



# INVOICE

INVOICE NUMBER: 13280

Mud Master Drilling Fluid Services Ltd.

1000, 639 - 5th Ave. SW

Calgary, AB T2P 0M9

Phone: 403.237.8900

Fax: 403.265.6199

[www.mudmaster.ca](http://www.mudmaster.ca)[info@mudmaster.ca](mailto:info@mudmaster.ca)

GST# 103797080

## SOLD TO:

Surge Energy Inc.

2100, 635 - 8th Ave SW

Calgary, AB

T2P 3M3

VIA: Open Invoice

INVOICE DATE: August 19, 2021

PAYMENT TERMS: Net 30

WELL NAME: Surge Energy Inc Provost

AFE: 21DR0695

COST CODE: 9310.326

SURFACE: 08-20-039-02 W4M

UWI: 103/08-21-039-02 W4M

RIG: Star Valley 102

## FIELD SUPERVISOR:

Shawn Schuster/Wade Zakaluzny

## FLUID SUPERVISOR:

Brian Mielke

## SALESPERSON:

Rob Nieuwesteeg

DESCRIPTION	UOM	QTY	UNIT PRICE	AMOUNT
Barite	40 kg	18	\$22.00	\$396.00
Bleach	20 L	6	\$65.00	\$390.00
Calcium Nitrate/Envirofloc	36.28 kg	13	\$44.00	\$572.00
Caustic Soda	22.68 kg	5	\$46.00	\$230.00
Caustic Potash	25 kg	4	\$100.00	\$400.00
Desco II CF	11.34 kg	14	\$100.00	\$1,400.00
Drispac Super Lo	22.68 kg	29	\$210.00	\$6,090.00
Gypsum	25 kg	62	\$11.00	\$682.00
Hyperdrill AF204RD	25 kg	2	\$195.00	\$390.00
Lignite/Humalite	22.68 kg	8	\$12.00	\$96.00
M & D Lube	205 l	1	\$1,400.00	\$1,400.00
Op-T-Con CS 3001	20 L	17	\$135.00	\$2,295.00
Polyxan	25 kg	13	\$250.00	\$3,250.00
Sawdust	6.8 kg	75	\$4.75	\$356.25
Sun Burst Beads	22.7 kg	10	\$107.00	\$1,070.00
Ultra Pac LV	22.68 kg	19	\$167.00	\$3,173.00
Ultra Pac R	22.68 kg	9	\$189.00	\$1,701.00
Walnut Med	22.68 kg	7	\$22.00	\$154.00
Mud Check	each	4	\$500.00	\$2,000.00
Travel Charge	km	150	\$1.00	\$150.00

SUBTOTAL: \$26,195.25

5% GST: \$1,309.76

Thank you for your business.

INVOICE TOTAL: \$27,505.01

If you have any questions regarding this invoice please call 403.237.8900 or email [accounting@mudmaster.ca](mailto:accounting@mudmaster.ca)

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Surge Energy Inc.  
Delivery Ticket Summary  
AFE: 21DR0695  
CC: 9310-326  
Surface: 08-20-039-02 W4M  
UWI: 103/08-21-039-02 W4M  
Rig: Star Valley 102  
Spud Date: August 9, 2021  
End Date: August 13, 2021  
Invoice: 13280

Mud Master Drilling Fluid Services Ltd.  
1000, 639 - 5th Ave SW, Calgary, AB, T2P 0M9  
Phone: 403.237.8000 Fax: 403.265.6199

