Drilling Contractor:	**WW Drilling Company Rig #14**
Drilling Commenced	**11/7/2017**
Drilling Completed	**11/21/2017**
Surface Casing	**9 5/8” cemented at 352’**
Intermediate	**8 3/4" cemented @ 5183'**
Long String	**6 1/4" cemented # 9100'**
Samples	**Saved and examined from 3400' to RTD.**
Drill Time	**Recorded and plotted from 3400'.**
Logging	**Schlumberger**
Logs Ran	**Gamma-Ray - Resistivity - Conductivity**
Elevations:	**Kelley Bushing: 1596.5’**
	Ground Level: 1581.5'
	Measurements Made From: Kelley Bushing
Kick off Point	**3985'**
Landing Point	**5183'**
Total Measured Depth	**9100'**

Formation	Measured Depth	True Vertical Depth	Datum
LeCompton	3499	3499	-1903
Elgin	3533	3533	-1937
Heebner	3716	3716	-2120
Lansing	3910	3910	-2314
Kick off Point*	3985	3985	-2388
Stark	4308	4293	-2697
B/KC	4408	4379	-2783
Mississippian	4538	4485	-2889
Kinderhook	4775	4643	-3047
Viola	5074	4751	-3155
Landing Point*	5183	4758	-3162

Schlumberger

Griffin Management

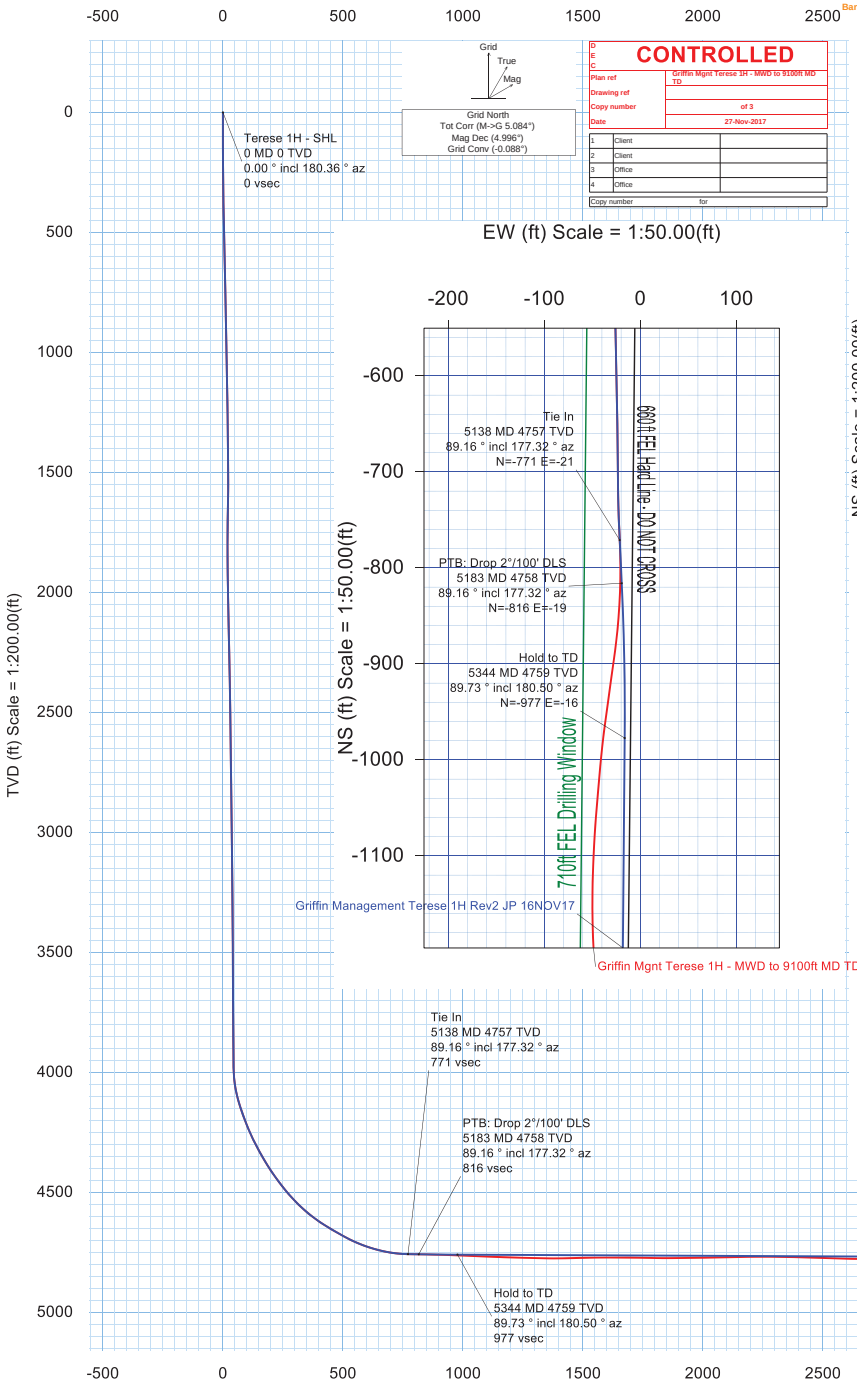
Final PVA - Rev2

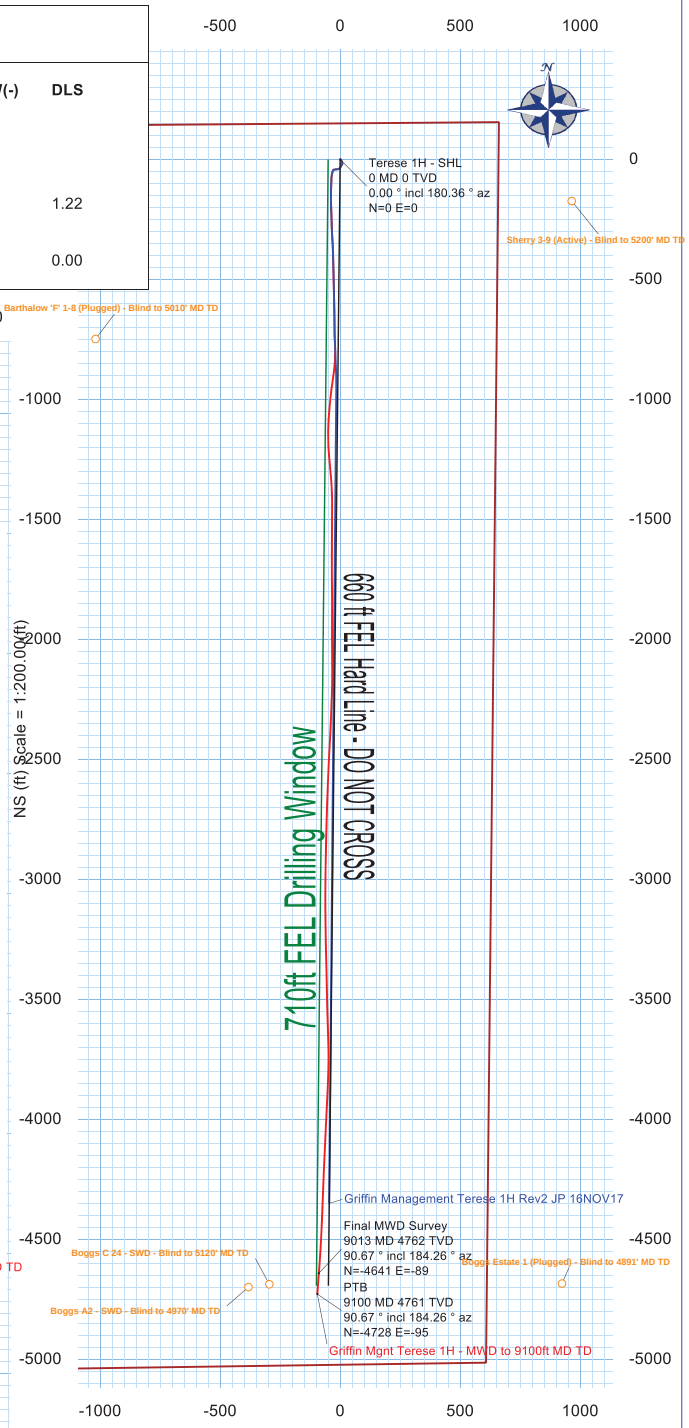
Borehole:	Well:	Field:	Structure:
Original Borehole	Griffin Management Terese 1H	Barber County, KS (NAD 27, Southern Zone)	WWD 14

Gravity & Magnetic Parameters																	
Model:	HDGM 2017	Dip:	65.215°	Date:	16-Nov-2017	Surface Location	NAD27 Kansas State Plane, Southern Zone, US Feet							Miscellaneous			
MagDec:	4.996°	FS:	51263.34nT	Gravity FS:	999.069mgn (9.80665 Based)	Lat:	N 37 11 44.55	Northing:	192665ftUS	Grid Conv:	-0.0879°			Slot:	Terese 1H	TVD Ref:	RKB(1596ft above Unknown)
						Lon:	W 98 38 35.05	Easting:	1958325ftUS	Scale Fact:	1.00001471			Plan:	Griffin Mgnt Terese 1H - MWD to 9100ft MD TD		

