

HALLIBURTON

iCem[®] Service

Encana Oil & Gas (USA) INC. - EBUS

For: Charlie Parker

Date: Wednesday, September 10, 2014

Encana Vogl-Geist 2D-5H-F267

Vogl-Geist 2D-5H-F267

Sincerely,
Sheldon Cotts

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Vogl-Geist 2D-5H-F267** cement **Production** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton [Brighton]

Job Times

	Date	Time	Time Zone
Requested Time On Location	5/22/14	05:00	MST
Call Out	5/22/14	00:00	MST
On Location	5/22/14	04:00	MST
Job Started	5/22/14	08:10	MST
Job Completed	5/22/14	12:08	MST
Depart Location	5/22/14	14:00	MST

1.2 Cementing Job Summary

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 340078	Ship To #: 3191324	Quote #:	Sales Order #: 0901350657							
Customer: ENCANA OIL & GAS (USA) INC. - EBUS		Customer Rep: CHARLIE PARKER								
Well Name: VOGL-GEIST	Well #: 2D-5 H-F267	API/UWI #: 05-123-37783-00								
Field: WATTENBERG	City (SAP): FIR	County/Parish: WELD	State: COLORADO							
Legal Description: SW NW-5-2N-67W-2597FNL-2353FWL										
Contractor:		Rig/Platform Name/Num: H&P 278								
Job BOM: 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA/HB50180		Srvc Supervisor: Christopher Pickell								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type	BHST									
Job depth MD	14488ft	Job Depth TVD	7179 ft							
Water Depth	Wk Ht Above Floor									
Perforation Depth (MD)	From	To								
Well Data										
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		7	6.368	23		N-80	0	7641	0	7179
Casing		4.5	3.92	13.5		P-110	0	14488	0	7179
Open Hole Section			6.125				7641	14510		
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	4.5				Top Plug	4.5	1	HES		
Float Shoe	4.5	1	HES	14483.2	Bottom Plug	4.5		HES		
Float Collar	4.5	1	HES	14481.9	SSR plug set	4.5		HES		
Insert Float	4.5	1	HES	14480.2	Plug Container	4.5		HES		
RSI Tool	4.5	1	HES	14432.3	Centralizers	4.5	30	HES		
Miscellaneous Materials										
Gelling Agt	Conc		Surfactant	Conc	Acid Type	Qty	Conc			
Treatment Fld	Conc		Inhibitor	Conc	Sand Type	Size	Qty			
Fluid Data										
Stage/Plug #: 1										
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	13 lb/gal Tuned Spacer III	Tuned Spacer III	30	bbl	13	8.93				
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	

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Cementing Job Summary

2	ExpandaCem B2	EXPANDACEM (TM) SYSTEM	545	sack	13.8	1.67		4	7.72
7.72 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	Fresh Water	Fresh Water	218.5	bbl	8.3				
Cement Left In Pipe		Amount	ft		Reason		Shoe Joint		
Comment									

1.3 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	PS Pump Press (psi)	Comb Pump Rate (bbl/min)	Comb Pump Total	Comment
Event	1	Call Out	Call Out	5/22/2014	00:00:00	USER					Crew called out 0000 to be on location at 0500. Crew was Christopher Pickell, Kendall Broom, Keaton Simmons, Jay Gleeson, James Wiley.
Event	2	Depart Shop for Location	Depart Shop for Location	5/22/2014	03:30:00	USER					Safety meeting held for journey. Left they yard for H&P 278
Event	3	Arrive At Loc	Arrive At Loc	5/22/2014	04:00:00	USER					Arrive at location 1 hour early. Rig had 9 joints left to run
Event	4	Rig-up Lines	Rig-up Lines	5/22/2014	04:15:00	USER					Hazard hunt performed. Rig up planned and executed.
Event	5	Safety Meeting - Pre Job	Safety Meeting - Pre Job	5/22/2014	07:30:00	USER					Safety meeting held with rig crew to discuss job safety and procedure.
Event	6	Start Job	Start Job	5/22/2014	08:10:31	COM5					Blackhawk rotating, reciprocating plug container used on job
Event	7	Test Lines	Test Lines	5/22/2014	08:16:47	COM5	8.33	4500	1	2	Pressure test lines to 4500 psi. Checked for visible leaks and pressure loss
Event	8	Pump Spacer 1	Pump Spacer 1	5/22/2014	08:21:17	COM5	13	750	4	32	Pump 30 bbl Tuned Spacer 13 ppg 8.93 cuft/sk 33.9 gal/sk. Deck engine began to shut off at random times while pumping spacer
Event	9	Pump Cement	Pump Cement	5/22/2014	08:29:06	COM5	13.8	1150	8	194	Pump 162 bbl Expandacem cement 525 sks 13.8 ppg 1.67 cuft/sk 7.72 gal/sk
Event	10	Shutdown	Shutdown	5/22/2014	08:58:53	COM5					
Event	11	Clean Lines	Clean Lines	5/22/2014	08:59:14	COM5					Wash pumps and lines to wash out