Mud Master Summary of Transfer, Delivery and Credit Tickets						
	Transfer Ticket TT-210809-BJM In	Delivery Ticket DT-210812-BJM In	Transfer Ticket TT-210813-BJM Out	Total Product Received	Product Consumption per Tickets	Product Pricing per Program
Description						Total for Invoicing
Barite	36		-18	36	18	\$22.00 396.00
Bleach	13		-7	13	6	\$65.00 390.00
Calcium Nitrate / Envirofloc	23		-10	23	13	\$44.00 572.00
Caulstic Soda	5			5	5	\$46.00 230.00
Caulstic Potash	30		-26	30	4	\$100.00 400.00
Desco II CF	56		-42	56	14	\$100.00 1,400.00
Drispac Super Lo	40		-11	40	29	\$210.00 6,090.00
Gypsum	98		-36	98	62	\$11.00 682.00
Hyperdrill AF204RD	11		-9	11	2	\$195.00 390.00
Lignite / Humaltite	15		-7	15	8	\$12.00 96.00
M&O Tube	3		-2	3	1	\$1,400.00 1,400.00
Op-T-Con CS-3001	67		-50	67	17	\$135.00 2,295.00
Polygan	8	13	-8	21	13	\$250.00 3,250.00
Sawdust	225		-150	225	75	\$4.75 356.25
Sun Burst Beads	42		-32	42	10	\$107.00 1,070.00
Ultra Pac LV	24		-5	24	19	\$167.00 3,173.00
Ultra Pac R	33		-24	33	9	\$189.00 1,701.00
Walnut Med	99		-92	99	7	\$22.00 154.00
Mud Man Travel Charge/km					150	\$1.00 150.00
						24,195.25
Mud Check (<4 hours)					4	\$500.00 2,000.00
Mud Check (>4 hours)						\$650.00 0.00
						2,000.00
Internal Reference BIC						
Internal Reference DC						
Internal Reference SGP						
Internal Reference M&O						
Grand Total						26,195.25

Field Summary		
Field Summary FT- 20210813-BJM	Product Pricing per Field Summary	Total per Field Summary
18	\$19.00	\$342.00
6	\$68.00	\$408.00
13	\$44.00	\$572.00
5	\$46.00	\$230.00
4	\$110.00	\$440.00
14	\$100.00	\$1,400.00
29	\$210.00	\$6,090.00
62	\$11.00	\$682.00
2	\$195.00	\$390.00
8	\$12.00	\$96.00
1	\$1,450.00	\$1,450.00
17	\$135.00	\$2,295.00
13	\$250.00	\$3,250.00
75	\$4.75	\$356.25
10	\$107.00	\$1,070.00
19	\$167.00	\$3,173.00
9	\$174.00	\$1,566.00
7	\$22.00	\$154.00
150	\$1.00	\$150.00
		\$26,114.25
4	\$500.00	\$2,000.00
	\$650.00	\$0.00
		\$2,000.00
		\$26,114.25

Difference and Comments		
Consumption Difference MM Ticketing vs Field Summary	Value of Consumption Difference for MM Ticketing vs Field Summary	Comments
0	\$54.00	Pricing Per Program
0	-\$18.00	Pricing Per Program
0	\$0.00	
0	\$0.00	
0	-\$40.00	Pricing Per Program
0	\$0.00	
0	\$0.00	
0	\$0.00	
0	\$0.00	
0	\$0.00	
0	\$0.00	
0	-\$50.00	Pricing Per Program
0	\$0.00	
0	\$0.00	
0	\$0.00	
0	\$0.00	
0	\$0.00	
0	\$135.00	Pricing Per Program
0	\$154.00	
0	\$0.00	
	\$81.00	
	\$0.00	
	\$0.00	
	\$0.00	
	\$81.00	

TICKET #:

FT-20210813      BJM



1000, 638 - 5th Ave. SW, Calgary, Alberta, T2P 0M9  
Telephone (24hour): (403) 237-8900 Fax: (403) 265-6199

A/E / PO NUMBER:	21DR0695
DATE ISSUED:	August 13, 2021
WAREHOUSE:	Blackfalds, Ab
TRUCKER:	FORMULA POWELL
PHONE:	(403) 885-5151

WELL NAME:	Surge 103 Hz Provost
LSD:	8-21-35-2w4m
U.W.I.:	103
OPERATOR / INVOICE TO:	Surge Energy Inc
RIG NUMBER:	Star Valley Drig #102