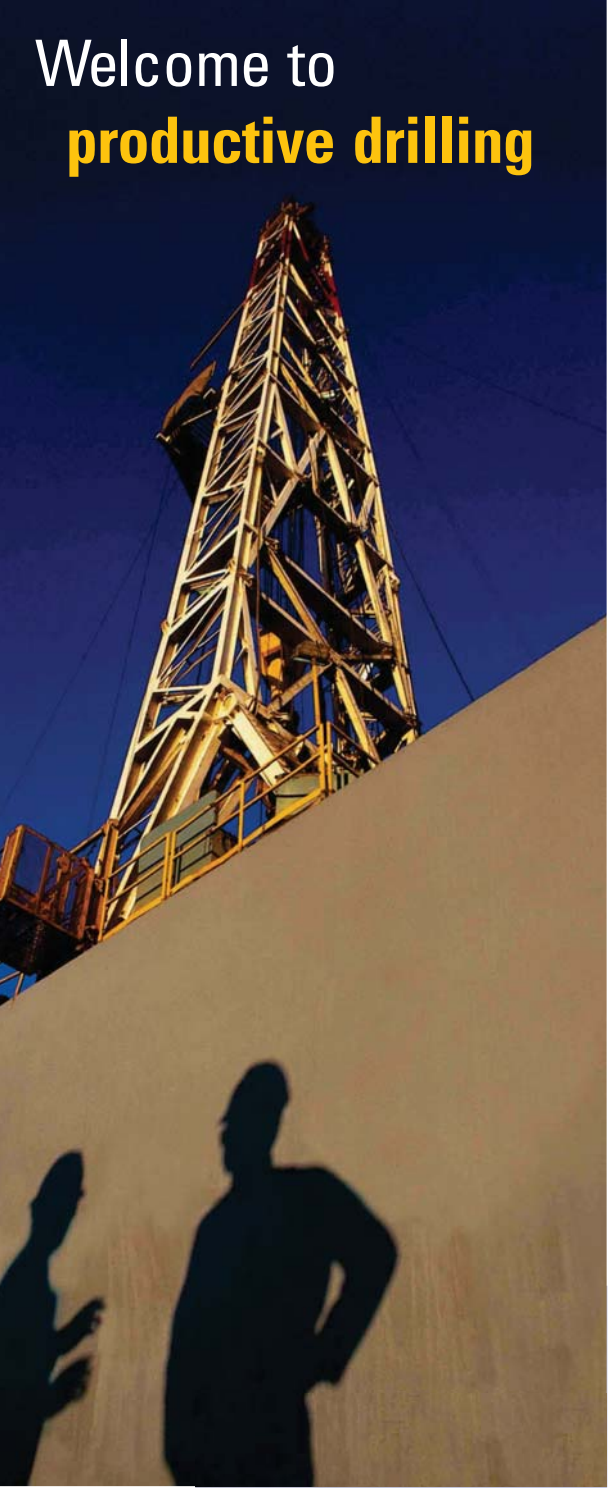
Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
Terese 1H - SHL	0.00	0.00	180.36	0.00	0.00	0.00	0.00	
Final MWD Survey	9013.00	90.67	184.26	4761.90	4641.69	-4641.02	-88.69	1.22
PTB	9100.00	90.67	184.26	4760.89	4728.51	-4727.77	-95.16	0.00





Vertical Section (ft) Azim = 180.60° Scale = 1:200.00(ft) Origin = 0N/-S, 0E/-W

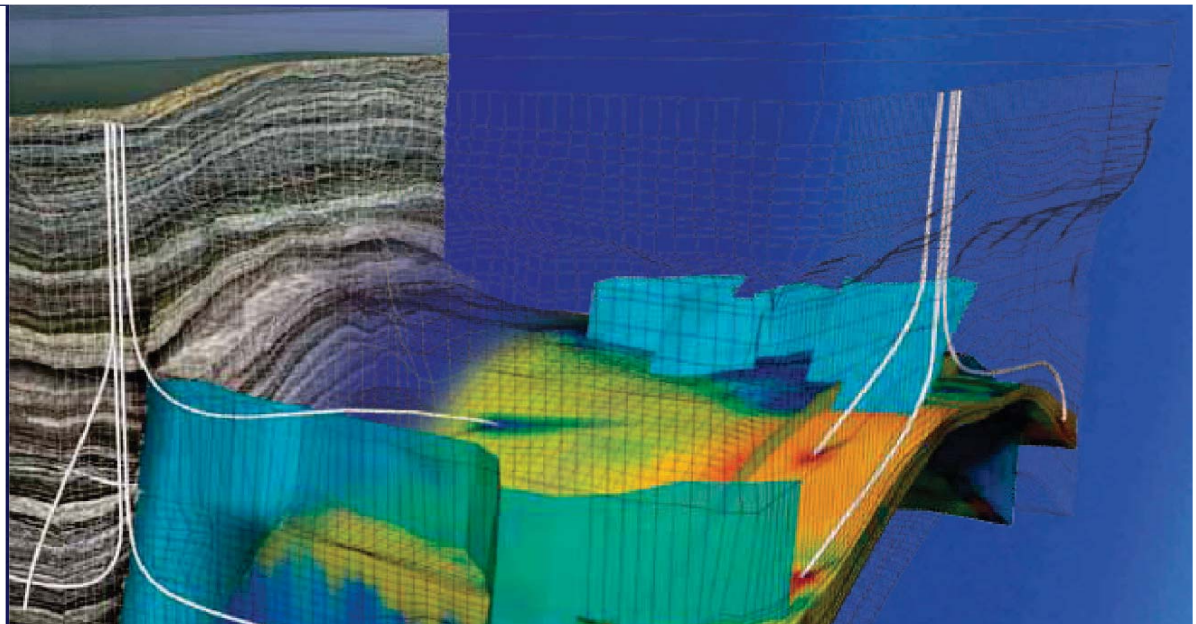


Schlumberger

END OF WELL REPORT

Client - Griffin Management
Rig Name - WWD #14
Well Name - Terese #1H
County - KS, Barber County
Date - 11/27/2017
Job # - 17OKC0467

Schlumberger



Schlumberger

11/27/2017

Griffin Management

Re:	Griffin Management
Well:	Terese #1H
Rig:	WWD #14
County:	KS, Barber County
Job#:	17OKC0467

Please find enclosed, a copy of the End of Well Report (EOW) provided by our Directional Drilling Services from 11/12/2017 through 11/22/2017 . This report consists of color planned vs. actual well drawings, proposed and actual surveys, morning reports, BHAs, and a Schlumberger office support personnel sheet for the above referenced well.

Should your office require further information, please feel free to contact your sales representative or me.

Sincerely,

Chris Lee
Drilling Engineer

Ben Davis
Sales Engineer
10546 NW 10th Street
Oklahoma City, OK 74103
BDavis17@slb.com
Phone: 405 709 1707

Larry Spangler
Client Engagement Coordinator
10546 NW 10th Street
Oklahoma City, OK 74103
LSpangler@slb.com
Phone: 405 892 3735

Chris Lee
Drilling Engineer
10546 NW 10th Street
Oklahoma City, OK 73127
CLee21@slb.com
Phone: 405 709 1717

Oklahoma City Command Center
10546 NW 10th Street
Oklahoma City, OK 73127
OKC-SDM1@slb.com
Phone: 405 709 1714

Schlumberger

Section 1

Definitive Plan

Schlumberger

Griffin Management

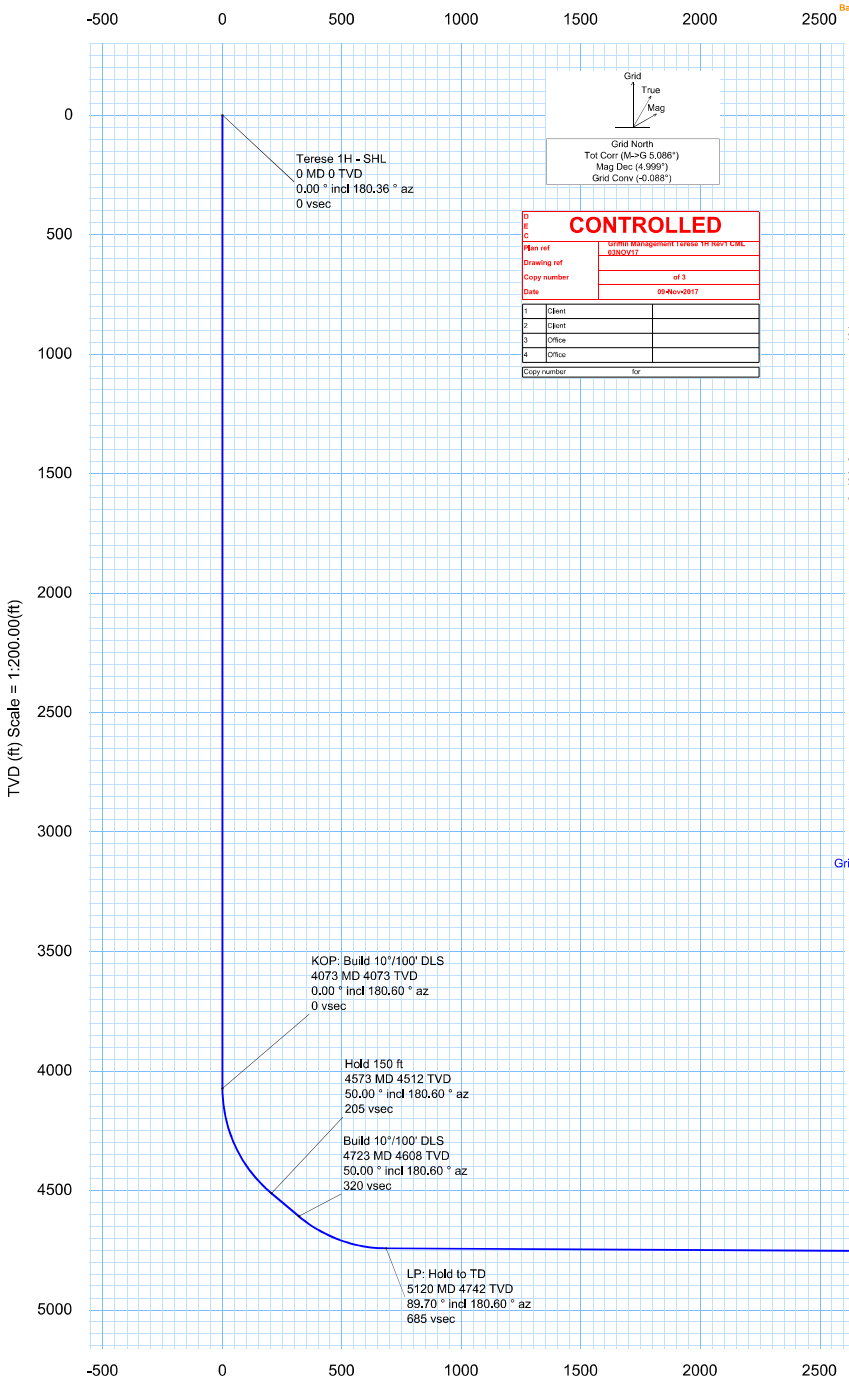
Rev1

Borehole:	Well:	Field:	Structure:
Original Borehole	Griffin Management Terese 1H	Barber County, KS (NAD 27, Southern Zone)	WWD #14