Event	12	Pump Spacer 1	Pump Spacer 1	5/22/2014	09:06:01	COM5	8.33	15	2.60	197	Pump 3 bbl MMCR water
Event	13	Shutdown	Shutdown	5/22/2014	09:07:05	COM5					Shutdown for blackhawk to hand to drop plug
Event	14	Drop Top Plug	Drop Top Plug	5/22/2014	09:07:12	COM5					Plug dropped by blackhawk hand and confirmed dropped by indicator once displacement began
Event	15	Pump Displacement	Pump Displacement	5/22/2014	09:08:02	COM5	9.5	1885	6	415.5	Pumped 1/4 bbl MMCR water to launch plug. Wiper balls were dropped and pumped 6.75 bbl MMCR water behind them followed by 193 bbl of brine water and finishing with 18.5 bbl fresh water for a total of 218.5 bbl displacement
Event	16	Displ Reached Cmmt	Displ Reached Cmmt	5/22/2014	09:12:47	COM5					Displacement reached cement with 22 bbl away
Event	17	Bump Plug	Bump Plug	5/22/2014	09:51:48	COM5	8.33	1855.00	3		Calculated pressure to land was 800. Plug landed with 1450 psi going 500 psi over to 1855. Pressure fell off immediately to 1250 and continued to drop.
Event	18	Other	Check Floats	5/22/2014	09:53:08	COM5		1026.00			Pressure was held for a minute and a half then released at 1026 psi. Floats held, 1 bbl back to tanks. Informed company man we may have a problem having lost over 800 psi. Was determined it could have been the position of the pipe while reciprocating at time of landing plug
Event	19	Other	Casing Test	5/22/2014	09:56:34	COM5	8.33	1553.00	2	417.5	Attempted to pressure up to 2500 psi for a 30 minute casing test. Pressure

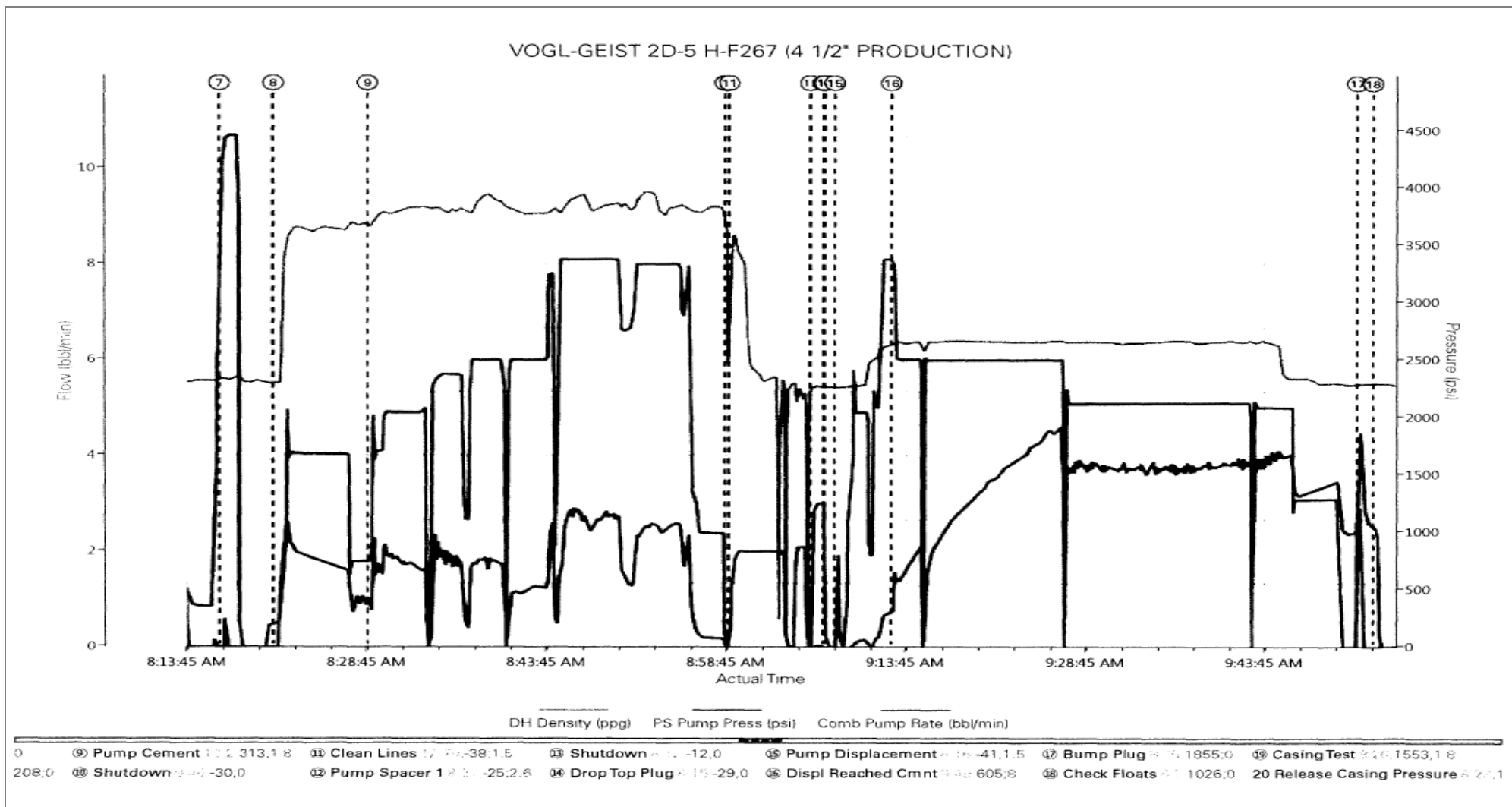
											wouldnt exceed 1650 after 2 bbl had been pumped in. Pumps were shutdown.
Event	20	Release Casing Pressure	Release Casing Pressure	5/22/2014	10:01:21	USER		1087.00			Discussion was held with company rep about possible reasoning why we couldnt pressure up the casing. Casing pressure was released after leveling off at 1087
Event	21	Other	Casing Test	5/22/2014	10:13:52	COM5	8.33	1772.00	2	420.5	After discussing the company rep it was decided possible the very airated brine water could be the cause and more fluid would need to be pumped to achieve the compression needed for 2500 psi. 3 bbl was pumped and 1650 psi was achieved. After shutting down psi leveled off at 1100
Event	22	Other	Casing Test	5/22/2014	10:16:30	COM5	8.33	1696.00	2	422.5	Pumped 1 bbl pressuring up to 1750. After shutting down psi leveled off at 1223.
Event	23	Other	Casing Test	5/22/2014	10:20:13	COM5	8.33	1703.00	2	423.5	Pumped 1 bbl pressuring up to 1750. After shutting down psi leveled off at 1243.
Event	24	Other	Release Casing Pressure	5/22/2014	10:21:57	COM5		1239.00			Pressure was released and 3/4 bbl came back to tanks
Event	25	Other	Casing Test	5/22/2014	10:25:20	COM5	8.33	1386.00	2	424	Pumped 1/2 bbl pressuring up to 1386. Deck engine quit while attempting to pressure up
Event	26	Other	Casing Test	5/22/2014	10:26:32	COM5	8.33	1867.00	2	424.5	Restarted engine and pumped 1/2 bbl pressuring up to 1867 psi. Leveled off at 1305. Flow was seen at shakers