[illegible]

Product Total:	\$ 24,114.25
Trucking and Product Handling Total:	\$ -
Engineering / Supervision Total:	\$ 1,500.00
Combined Drilling Fluids Total:	\$ 25,614.25

STAMP / COMMENTS:

**SURGE ENERGY INC** Provost 103/08-21-039-02W4  
Surface 8-20-39-2W4 (459.6m N, 245.6m W)  
UIW 103/08-21-039-02W4  
License #0500717 AFE 21DR0895  
Star Valley 102  
Billing.oilfield.clean@gmail.com  
Rep: Shawn Schuster 306-830-5903  
Rep Wade Zakaluzny 403-928-4882  
CODE 9310-326 / DRILLING MUD & CHEMICALS

ISSUED BY:

**Brian Mielke**

RECEIVED IN GOOD ORDER BY

**Shawn Schuster / Wade Zakaluzny**

DT ✓



1000, 639 - 5th Ave. SW  
Calgary, Alberta  
T2P 0M9

**TRANSFER TICKET**

TT- 210809 BJM - IN

**Date Shipped:****Origin:**

Well Name: Surge 103 Hz Provost  
Location: 2-17-39-2w4m  
U.W.I. 103  
Operator: Surge Energy Inc  
Rig Number: Star Valley Drig #102

**Destination:**

Well Name: Surge 103 Hz Provost  
Location: 8-21-39-2w4m  
U.W.I. 103  
Operator: Surge Energy Inc  
Rig Number: Star Valley Drig #102

103

PRODUCT	QUANTITY	UNIT WEIGHT	TOTAL WEIGHT
Barite	36	40.0 kg	1440 kg
Bleach	13	20.0 kg	260 kg
Calcium Nitrate	23	36.4 kg	836.28 kg
Caustic Potash	30	25.0 kg	750 kg
Caustic Soda	5	22.7 kg	113.4 kg
Desco II	56	11.3 kg	635.04 kg
Gypsum	98	25.0 kg	2450 kg
Humalite / Lignite	15	45.5 kg	681.75 kg
Hyperdrill AF 204RD	11	25.0 kg	275 kg
M&D Lube	3	175.0 kg	525 kg
Nut Shell M	99	22.7 kg	2245.32 kg
OptiCon	67	20.0 kg	1340 kg
Poly Xan	8	25.0 kg	200 kg
Sawdust	225	7.3 kg	1642.5 kg
Sunburst Beads	42	22.7 kg	953.4 kg
Ultra Pac Lo	24	25.0 kg	600 kg
Ultra Pac Reg	33	25.0 kg	825 kg
Drispac Super Lo	40	22.7 kg	907.2 kg

**TOTAL WEIGHT:** 16679.89 kg

Issued by:

Brian Mielke

Received / Released by:

Shaun Schuster / Bryan Walsh

DTV ✓



1000, 639 - 5th Ave. SW  
Calgary, Alberta  
T2P 0M9

**DELIVERY TICKET**

DT- 210812 BJM - 1A

**Date Shipped:****Origin:**

Well Name: Surge 103 Hz Provost  
Location: 8-21-39-2w4m  
U.W.I. 103  
Operator: Surge Energy Inc  
Rig Number: Star Valley Drlg #102

**Destination:**

Well Name: Mud Master Drilling Fluids  
Location: Calgary  
U.W.I.  
Operator:  
Rig Number:

PRODUCT		QUANTITY	UNIT WEIGHT	TOTAL WEIGHT
1	Barite		40.0 kg	kg
2	Bleach		20.0 kg	kg
3	Calcium Nitrate		36.4 kg	kg
4	Caustic Potash		25.0 kg	kg
5	Caustic Soda		22.7 kg	kg
6	Desco II		11.3 kg	kg
7	Gypsum		25.0 kg	kg
8	Humalite / Lignite		45.5 kg	kg
9	Hyperdrill AF 204RD		25.0 kg	kg
10	M&D Lube		175.0 kg	kg
11	Nut Shell M		22.7 kg	kg
12	OptiCon		20.0 kg	kg
13	Poly Xan	13	25.0 kg	325 kg
14	Sawdust		7.3 kg	kg
15	Sunburst Beads		22.7 kg	kg
16	Ultra Pac Lo		25.0 kg	kg
17	Ultra Pac Reg		25.0 kg	kg
18	Drispac Super Lo		22.7 kg	kg
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				