Gravity & Magnetic Parameters															
Model:	HDGM 2017	Dip:	65.217°	Date:	03-Nov-2017	Surface Location	NAD27 Kansas State Plane, Southern Zone, US Feet					Miscellaneous			
MagDec:	4.999°	FS:	51267.703nT	Gravity FS:	999.069mgn (9.80665 Based)	Lat:	N 37 11 44.55	Northing:	192665ftUS	Grid Conv:	-0.0879°	Slot:	Terese 1H	TVD Ref:	RKB(1596ft above Unknown)
						Lon:	W 98 38 35.05	Easting:	1958325ftUS	Scale Fact:	1.00001471	Plan:	Rev1 CML 03NOV17		

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
Terese 1H - SHL	0.00	0.00	180.36	0.00	0.00	0.00	0.00	
KOP: Build 10°/100' DLS	4072.63	0.00	180.60	4072.63	0.00	0.00	0.00	0.00
Hold 150 ft	4572.63	50.00	180.60	4511.54	204.67	-204.66	-2.14	10.00
Build 10°/100' DLS	4722.63	50.00	180.60	4607.96	319.57	-319.56	-3.35	0.00
LP: Hold to TD	5119.63	89.70	180.60	4742.00	684.86	-684.82	-7.17	10.00
Terese 1H - PBHL	8785.05	89.70	180.60	4761.30	4350.24	-4350.00	-45.50	0.00



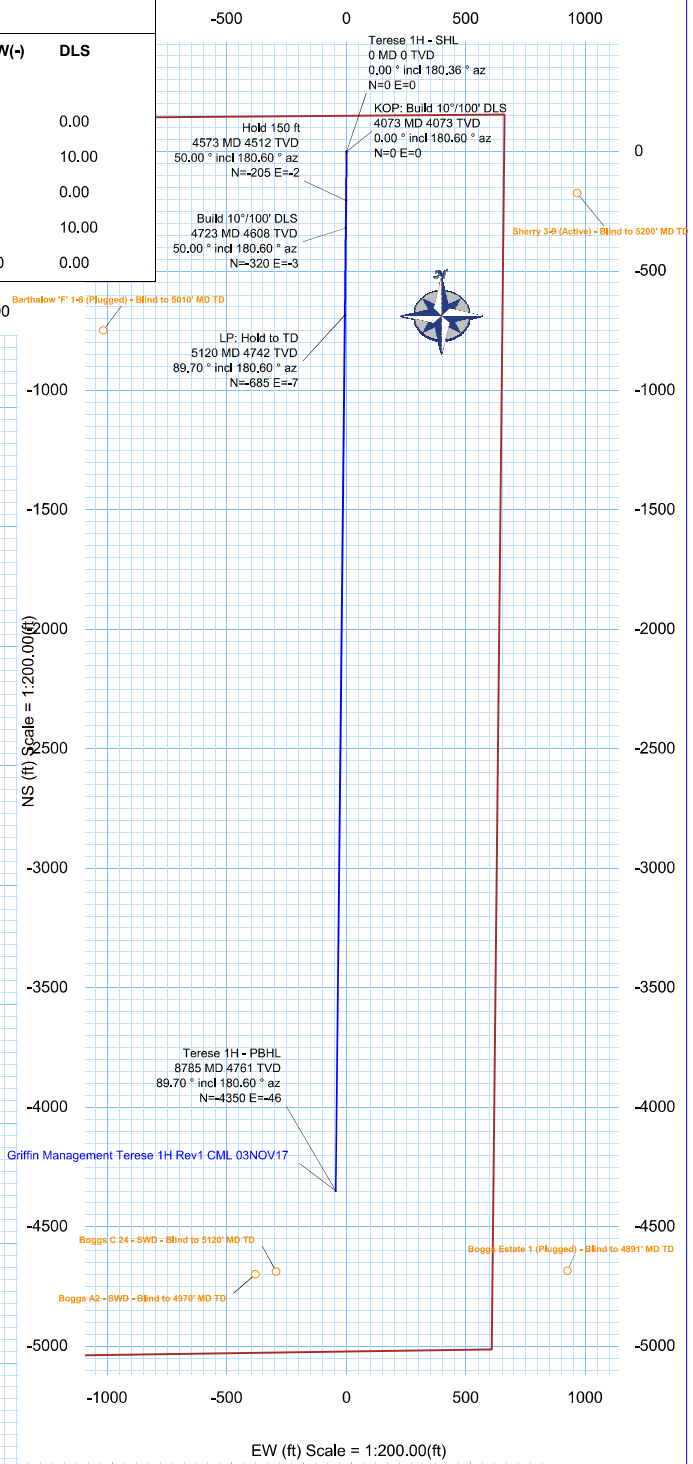
Grid
True
Mag
Grid North
Tot Corr (M->G 5.086°)
Mag Dec (4.999°)
Grid Conv (-0.088°)

CONTROLLED

Plan ref	Griffin Management Terese 1H Rev1 CML 03NOV17
Drawing ref	
Copy number	of 3
Date	09-Nov-2017

1	Client	
2	Client	
3	Office	
4	Office	

Copy number for



Vertical Section (ft) Azim = 180.60° Scale = 1:200.00(ft) Origin = 0N/-S, 0E/-W

Schlumberger

Griffin Management Terese 1H Rev1 CML 03NOV17 Proposal Geodetic Report

(Def Plan)