Event	27	Other	Casing Test	5/22/2014	10:31:01	COM5	8.33	1789.00	2	425.5	Pump 1 bbl pressuring up to 1789. Leveled off at 1337. Customer was informed and further pumping could be harmful to the integrity of the cement and possible create micro annulus or cement window. Pumping anymore fluid was ruled out. Flow as seen at shakers
Event	28	Other	Release Casing Pressure	5/22/2014	10:35:58	COM5		1337.00			Casing pressure was released, 3/4 bbl back to tanks
Event	29	Other	Meet with company man	5/22/2014	10:37:41	USER					Possible reasons for not being able to achieve casing test were discussed with customer. All possibilities were ruled out other than possible casing collar leak. Release line was shut and psi was monitored on the truck for 15 minutes. 5 psi was gained, likely due to thermal expansion. It was determined nothing further could be done today and HES crew was released from location.
Event	30	End Job	End Job	5/22/2014	12:08:34	COM5					Good returns throughout the job. Deck engine stopped 5 times while pumping. 4 times not while pumping
Event	31	Rig Down Lines	Rig Down Lines	5/22/2014	12:10:00	USER					Safety meeting was held for rig down. Rigged down all equipment.
Event	32	Depart Location	Depart Location	5/22/2014	14:00:00	USER					Safety meeting was held for journey. Left location for the yard

1.4 Planned Pumping Schedule

- 1. Fill Lines with Water**
 - a. Density = 8.33 lb/gal
 - b. Volume = 2 bbls
- 2. Pressure Test Lines to 4500psi**
- 3. Pump Tuned Spacer III**
 - a. Density = 13 lb/gal
 - b. Volume = 30 bbl
 - c. Rate = 4 bpm
- 4. Pump ExpandaCem (Primary)**
 - a. Density = 13.8 lb/gal
 - b. Yield = 1.67 ft³/sk
 - c. Water Requirement = 7.72 gal/sk
 - d. Volume = 545 sks (162 bbls)
 - e. Rate = 6.0 bpm
- 5. Drop Top Plug**
- 6. Start Displacement**
- 7. Pump Displacement Water**
 - a. Density = 8.33 lb/gal
 - b. Volume = 218.5 bbls
 - c. Rate = 5.0 bpm
- 8. Land Plug – Anticipated Final Circulation Pressure 800 psi**

2.0 Custom Graph



3.0 Appendix

Insert Planned Pump Schedule from Proposal or actual Job Procedure built for job