**TOTAL WEIGHT:** 325 kg

Issued by:

Received / Released by:

Brian Mielke

Shawn Schuster / Wade Zakaluzny

SIGNATURE

SIGNATURE

1000, 639 - 5th Ave. SW  
Calgary, Alberta  
T2P 0M9

**TRANSFER TICKET**

TT- 210813 BJM -OUT

**Date Shipped:**

**Origin:**

Well Name:

Location:

U.W.I.

Operator:

Rig Number:

Surge 103 Hz Provost

8-21-39-2w4m

103

Surge Energy Inc

Star Valley Drlg #102

**Destination:**

Well Name:

Location:

U.W.I.

Operator:

Rig Number:

Surge 103 Hz Provost

8-11-39-2w4m

Surge Energy Inc

Star Valley Drlg #102

106

PRODUCT	QUANTITY	UNIT WEIGHT	TOTAL WEIGHT
Barite	18	40.0 kg	720 kg
Bleach	7	20.0 kg	140 kg
Calcium Nitrate	10	36.4 kg	363.6 kg
Caustic Potash	26	25.0 kg	650 kg
Caustic Soda		22.7 kg	kg
Desco II	42	11.3 kg	476.28 kg
Gypsum	36	25.0 kg	900 kg
Humalite / Lignite	7	45.5 kg	318.15 kg
Hyperdrill AF 204RD	9	25.0 kg	225 kg
M&D Lube	2	175.0 kg	350 kg
Nut Shell M	92	22.7 kg	2086.56 kg
OptiCon	50	20.0 kg	1000 kg
Poly Xan	8	25.0 kg	200 kg
Sawdust	150	7.3 kg	1095 kg
Sunburst Beads	32	22.7 kg	726.4 kg
Ultra Pac Lo	5	25.0 kg	125 kg
Ultra Pac Reg	24	25.0 kg	600 kg
Drispac Super Lo	11	22.7 kg	249.48 kg

**TOTAL WEIGHT:** 10225.47 kg

Issued by:

Brian Mielke

Received / Released by:

Shawn Schuster / Wade Zakaluzny

DT



1000, 639 - 5th Ave. SW  
Calgary, Alberta  
T2P 0M9

**DELIVERY TICKET**

DT- 210812 BJM

**Date Shipped:****Origin:**

Well Name: Surge 103 Hz Provost  
Location: 8-21-39-2w4m  
U.W.I. 103  
Operator: Surge Energy Inc  
Rig Number: Star Valley Drig #102

**Destination:**

Well Name: Mud Master Drilling Fluids  
Location: Calgary  
U.W.I.  
Operator:  
Rig Number:

PRODUCT	QUANTITY	UNIT WEIGHT	TOTAL WEIGHT
Barite		40.0 kg	kg
Bleach		20.0 kg	kg
Calcium Nitrate		36.4 kg	kg
Caustic Potash		25.0 kg	kg
Caustic Soda		22.7 kg	kg
Desco II		11.3 kg	kg
Gypsum		25.0 kg	kg
Humalite / Lignite		45.5 kg	kg
Hyperdrill AF 204RD		25.0 kg	kg
M&D Lube		175.0 kg	kg
Nut Shell M		22.7 kg	kg
OptiCon		20.0 kg	kg
Poly Xan	13	25.0 kg	325 kg
Sawdust		7.3 kg	kg
Sunburst Beads		22.7 kg	kg
Ultra Pac Lo		25.0 kg	kg
Ultra Pac Reg		25.0 kg	kg
Drispac Super Lo		22.7 kg	kg