Report Date:	November 10, 2017 - 10:50 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Griffin Management	**Vertical Section Azimuth:**	180.599 ° (Grid North)
Field:	Barber County, KS (NAD 27, Southern Zone)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Griffin Management Terese 1H / Terese 1H	**TVD Reference Datum:**	RKB
Well:	Griffin Management Terese 1H	**TVD Reference Elevation:**	1596.000 ft above Unknown
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	1581.000 ft above Unknown
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	4.999 °
Survey Name:	Griffin Management Terese 1H Rev1 CML 03NOV17	**Total Gravity Field Strength:**	999.0692mgn (9.80665 Based)
Survey Date:	November 03, 2017	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	89.703 ° / 4350.238 ft / 5.857 / 0.914	**Total Magnetic Field Strength:**	51267.703 nT
Coordinate Reference System:	NAD27 Kansas State Plane, Southern Zone, US Feet	**Magnetic Dip Angle:**	65.217 °
Location Lat / Long:	N 37° 11' 44.54555", W 98° 38' 35.04736"	**Declination Date:**	November 03, 2017
Location Grid N/E Y/X:	N 192665.000 ftUS, E 1958325.000 ftUS	**Magnetic Declination Model:**	HDGM 2017
CRS Grid Convergence Angle:	-0.0879 °	**North Reference:**	Grid North
Grid Scale Factor:	1.00001471	**Grid Convergence Used:**	-0.0879 °
Version / Patch:	2.10.565.0	**Total Corr Mag North->Grid North:**	5.0865 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Terese 1H - SHL	0.00	0.00	180.36	0.00	0.00	0.00	0.00	N/A	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	100.00	0.00	180.60	100.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	200.00	0.00	180.60	200.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	300.00	0.00	180.60	300.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	400.00	0.00	180.60	400.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	500.00	0.00	180.60	500.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	600.00	0.00	180.60	600.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	700.00	0.00	180.60	700.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	800.00	0.00	180.60	800.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	900.00	0.00	180.60	900.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1000.00	0.00	180.60	1000.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1100.00	0.00	180.60	1100.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1200.00	0.00	180.60	1200.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1300.00	0.00	180.60	1300.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1400.00	0.00	180.60	1400.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1500.00	0.00	180.60	1500.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1600.00	0.00	180.60	1600.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1700.00	0.00	180.60	1700.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1800.00	0.00	180.60	1800.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	1900.00	0.00	180.60	1900.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2000.00	0.00	180.60	2000.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2100.00	0.00	180.60	2100.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2200.00	0.00	180.60	2200.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2300.00	0.00	180.60	2300.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2400.00	0.00	180.60	2400.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2500.00	0.00	180.60	2500.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2600.00	0.00	180.60	2600.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2700.00	0.00	180.60	2700.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2800.00	0.00	180.60	2800.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	2900.00	0.00	180.60	2900.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3000.00	0.00	180.60	3000.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3100.00	0.00	180.60	3100.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3200.00	0.00	180.60	3200.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3300.00	0.00	180.60	3300.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3400.00	0.00	180.60	3400.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3500.00	0.00	180.60	3500.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3600.00	0.00	180.60	3600.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3700.00	0.00	180.60	3700.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3800.00	0.00	180.60	3800.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	3900.00	0.00	180.60	3900.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	4000.00	0.00	180.60	4000.00	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
KOP: Build 10°/100' DLS	4072.63	0.00	180.60	4072.63	0.00	0.00	0.00	0.00	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	4100.00	2.74	180.60	4099.99	0.65	-0.65	-0.01	10.00	192664.35	1958324.99	N 37 11 44.54	W 98 38 35.05
	4200.00	12.74	180.60	4198.95	14.10	-14.10	-0.15	10.00	192650.90	1958324.85	N 37 11 44.41	W 98 38 35.05
	4300.00	22.74	180.60	4294.08	44.53	-44.52	-0.47	10.00	192620.48	1958324.53	N 37 11 44.11	W 98 38 35.05
	4400.00	32.74	180.60	4382.48	91.01	-91.00	-0.95	10.00	192574.00	1958324.05	N 37 11 43.65	W 98 38 35.06
	4500.00	42.74	180.60	4461.46	152.13	-152.13	-1.59	10.00	192512.87	1958323.41	N 37 11 43.04	W 98 38 35.06
Hold 150 ft	4572.63	50.00	180.60	4511.54	204.67	-204.66	-2.14	10.00	192460.34	1958322.86	N 37 11 42.52	W 98 38 35.07
	4600.00	50.00	180.60	4529.13	225.63	-225.62	-2.36	0.00	192439.38	1958322.64	N 37 11 42.31	W 98 38 35.07
	4700.00	50.00	180.60	4593.41	302.24	-302.22	-3.16	0.00	192362.77	1958321.83	N 37 11 41.56	W 98 38 35.08
Build 10°/100' DLS	4722.63	50.00	180.60	4607.96	319.57	-319.56	-3.35	0.00	192345.44	1958321.65	N 37 11 41.39	W 98 38 35.08
	4800.00	57.74	180.60	4653.55	382.02	-381.99	-4.00	10.00	192283.00	1958321.00	N 37 11 40.77	W 98 38 35.09
	4900.00	67.74	180.60	4699.29	470.79	-470.77	-4.93	10.00	192194.23	1958320.07	N 37 11 39.89	W 98 38 35.10
	5000.00	77.74	180.60	4728.93	566.17	-566.14	-5.93	10.00	192098.86	1958319.07	N 37 11 38.95	W 98 38 35.11
	5100.00	87.74	180.60	4741.56	665.24	-665.20	-6.96	10.00	191999.79	1958318.04	N 37 11 37.97	W 98 38 35.12
LP: Hold to TD	5119.63	89.70	180.60	4742.00	684.86	-684.82	-7.17	10.00	191980.17	1958317.83	N 37 11 37.77	W 98 38 35.12
	5200.00	89.70	180.60	4742.42	765.23	-765.19	-8.01	0.00	191899.80	1958316.99	N 37 11 36.98	W 98 38 35.13
	5300.00	89.70	180.60	4742.94	865.23	-865.18	-9.06	0.00	191799.80	1958315.94	N 37 11 35.99	W 98 38 35.14
	5400.00	89.70	180.60	4743.47	965.23	-965.18	-10.10	0.00	191699.81	1958314.90	N 37 11 35.00	W 98 38 35.15
	5500.00	89.70	180.60	4743.99	1065.23	-1065.17	-11.15	0.00	191599.82	1958313.85	N 37 11 34.01	W 98 38 35.16
	5600.00	89.70	180.60	4744.52	1165.23	-1165.16	-12.19	0.00	191499.82	1958312.81	N 37 11 33.03	W 98 38 35.18
	5700.00	89.70	180.60	4745.04	1265.23	-1265.16	-13.24	0.00	191399.83	1958311.76	N 37 11 32.04	W 98 38 35.19
	5800.00	89.70	180.60	4745.57	1365.23	-1365.15	-14.28	0.00	191299.83	1958310.72	N 37 11 31.05	W 98 38 35.20
	5900.00	89.70	180.60	4746.09	1465.22	-1465.14	-15.33	0.00	191199.84	1958309.67	N 37 11 30.06	W 98 38 35.21
	6000.00	89.70	180.60	4746.62	1565.22	-1565.14	-16.38	0.00	191099.84	1958308.62	N 37 11 29.07	W 98 38 35.22
	6100.00	89.70	180.60	4747.14	1665.22	-1665.13	-17.42	0.00	190999.85	1958307.58	N 37 11 28.08	W 98 38 35.23
	6200.00	89.70	180.60	4747.67	1765.22	-1765.12	-18.47	0.00	190899.85	1958306.53	N 37 11 27.09	W 98 38 35.24
	6300.00	89.70	180.60	4748.19	1865.22	-1865.12	-19.51	0.00	190799.86	1958305.49	N 37 11 26.10	W 98 38 35.25
	6400.00	89.70	180.60	4748.72	1965.22	-1965.11	-20.56	0.00	190699.87	1958304.44	N 37 11 25.12	W 98 38 35.26
	6500.00	89.70	180.60	4749.24	2065.22	-2065.10	-21.60	0.00	190599.87	1958303.40	N 37 11 24.13	W 98 38 35.28
	6600.00	89.70	180.60	4749.77	2165.21	-2165.10	-22.65	0.00	190499.88	1958302.35	N 37 11 23.14	W 98 38 35.29
	6700.00	89.70	180.60	4750.30	2265.21	-2265.09	-23.70	0.00	190399.88	1958301.30	N 37 11 22.15	W 98 38 35.30
	6800.00	89.70	180.60	4750.82	2365.21	-2365.08	-24.74	0.00	190299.89	1958300.26	N 37 11 21.16	W 98 38 35.31
	6900.00	89.70	180.60	4751.35	2465.21	-2465.08	-25.79	0.00	190199.89	1958299.21	N 37 11 20.17	W 98 38 35.32
	7000.00	89.70	180.60	4751.88	2565.21	-2565.07	-26.83	0.00	190099.90	1958298.17	N 37 11 19.18	W 98 38 35.33
	7100.00	89.70	180.60	4752.40	2665.21	-2665.06	-27.88	0.00	189999.90	1958297.12	N 37 11 18.19	W 98 38 35.34
	7200.00	89.70	180.60	4752.93	2765.21	-2765.05	-28.92	0.00	189899.91	1958296.08	N 37 11 17.21	W 98 38 35.35
	7300.00	89.70	180.60	4753.46	2865.20	-2865.05	-29.97	0.00	189799.92	1958295.03	N 37 11 16.22	W 98 38 35.36
	7400.00	89.70	180.60	4753.98	2965.20	-2965.04	-31.02	0.00	189699.92	1958293.98	N 37 11 15.23	W 98 38 35.37
	7500.00	89.70	180.60	4754.51	3065.20	-3065.03	-32.06	0.00	189599.93	1958292.94	N 37 11 14.24	W 98 38 35.39
	7600.00	89.70	180.60	4755.04	3165.20	-3165.03	-33.11	0.00	189499.93	1958291.89	N 37 11 13.25	W 98 38 35.40
	7700.00	89.70	180.60	4755.57	3265.20	-3265.02	-34.15	0.00	189399.94	1958290.85	N 37 11 12.26	W 98 38 35.41
	7800.00	89.70	180.60	4756.09	3365.20	-3365.01	-35.20	0.00	189299.94	1958289.80	N 37 11 11.27	W 98 38 35.42

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' "")	Longitude (E/W ° ' "")
	7900.00	89.70	180.60	4756.62	3465.20	-3465.01	-36.24	0.00	189199.95	1958288.75	N 37 11 10.29 W	98 38 35.43
	8000.00	89.70	180.60	4757.15	3565.19	-3565.00	-37.29	0.00	189099.96	1958287.71	N 37 11 9.30 W	98 38 35.44
	8100.00	89.70	180.60	4757.68	3665.19	-3664.99	-38.34	0.00	188999.96	1958286.66	N 37 11 8.31 W	98 38 35.45
	8200.00	89.70	180.60	4758.21	3765.19	-3764.99	-39.38	0.00	188899.97	1958285.62	N 37 11 7.32 W	98 38 35.46
	8300.00	89.70	180.60	4758.73	3865.19	-3864.98	-40.43	0.00	188799.97	1958284.57	N 37 11 6.33 W	98 38 35.47
	8400.00	89.70	180.60	4759.26	3965.19	-3964.97	-41.47	0.00	188699.98	1958283.53	N 37 11 5.34 W	98 38 35.48
	8500.00	89.70	180.60	4759.79	4065.19	-4064.97	-42.52	0.00	188599.98	1958282.48	N 37 11 4.35 W	98 38 35.50
	8600.00	89.70	180.60	4760.32	4165.19	-4164.96	-43.56	0.00	188499.99	1958281.43	N 37 11 3.36 W	98 38 35.51
	8700.00	89.70	180.60	4760.85	4265.18	-4264.95	-44.61	0.00	188399.99	1958280.39	N 37 11 2.38 W	98 38 35.52
Terese 1H - PBHL	8785.05	89.70	180.60	4761.30	4350.24	-4350.00	-45.50	0.00	188314.94	1958279.50	N 37 11 1.54 W	98 38 35.53

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
Air Gap	1	0.000	15.000	1/100.000	12.250	9.625		ZERO	Original Borehole / Griffin Management Terese 1H Rev1 CML 03NOV17
12 1/4" Surface Hole	1	15.000	350.000	1/100.000	12.250	9.625		NAL_MWD-NON_SLB	Original Borehole / Griffin Management Terese 1H Rev1
8 3/4" Vertical - 3rd Party	1	350.000	4000.000	1/100.000	8.750	7.000		NAL_MWD-NON_SLB	Original Borehole / Griffin Management Terese 1H Rev1
8.75in Curve - HDGM Survey Correction	1	4000.000	5120.000	1/100.000	8.750	7.000		NAL_MWD_1.0_DEG	Original Borehole / Griffin Management Terese 1H Rev1 CML 03NOV17
6.125in Lateral - HDGM Survey Correction	1	5120.000	8785.054	1/100.000	6.125	4.500		NAL_MWD_1.0_DEG	Original Borehole / Griffin Management Terese 1H Rev1 CML 03NOV17

Schlumberger

Section 2

Plan vs Actual

Schlumberger

Griffin Management

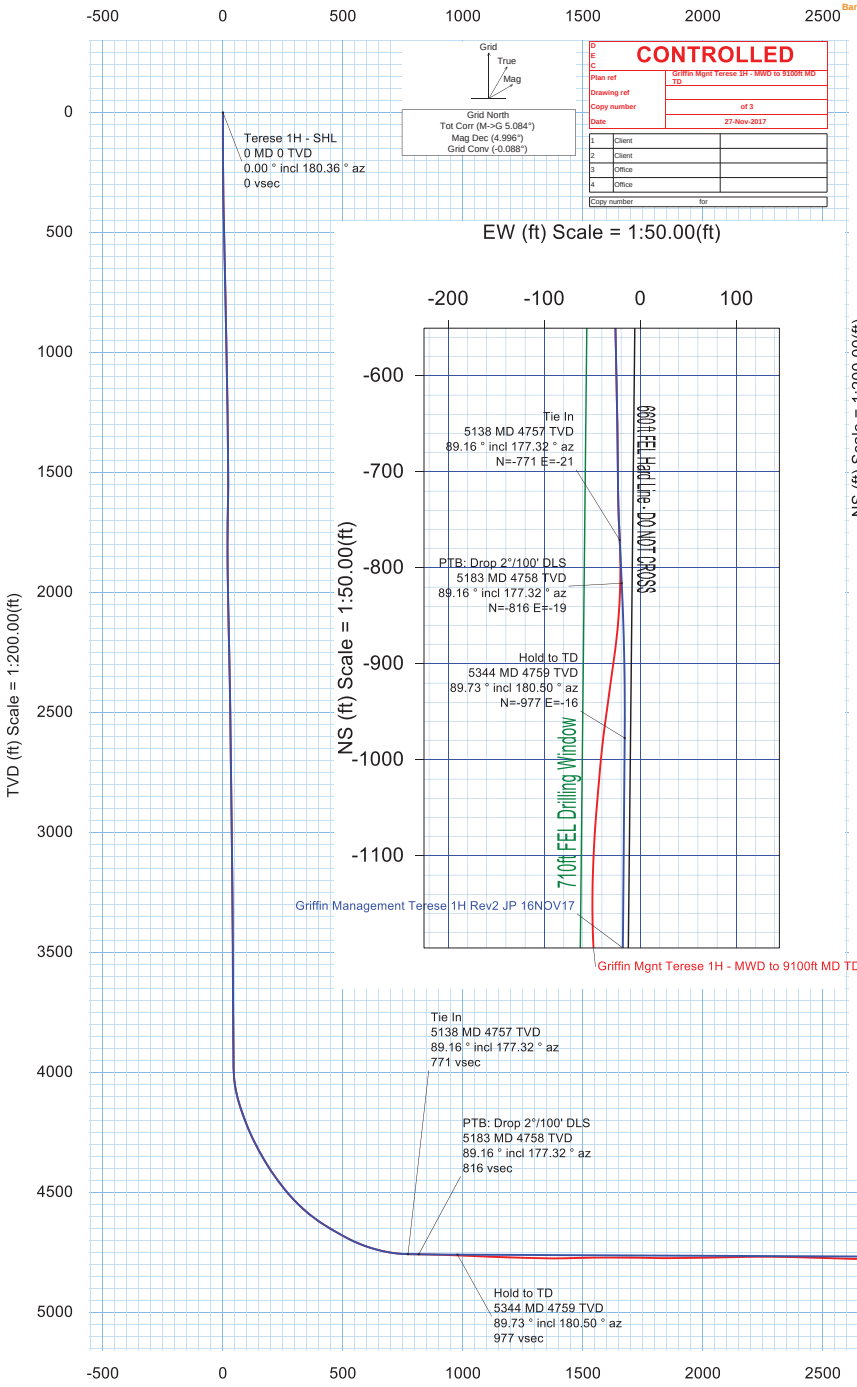
Final PVA - Rev2

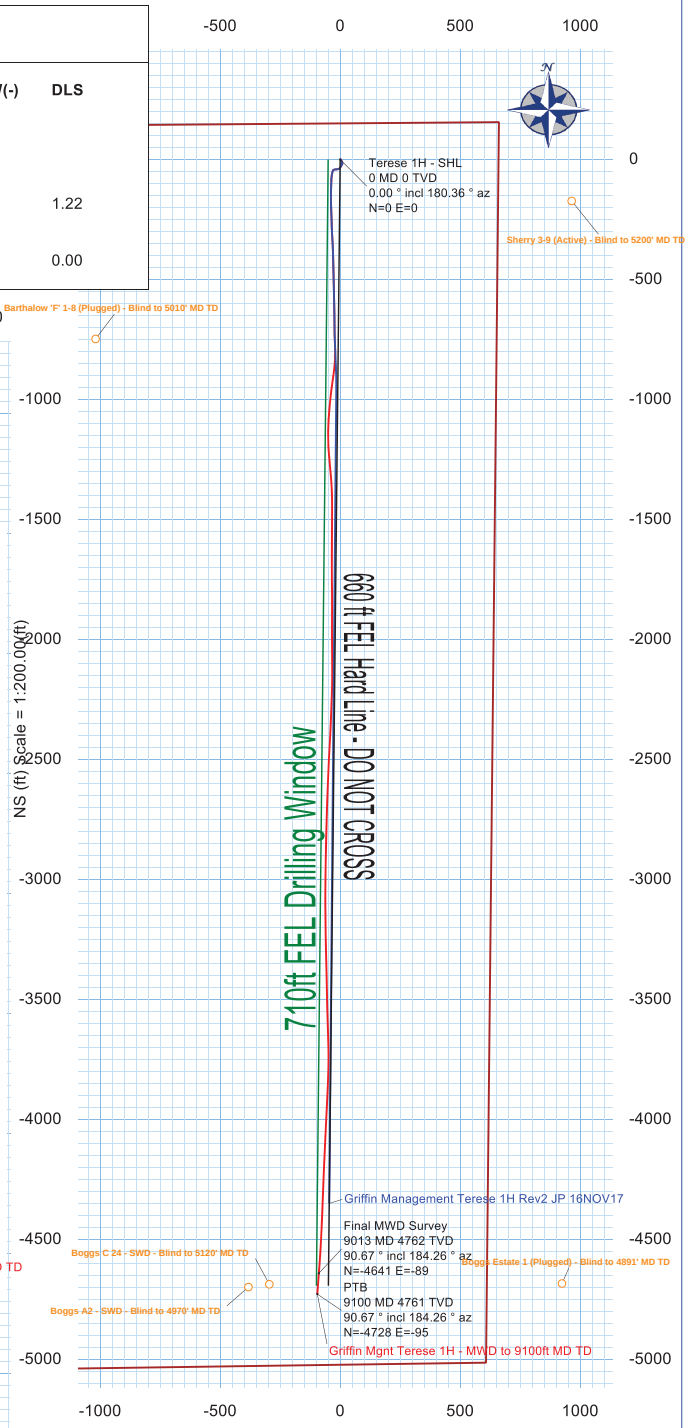
Borehole:	Well:	Field:	Structure:
Original Borehole	Griffin Management Terese 1H	Barber County, KS (NAD 27, Southern Zone)	WWD 14

Gravity & Magnetic Parameters																	
Model:	HDGM 2017	Dip:	65.215°	Date:	16-Nov-2017	Surface Location	NAD27 Kansas State Plane, Southern Zone, US Feet							Miscellaneous			
MagDec:	4.996°	FS:	51263.34nT	Gravity FS:	999.069mgn (9.80665 Based)	Lat:	N 37 11 44.55	Northing:	192665ftUS	Grid Conv:	-0.0879°			Slot:	Terese 1H	TVD Ref:	RKB(1596ft above Unknown)
						Lon:	W 98 38 35.05	Easting:	1958325ftUS	Scale Fact:	1.00001471			Plan:	Griffin Mgnt Terese 1H - MWD to 9100ft MD TD		

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
Terese 1H - SHL	0.00	0.00	180.36	0.00	0.00	0.00	0.00	
Final MWD Survey	9013.00	90.67	184.26	4761.90	4641.69	-4641.02	-88.69	1.22
PTB	9100.00	90.67	184.26	4760.89	4728.51	-4727.77	-95.16	0.00





Vertical Section (ft) Azim = 180.60° Scale = 1:200.00(ft) Origin = 0N/-S, 0E/-W

Schlumberger

Griffin Mgnt Terese 1H - MWD to 9100ft MD TD Survey Geodetic Report

(Def Survey)