**TOTAL WEIGHT:** 325 kg

Issued by:

Received / Released by:

Brian Mielke

Shawn Schuster / Wade Zakaluzny

# DRILLING FLUIDS REPORT (WBM)

REPORT NUMBER: 2

WELL NAME: Surge 103 Hz Provost  
UJWL: 103  
OPERATOR: Surge Energy Inc  
OPERATOR REP: Shawn Schuster / Wade Zakaluzny  
PHONE NUMBER: (306) 830-5903  
RIG NUMBER: Star Valley Drig #102  
RIG MANAGER: Daryl Johnson  
PHONE NUMBER:

B.H.L.: 8-21-39-2w4m  
LSD: 8-20-39-2w4m  
DATE: August 11, 2021  
SPUD DATE: August 9, 2021  
DAYS FROM SPUD: 2  
WAREHOUSE: BLACKFALDS, AB  
TRUCKER: Formula Powell  
PHONE: (403) 885-5151



1000, 639 - 5th Ave. SW, Calgary, Alberta, T2P 0M9  
Telephone (24hour): (403) 237-8900 Fax: (403) 265-6199

HYDRAULICS ANALYSIS										PRESSURE LOSS		PUMP DATA		#1	#2
Interval	Hole (mm)	Wash (vol %)	Hole (Adjusted)	OD (mm)	ID (mm)	Length (m)	A.Vel.(m/min)	C.Vel (m/min)	Flow Profile	Ann.kPa	Pipe.kPa	Make	Grixmax	Emsco	
HWDP	205		205.00	102	63	103	69	87	TRANS	26	843	Model	1300	F-1000	
HWDP	200	10.00%	209.76	102	63	458	65	85	LAMI	103	3747	Liner (mm)	139.7	139.7	
DP	200	10.00%	209.76	102	63	409	65	85	LAMI	92	988	Stroke (mm)	304.8	254	
BHA	200	10.00%	209.76	102	83	40	65	85	LAMI	9	97	Output (L/stk)	14.01	11.67	
												SPM	61	73	
												Output (m³/min)	1.707		
												Pressure (kPa)	11800		
FLUID MANAGEMENT AND VOLUME SUMMARY (VOLUMES IN m³)										CASING DESIGN		DEVIATION SURVEY		Press. Loss @ bit	
ACTIVE SYSTEM										Type	OD (mm)	ID (mm)	Set @ (m)	Survey (deg)	83
Tank Volume: 37.0										Surf	219	206	103	Azimuth (deg.)	83.0
Hole Volume: 34.7										Inter				Depth (mTVD):	739.00
Annular Volume: 26.5										Inter				Depth (mWD):	1010.00
Pipe Capacity: 4.2															
Total Active: 67.7										Liner top					
FLUID ADDITIONS										Liner					
Previous Additions:										TOTAL PRESSURE LOSS (kPa)		PRODUCT		UNIT SIZE	
Daily Additions:										7063		CALCIUM NITRATE		36.3 kg	
Total Additions:												GYPSUM		25 kg	
Accum. Int. Losses:												HYPERDRILL AF 204RD		25 kg	
FLUID LOSSES												OPTICON		20 L	
Previous Losses:												SAWDUST		7.3 kg	
Daily Hole Losses:												ULTRA PAC REG		25 kg	
Daily Surf. Losses:												TRAVEL CHARGE			
Daily Total Losses:															
Accum. Int. Losses:															
SOLIDS CONTROL EQUIPMENT DESCRIPTION										HRS					
Shaker #1 Derrick SCREENS 230 230 230 230															
Shaker #2 Derrick SCREENS 230 230 230 230															
Shaker #3 SCREENS															
Shaker #4 SCREENS															
Centrifuge #1 Precision OF(kg/m³) 1060 UF (kg/m³) 1740															
Centrifuge #2 Precision OF(kg/m³) 1060 UF (kg/m³) 1740															
OF(kg/m³) UF (kg/m³)															
WELL DESIGN: HORIZONTAL															
CURRENT WELL INTERVAL: BUILD															
CURRENT FORMATION: SPARKY (SS)															
CURRENT ACTIVITY: DRILLING AHEAD - BUILD SECTION															
ACTIVE SYSTEM FLUID TYPE: PAC POLYMER															
FLUID PROPERTIES CHECK:										#1		#2		#3	