Report Date:	November 27, 2017 - 08:45 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Griffin Management	**Vertical Section Azimuth:**	180.598 ° (Grid North)
Field:	Barber County, KS (NAD 27, Southern Zone)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Griffin Management Terese 1H / Terese 1H	**TVD Reference Datum:**	RKB
Well:	Griffin Management Terese 1H	**TVD Reference Elevation:**	1596.000 ft above Unknown
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	1581.000 ft above Unknown
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	4.996 °
Survey Name:	Griffin Mgnt Terese 1H - MWD to 9100ft MD TD	**Total Gravity Field Strength:**	999.0692mgn (9.80665 Based)
Survey Date:	November 09, 2017	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	187.267 ° / 4766.910 ft / 6.230 / 0.996	**Total Magnetic Field Strength:**	51263.340 nT
Coordinate Reference System:	NAD27 Kansas State Plane, Southern Zone, US Feet	**Magnetic Dip Angle:**	65.215 °
Location Lat / Long:	N 37° 11' 44.54555", W 98° 38' 35.04736"	**Declination Date:**	November 16, 2017
Location Grid N/E Y/X:	N 192665.000 ftUS, E 1958325.000 ftUS	**Magnetic Declination Model:**	HDGM 2017
CRS Grid Convergence Angle:	-0.0879 °	**North Reference:**	Grid North
Grid Scale Factor:	1.00001471	**Grid Convergence Used:**	-0.0879 °
Version / Patch:	2.10.565.0	**Total Corr Mag North->Grid North:**	5.0835 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Terese 1H - SHL	0.00	0.00	180.36	0.00	0.00	0.00	0.00	N/A	192665.00	1958325.00	N 37 11 44.55	W 98 38 35.05
	78.50	0.83	83.55	78.50	-0.07	0.06	0.56	1.06	192665.06	1958325.56	N 37 11 44.55	W 98 38 35.04
	138.50	0.87	104.52	138.49	-0.01	0.00	1.44	0.52	192665.00	1958326.44	N 37 11 44.55	W 98 38 35.03
	197.97	0.72	119.28	197.96	0.27	-0.30	2.20	0.42	192664.70	1958327.20	N 37 11 44.54	W 98 38 35.02
	260.15	0.74	133.36	260.13	0.73	-0.76	2.83	0.29	192664.24	1958327.83	N 37 11 44.54	W 98 38 35.01
	320.06	0.95	130.19	320.03	1.31	-1.35	3.49	0.36	192663.65	1958328.49	N 37 11 44.53	W 98 38 35.00
	378.40	1.31	153.36	378.36	2.21	-2.26	4.16	0.99	192662.74	1958329.16	N 37 11 44.52	W 98 38 35.00
	437.19	1.36	156.86	437.14	3.45	-3.50	4.74	0.16	192661.50	1958329.74	N 37 11 44.51	W 98 38 34.99
	498.87	1.31	159.70	498.80	4.78	-4.84	5.27	0.13	192660.16	1958330.27	N 37 11 44.50	W 98 38 34.98
	562.57	1.37	163.95	562.48	6.19	-6.25	5.73	0.18	192658.75	1958330.73	N 37 11 44.48	W 98 38 34.98
	626.28	1.48	161.88	626.17	7.70	-7.76	6.20	0.19	192657.24	1958331.20	N 37 11 44.47	W 98 38 34.97
	689.91	1.21	155.79	689.79	9.09	-9.16	6.73	0.48	192655.84	1958331.73	N 37 11 44.46	W 98 38 34.96
	753.37	1.00	146.60	753.23	10.15	-10.23	7.31	0.43	192654.77	1958332.31	N 37 11 44.44	W 98 38 34.96
	817.00	1.10	164.68	816.85	11.20	-11.28	7.78	0.54	192653.72	1958332.78	N 37 11 44.43	W 98 38 34.95
	880.38	1.36	167.23	880.22	12.52	-12.60	8.10	0.42	192652.40	1958333.10	N 37 11 44.42	W 98 38 34.95
	944.03	1.06	165.92	943.85	13.82	-13.91	8.41	0.47	192651.09	1958333.41	N 37 11 44.41	W 98 38 34.94
	1007.40	1.14	175.86	1007.21	15.02	-15.11	8.60	0.33	192649.89	1958333.60	N 37 11 44.40	W 98 38 34.94
	1071.01	0.97	163.87	1070.81	16.16	-16.26	8.80	0.44	192648.74	1958333.80	N 37 11 44.38	W 98 38 34.94
	1134.39	1.14	177.06	1134.18	17.31	-17.40	8.98	0.47	192647.60	1958333.98	N 37 11 44.37	W 98 38 34.94
	1198.01	0.94	175.86	1197.79	18.46	-18.55	9.05	0.32	192646.45	1958334.05	N 37 11 44.36	W 98 38 34.94
	1261.32	0.77	201.69	1261.09	19.37	-19.47	8.93	0.66	192645.53	1958333.93	N 37 11 44.35	W 98 38 34.94
	1324.69	0.76	211.89	1324.46	20.13	-20.22	8.55	0.22	192644.78	1958333.55	N 37 11 44.35	W 98 38 34.94
	1388.27	0.61	206.30	1388.03	20.80	-20.88	8.18	0.26	192644.12	1958333.18	N 37 11 44.34	W 98 38 34.95
	1451.86	0.67	211.24	1451.62	21.42	-21.50	7.84	0.13	192643.50	1958332.84	N 37 11 44.33	W 98 38 34.95
	1515.41	0.41	238.78	1515.17	21.86	-21.94	7.45	0.57	192643.06	1958332.45	N 37 11 44.33	W 98 38 34.95
	1578.88	0.46	306.97	1578.64	21.83	-21.90	7.05	0.77	192643.10	1958332.05	N 37 11 44.33	W 98 38 34.96
	1642.42	1.42	345.24	1642.17	20.92	-20.99	6.65	1.73	192644.01	1958331.65	N 37 11 44.34	W 98 38 34.96
	1706.13	0.85	329.72	1705.86	19.75	-19.82	6.21	1.01	192645.18	1958331.21	N 37 11 44.35	W 98 38 34.97
	1769.80	0.33	278.64	1769.53	19.32	-19.38	5.79	1.09	192645.62	1958330.79	N 37 11 44.35	W 98 38 34.98
	1833.34	0.15	250.41	1833.07	19.32	-19.38	5.53	0.33	192645.62	1958330.53	N 37 11 44.35	W 98 38 34.98
	1896.82	0.64	215.50	1896.55	19.64	-19.70	5.24	0.83	192645.30	1958330.24	N 37 11 44.35	W 98 38 34.98
	1960.36	0.86	190.69	1960.08	20.40	-20.46	4.95	0.61	192644.54	1958329.95	N 37 11 44.34	W 98 38 34.99
	2023.80	1.12	177.70	2023.51	21.49	-21.54	4.89	0.54	192643.46	1958329.89	N 37 11 44.33	W 98 38 34.99
	2087.18	1.25	173.22	2086.88	22.80	-22.85	4.99	0.25	192642.15	1958329.99	N 37 11 44.32	W 98 38 34.99
	2150.82	1.06	186.13	2150.51	24.07	-24.12	5.01	0.50	192640.88	1958330.01	N 37 11 44.31	W 98 38 34.98
	2214.34	1.34	190.12	2214.01	25.39	-25.44	4.82	0.46	192639.56	1958329.82	N 37 11 44.29	W 98 38 34.99
	2277.69	1.11	186.30	2277.35	26.73	-26.78	4.62	0.39	192638.22	1958329.62	N 37 11 44.28	W 98 38 34.99
	2341.34	1.24	196.32	2340.99	28.00	-28.05	4.36	0.38	192636.95	1958329.36	N 37 11 44.27	W 98 38 34.99
	2405.06	1.21	220.30	2404.69	29.19	-29.23	3.73	0.80	192635.77	1958328.73	N 37 11 44.26	W 98 38 35.00
	2468.65	1.09	222.16	2468.27	30.15	-30.19	2.89	0.20	192634.81	1958327.89	N 37 11 44.25	W 98 38 35.01
	2532.33	0.85	219.61	2531.94	30.98	-31.00	2.18	0.38	192634.00	1958327.18	N 37 11 44.24	W 98 38 35.02
	2596.04	0.94	215.84	2595.64	31.77	-31.79	1.58	0.17	192633.21	1958326.58	N 37 11 44.23	W 98 38 35.03
	2659.62	0.60	202.55	2659.22	32.50	-32.52	1.14	0.60	192632.48	1958326.14	N 37 11 44.22	W 98 38 35.03
	2723.29	0.93	217.62	2722.88	33.23	-33.23	0.70	0.60	192631.76	1958325.70	N 37 11 44.22	W 98 38 35.04
	2786.57	0.89	200.45	2786.15	34.10	-34.10	0.21	0.43	192630.90	1958325.21	N 37 11 44.21	W 98 38 35.04
	2850.12	0.84	202.21	2849.69	35.00	-35.00	-0.13	0.09	192630.00	1958324.87	N 37 11 44.20	W 98 38 35.05
	2913.51	0.86	216.65	2913.08	35.81	-35.81	-0.59	0.34	192629.19	1958324.41	N 37 11 44.19	W 98 38 35.05
	2977.23	0.73	219.72	2976.79	36.51	-36.50	-1.14	0.21	192628.50	1958323.86	N 37 11 44.18	W 98 38 35.06
	3040.74	0.91	224.30	3040.30	37.19	-37.18	-1.75	0.30	192627.82	1958323.25	N 37 11 44.18	W 98 38 35.07
	3104.28	1.15	236.13	3103.82	37.92	-37.89	-2.63	0.50	192627.11	1958322.37	N 37 11 44.17	W 98 38 35.08
	3167.50	0.97	242.88	3167.03	38.53	-38.49	-3.63	0.35	192626.51	1958321.37	N 37 11 44.16	W 98 38 35.09
	3230.86	1.25	238.67	3230.38	39.14	-39.09	-4.70	0.46	192625.91	1958320.30	N 37 11 44.16	W 98 38 35.10
	3294.27	1.49	250.10	3293.77	39.79	-39.73	-6.07	0.57	192625.27	1958318.93	N 37 11 44.15	W 98 38 35.12
	3357.80	2.05	258.30	3357.27	40.33	-40.25	-7.96	0.97	192624.75	1958317.04	N 37 11 44.15	W 98 38 35.14
	3421.35	2.35	262.58	3420.78	40.75	-40.64	-10.36	0.54	192624.36	1958314.64	N 37 11 44.14	W 98 38 35.17
	3484.86	2.39	259.72	3484.23	41.18	-41.05	-12.96	0.20	192623.95	1958312.04	N 37 11 44.14	W 98 38 35.21
	3548.20	2.53	263.14	3547.51	41.61	-41.45	-15.64	0.32	192623.55	1958309.36	N 37 11 44.14	W 98 38 35.24
	3611.52	1.97	269.01	3610.79	41.82	-41.64	-18.12	0.96	192623.36	1958306.88	N 37 11 44.13	W 98 38 35.27
	3674.78	1.88	261.11	3674.01	42.02	-41.82	-20.23	0.44	192623.18	1958304.77	N 37 11 44.13	W 98 38 35.30
	3738.24	1.90	259.87	3737.43	42.39	-42.16	-22.30	0.07	192622.84	1958302.70	N 37 11 44.13	W 98 38 35.32
	3801.00	1.31	259.41	3800.17	42.73	-42.48	-24.03	0.94	192622.52	1958300.97	N 37 11 44.13	W 98 38 35.34
	3865.25	1.33	246.46	3864.40	43.17	-42.91	-25.43	0.46	192622.09	1958299.57	N 37 11 44.12	W 98 38 35.36
	3973.30	1.89	252.70	3972.41	44.23	-43.94	-28.28	0.54	192621.06	1958296.72	N 37 11 44.11	W 98 38 35.40
	4009.00	3.97	210.59	4008.07	45.48	-45.18	-29.47	8.02	192619.82	1958295.53	N 37 11 44.10	W 98 38 35.41
	4040.00	7.19	197.91	4038.92	48.27	-47.95	-30.62	11.06	192617.05	1958294.38	N 37 11 44.07	W 98 38 35.42
	4072.00	10.91	193.83	4070.51	53.13	-52.80	-31.96	11.79	192612.20	1958293.04	N 37 11 44.02	W 98 38 35.44
	4104.00	14.45	192.34	4101.73	59.99	-59.64	-33.53	11.11	192605.36	1958291.47	N 37 11 43.96	W 98 38 35.46
	4136.00	17.33	189.26	4132.50	68.61	-68.25	-35.16	9.37	192596.75	1958289.84	N 37 11 43.87	W 98 38 35.48
	4167.00	19.35	183.88	4161.93	78.30	-77.93	-36.25	8.50	192587.07	1958288.75	N 37 11 43.77	W 98 38 35.49
	4199.00	20.16	180.72	4192.04	89.11	-88.73	-36.67	4.19	192576.27	1958288.33	N 37 11 43.67	W 98 38 35.50
	4231.00	21.65	182.43	4221.94	100.53	-100.15	-36.99	5.03	192564.85	1958288.01	N 37 11 43.55	W 98 38 35.50
	4263.00	23.91	181.88	4251.44	112.91	-112.53	-37.46	7.09	192552.47	1958287.54	N 37 11 43.43	W 98 38 35.51
	4294.00	26.15	181.99	4279.53	126.02	-125.63	-37.90	7.23	192539.37	1958287.10	N 37 11 43.30	W 98 38 35.51
	4326.00	27.75	181.74	4308.05	140.52	-140.13	-38.37	5.01	192524.87	1958286.63	N 37 11 43.16	W 98 38 35.52
	4357.00	29.04	180.07	4335.32	155.26	-154.87	-38.60	4.89	192510.13	1958286.40	N 37 11 43.01	W 98 38 35.52
	4389.00	30.49	178.75	4363.10	171.14	-170.75	-38.43	4.97	192494.25	1958286.57	N 37 11 42.86	W 98 38 35.52
	4421.00	32.19	178.22	4390.43	187.77	-187.39	-37.99	5.38	192477.61	1958287.01	N 37 11 42.69	W 98 38 35.51
	4453.00	34.13	178.01	4417.22	205.26	-204.88	-37.41	6.07	192460.12	1958287.59	N 37 11 42.52	W 98 38 35.51
	4485.00	36.23	177.45	4443.37	223.67	-223.30	-36.68	6.64	192441.70	1958288.32	N 37 11 42.34	W 98 38 35.50
	4517.00	37.78	178.28	4468.92	242.91	-242.55	-35.97	5.09	192422.45	1958289.03	N 37 11 42.15	W 98 38 35.49
	4548.00	39.50	178.38	4493.14	262.25	-261.90	-35.40	5.55	192403.10	1958289.60	N 37 11 41.96	W 98 38 35.48
	4580.00	41.96	178.06	4517.38	283.11	-282.76	-34.75	7.72	192382.23	1958290.25	N 37 11 41.75	W 98 38 35.47
	4612.00	44.57	177.37	4540.68	305.01	-304.68	-33.87	8.29	192360.32	1958291.13	N 37 11 41.53	W 98 38 35.46

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	4643.00	47.32	176.20	4562.24	327.24	-326.92	-32.62	9.28	192338.08	1958292.38	N 37 11 41.31	W 98 38 35.44
	4675.00	49.75	177.11	4583.43	351.16	-350.85	-31.22	7.89	192314.14	1958293.78	N 37 11 41.08	W 98 38 35.43
	4707.00	52.52	178.67	4603.50	376.04	-375.75	-30.31	9.45	192289.25	1958294.69	N 37 11 40.83	W 98 38 35.41
	4739.00	55.90	178.38	4622.22	401.98	-401.69	-29.64	10.59	192263.30	1958295.36	N 37 11 40.57	W 98 38 35.41
	4770.00	58.35	178.06	4639.04	427.99	-427.71	-28.83	7.95	192237.28	1958296.17	N 37 11 40.32	W 98 38 35.40
	4802.00	59.71	178.88	4655.51	455.41	-455.14	-28.10	4.78	192209.85	1958296.90	N 37 11 40.05	W 98 38 35.39
	4834.00	60.06	178.62	4671.56	483.08	-482.82	-27.50	1.30	192182.18	1958297.50	N 37 11 39.77	W 98 38 35.38
	4865.00	61.86	178.52	4686.61	510.16	-509.91	-26.82	5.81	192155.08	1958298.18	N 37 11 39.50	W 98 38 35.37
	4897.00	64.80	178.89	4700.97	538.74	-538.49	-26.18	9.25	192126.50	1958298.82	N 37 11 39.22	W 98 38 35.36
	4929.00	67.73	178.71	4713.85	568.01	-567.78	-25.56	9.17	192097.22	1958299.44	N 37 11 38.93	W 98 38 35.35
	4960.00	70.66	178.87	4724.86	596.97	-596.75	-24.95	9.46	192068.25	1958300.05	N 37 11 38.64	W 98 38 35.34
	4992.00	73.78	178.90	4734.63	627.43	-627.21	-24.36	9.75	192037.78	1958300.64	N 37 11 38.34	W 98 38 35.34
	5024.00	76.55	179.17	4742.82	658.35	-658.13	-23.84	8.69	192006.86	1958301.16	N 37 11 38.04	W 98 38 35.33
	5055.00	79.88	179.51	4749.15	688.68	-688.47	-23.49	10.80	191976.52	1958301.51	N 37 11 37.74	W 98 38 35.32
	5087.00	83.27	179.34	4753.84	720.33	-720.12	-23.17	10.61	191944.87	1958301.83	N 37 11 37.43	W 98 38 35.32
	5118.00	86.92	177.60	4756.49	751.18	-750.99	-22.35	13.03	191914.00	1958302.65	N 37 11 37.12	W 98 38 35.31
	5138.00	89.16	177.32	4757.18	771.14	-770.96	-21.46	11.29	191894.03	1958303.54	N 37 11 36.92	W 98 38 35.30
	5233.00	88.66	185.68	4758.99	866.03	-865.83	-23.94	8.81	191799.16	1958301.06	N 37 11 35.98	W 98 38 35.33
	5264.00	88.77	188.23	4759.68	896.83	-896.59	-27.70	8.23	191768.40	1958297.30	N 37 11 35.68	W 98 38 35.37
	5294.00	88.10	187.64	4760.50	926.57	-926.29	-31.84	2.98	191738.70	1958293.16	N 37 11 35.39	W 98 38 35.42
	5325.00	87.87	187.96	4761.59	957.31	-956.98	-36.04	1.27	191708.01	1958288.96	N 37 11 35.08	W 98 38 35.47
	5355.00	87.42	186.21	4762.82	987.09	-986.73	-39.74	6.02	191678.26	1958285.26	N 37 11 34.79	W 98 38 35.52
	5386.00	87.70	184.77	4764.14	1017.95	-1017.56	-42.70	4.73	191647.43	1958282.30	N 37 11 34.48	W 98 38 35.56
	5416.00	87.93	184.99	4765.29	1047.84	-1047.43	-45.25	1.06	191617.56	1958279.75	N 37 11 34.19	W 98 38 35.59
	5447.00	87.65	183.44	4766.48	1078.76	-1078.32	-47.53	5.08	191586.67	1958277.47	N 37 11 33.88	W 98 38 35.61
	5478.00	87.48	182.30	4767.80	1109.70	-1109.25	-49.08	3.71	191555.74	1958275.92	N 37 11 33.58	W 98 38 35.63
	5508.00	87.87	180.67	4769.02	1139.67	-1139.21	-49.86	5.58	191525.77	1958275.14	N 37 11 33.28	W 98 38 35.64
	5600.00	88.66	175.01	4771.81	1231.49	-1231.07	-46.39	6.21	191433.92	1958278.61	N 37 11 32.37	W 98 38 35.60
	5692.00	88.43	174.97	4774.14	1323.02	-1322.69	-38.36	0.25	191342.30	1958286.64	N 37 11 31.47	W 98 38 35.50
	5784.00	91.01	179.37	4774.59	1414.82	-1414.54	-33.82	5.54	191250.44	1958291.18	N 37 11 30.56	W 98 38 35.44
	5876.00	91.46	180.49	4772.61	1506.79	-1506.52	-33.71	1.31	191158.46	1958291.29	N 37 11 29.65	W 98 38 35.44
	5967.00	90.06	180.10	4771.40	1597.78	-1597.51	-34.17	1.60	191067.47	1958290.83	N 37 11 28.75	W 98 38 35.44
	6060.00	89.44	180.40	4771.81	1690.78	-1690.51	-34.58	0.74	190974.47	1958290.42	N 37 11 27.83	W 98 38 35.44
	6152.00	88.82	179.03	4773.20	1782.75	-1782.49	-34.12	1.63	190882.48	1958290.88	N 37 11 26.92	W 98 38 35.44
	6247.00	90.56	180.41	4773.72	1877.73	-1877.48	-33.66	2.34	190787.49	1958291.34	N 37 11 25.98	W 98 38 35.43
	6343.00	90.84	179.91	4772.55	1973.72	-1973.48	-33.93	0.60	190691.50	1958291.07	N 37 11 25.03	W 98 38 35.43
	6438.00	91.07	179.27	4770.96	2068.69	-2068.46	-33.25	0.72	190596.51	1958291.75	N 37 11 24.09	W 98 38 35.42
	6534.00	91.29	180.57	4768.98	2164.67	-2164.44	-33.11	1.37	190500.54	1958291.89	N 37 11 23.14	W 98 38 35.42
	6630.00	89.66	182.37	4768.19	2260.64	-2260.40	-35.58	2.53	190404.58	1958289.42	N 37 11 22.20	W 98 38 35.44
	6726.00	89.16	182.24	4769.18	2356.60	-2356.31	-39.44	0.54	190308.66	1958285.56	N 37 11 21.25	W 98 38 35.49
	6821.00	88.10	183.44	4771.45	2451.49	-2451.17	-44.14	1.69	190213.80	1958280.86	N 37 11 20.31	W 98 38 35.55
	6917.00	87.93	182.43	4774.77	2547.35	-2546.98	-49.05	1.07	190117.99	1958275.95	N 37 11 19.36	W 98 38 35.61
	7012.00	89.10	181.94	4777.24	2642.28	-2641.88	-52.67	1.34	190023.09	1958272.32	N 37 11 18.42	W 98 38 35.65
	7107.00	89.16	181.74	4778.68	2737.25	-2736.82	-55.72	0.22	189928.15	1958269.27	N 37 11 17.49	W 98 38 35.68
	7203.00	89.05	181.32	4780.18	2833.23	-2832.77	-58.29	0.45	189832.19	1958266.71	N 37 11 16.54	W 98 38 35.71
	7298.00	90.11	181.03	4780.87	2928.22	-2927.75	-60.24	1.16	189737.22	1958264.76	N 37 11 15.60	W 98 38 35.74
	7394.00	90.73	180.54	4780.17	3024.21	-3023.74	-61.55	0.82	189641.23	1958263.45	N 37 11 14.65	W 98 38 35.75
	7489.00	90.84	179.44	4778.87	3119.20	-3118.72	-61.53	1.16	189546.24	1958263.46	N 37 11 13.71	W 98 38 35.75
	7585.00	88.21	179.40	4779.67	3215.17	-3214.71	-60.56	2.74	189450.25	1958264.44	N 37 11 12.76	W 98 38 35.73
	7680.00	87.87	178.32	4782.91	3310.06	-3309.63	-58.67	1.19	189355.33	1958266.33	N 37 11 11.82	W 98 38 35.71
	7776.00	90.95	178.95	4783.90	3405.99	-3405.59	-56.39	3.27	189259.37	1958268.61	N 37 11 10.87	W 98 38 35.68
	7871.00	92.75	178.76	4780.84	3500.89	-3500.52	-54.49	1.91	189164.44	1958270.51	N 37 11 9.93	W 98 38 35.65
	7967.00	93.19	178.15	4775.86	3596.70	-3596.35	-51.91	0.78	189068.60	1958273.09	N 37 11 8.99	W 98 38 35.62
	8062.00	93.42	178.40	4770.39	3691.46	-3691.15	-49.05	0.36	188973.80	1958275.95	N 37 11 8.05	W 98 38 35.58
	8158.00	90.50	181.48	4767.10	3787.38	-3787.07	-48.95	4.42	188877.88	1958276.05	N 37 11 7.10	W 98 38 35.58
	8253.00	88.77	182.60	4767.71	3882.34	-3882.00	-52.33	2.17	188782.95	1958272.67	N 37 11 6.16	W 98 38 35.62
	8363.00	90.34	182.90	4768.56	3992.25	-3991.87	-57.61	1.45	188673.08	1958267.39	N 37 11 5.08	W 98 38 35.68
	8458.00	90.84	182.50	4767.58	4087.19	-4086.76	-62.09	0.67	188578.19	1958262.91	N 37 11 4.14	W 98 38 35.74
	8554.00	91.18	182.65	4765.89	4183.11	-4182.65	-66.40	0.39	188482.30	1958258.60	N 37 11 3.19	W 98 38 35.79
	8649.00	90.73	182.22	4764.31	4278.05	-4277.55	-70.43	0.66	188387.40	1958254.57	N 37 11 2.25	W 98 38 35.84
	8745.00	91.62	181.98	4762.34	4374.00	-4373.46	-73.95	0.96	188291.48	1958251.05	N 37 11 1.30	W 98 38 35.88
	8841.00	89.33	182.68	4761.54	4469.94	-4469.37	-77.85	2.49	188195.57	1958247.15	N 37 11 0.35	W 98 38 35.92
	8936.00	89.83	183.84	4762.24	4564.84	-4564.21	-83.26	1.33	188100.73	1958241.74	N 37 10 59.42	W 98 38 35.99
Final MWD Survey	9013.00	90.67	184.26	4761.90	4641.69	-4641.02	-88.69	1.22	188023.92	1958236.31	N 37 10 58.66	W 98 38 36.06
PTB	9100.00	90.67	184.26	4760.89	4728.51	-4727.77	-95.16	0.00	187937.17	1958229.84	N 37 10 57.80	W 98 38 36.13

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	15.000	1/98.425	0.000	0.000	NAL_MWD_1.0_DEG-Depth Only	Original Borehole / Griffin Mgnt Terese 1H - MWD to 9100ft MD TD
	1	15.000	15.000	Act Stns	12.250	9.625	NAL_MWD_1.0_DEG-Depth Only	Original Borehole / Griffin Mgnt Terese 1H - MWD to 9100ft MD TD
	1	15.000	350.000	Act Stns	12.250	9.625	NAL_MWD_1.0_DEG	Original Borehole / Griffin Mgnt Terese 1H - MWD to 9100ft MD
	1	350.000	5183.000	Act Stns	8.750	7.000	NAL_MWD_1.0_DEG	Original Borehole / Griffin Mgnt Terese 1H - MWD to 9100ft MD
	1	5183.000	9100.000	Act Stns	6.125	4.500	NAL_MWD_1.0_DEG	Original Borehole / Griffin Mgnt Terese 1H - MWD to 9100ft MD

BASIC ENERGY SERVICES
PRESSURE PUMPING

Liberal Yard #1717 - Phone 620-624-2277 - 1700 S. Country Estates Road, Liberal KS 67901

Job Log

Customer:	Griffin Management	Cement Pump No.:	38119-19570	Operator TRK No.:	39878		
Address:		Ticket #:	1718-14561 L	Bulk TRK No.:	19959-19918	19960-19860	
City, State, Zip:		Job Type:	Z42 Cement Production Casing				
Service District:	1718	Well Type:	OIL				
Well Name and No.:	Terese #1H	Well Location:	8,33,12	County:	Barber	State:	Ks

Type of Cmt	Sacks	Additives	Truck Loaded On		
PREMIUM	20	1/4#DEFOAMER, 10%SALT, .75%FRICTION REDUCER, .1%WCA-1	19959-19918	Front	Back
PREMIUM	470	1/4#DEFOAMER, 10%SALT, .75%FRICTION REDUCER, .1%WCA-1	19960-19860	Front	Back
				Front	Back

Lead/Tail:	Weight #1 Gal.	Cu/Ft/sk	Water Requirements	CU. FT.	Man Hours / Personnel	
Lead:	13	1.98	11.12	39.6	Man Hours:	96
Tail:	15.6	1.24	5.43	582.8	# of Men on Job:	4

Time (am/pm)	(BPM)	Volume (BBLS)	Pumps T	Pumps C	Pressure(PSI) Tubing	Pressure(PSI) Casing	Description of Operation and Materials
19:30							ON LOC, SAFTEY MTG, R.U.
13:25					8800		TEST LINES
1:32 PM	3.5						PUMP DOWN BALL
1:56 PM		75			2200		SEAT BALL
2:25 PM					4000-620		BLOW OUT BALL EST RATE
14:30	4.5	24			730		PUMP MUD FLUSH
14:41	4.5	5			600		H2O SPACER
2:45 PM	5				750		START SCAVENGER@ 13#
2:47	5.6	8			800		START TAIL @15.6#
15:13		104					SHUT DOWN, DROP DART, WASHUP TO PIT
15:18	5.5				40		START DISPLACEMENT
15:26	3	30			300		SLOW RATE
15:31	5	44			1100		INCREASE RATE
15:39	3	90			500		SLOW RATE
15:46		108			1000-1500		PLUG DOWN
15:50					1500-0		RELEASE PSI, FLOAT HELD
15:57	5.5				710		REV OUT
16:31		161					SHUT DOWN, CIRC 25 BBL TO PIT
16:34					1500		SHUT IN BOP, TEST STRING
16:39					1500-0		RELEASE PSI
							JOB COMPLETE
							THANK YOU FOR YOUR BUSINESS!!!

Size Hole	6 1/8	Depth	9100'			TYPE			
Size & Wt. Csg.	4 1/2 11.6	Depth	4391.48	New / Used	NEW	Packer		Depth	
tbg.	4' D.P.	Depth	4699.83			Retainer		Depth	
Top Plugs		Type				Perfs		CIBP	

Customer Signature:	Basic Representative:	CHAD HINZ
	Basic Signature:	
	Date of Service:	11/23/2017