PRESENT DEPTH										mTVD		739			
										mMD		1010			
TIME SAMPLE TAKEN										11:00					
SAMPLE POINT										SHAKER					
FLOWLINE TEMPERATURE										deg.C		33			
FUNNEL VISCOSITY										s/L		50			
FLUID DENSITY										kg/m³		1070			
PRESSURE GRADIENT										kPa/m		10.50			
pH												9.5			
RHEOMETER READINGS										600 rpm		50			
										300 rpm		32			
										200 rpm		26			
										100 rpm		20			
										60 rpm					
										30 rpm					
										6 rpm		6			
										3 rpm		3			
GEL STRENGTHS										10 sec. (Pa)		1.5			
										10 min. (Pa)		3			
										30 min. (Pa)		5			
PV @ 32 deg.C										mPa's		18			
YP @ 32 deg.C										Pa		7.0			
n												0.843			
k										Poise		2.956			
API FLUID LOSS										mL/30 min		5.6			
FILTER CAKE THICKNESS										mm		1.6			
SAND										%					
OIL										%					
WATER RETORT										%		95.7			
TOTAL SOLIDS										%		4.3			
MBT										kg/m³		21.0			
HIGH GRAVITY SOLIDS										% by volume					
HIGH GRAVITY SOLIDS										kg/m³					
LOW GRAVITY SOLIDS										% by volume		4.28			
LOW GRAVITY SOLIDS										kg/m³		111.28			
DRILLED SOLIDS										kg/m³		90.28			
ALKALINITY										Pf		mL		0.20	
										Mf		mL		0.60	
HYDROXYL ION										mg/L					
CARBONATE ION										mg/L		240			
BICARBONATE ION										mg/L		244			
Pm ALKALINITY										mg/L					
FREE LIME										kg/m³					
TOTAL HARDNESS										mg/L		40			
CALCIUM ION										mg/L		40			
MAGNESIUM ION										mg/L					
CHLORIDES ION										mg/L		1400			
POTASSIUM ION										mg/L					
FILTRATE DENSITY (for brine/salicate)										S.G.					
Make Up Water pH															
Make Up Water Alkalinity															
Make Up Water Ca++										mg/L					
PPHA Excess										kg/m3					
Amine Excess										L/m3		0.25			
RIG TIME BREAKDOWN															
1 RIG UP AND TEAR DOWN										10		DEVIATION SURVEY		19	
2 DRILL ACTUAL										11		WIRELINE LOGS		20	
3 REAMING										12		RUN CASE & CEMENT		21	
4 CORING										13		WAIT ON CEMENT		22	
5 CONDITION MUD & CIRC										14		NIPPLE UP B.O.P.		23	
6 TRIPS										15		TEST B.O.P.		24	
7 RIG SERVICE										16		DRILLSTEM TEST		25	
8 REPAIR RIG										17		PLUG BACK		26	
9 CUT OFF DRILLING LINE										18		SQUEEZE CEMENT		27	
														TOTAL HOURS	
														Cumulative Drilling Hours	
														Total N.P.T.	
Field Representative: Brian Mielke										Email: mudman78@telus.net		Mobile: (780) 753-0374			
The information contained in this report represents our best judgment based on industry experience. It is solely intended to aid our customer without risk of liability for any loss which may result from its use. In addition, nothing contained herein shall be construed as a recommendation to use any product with existing patents covering any material or its applications.															

## ACTIVITY:

Aug 9; Spud at 2300 hrs.  
Aug 10; Drill surface hole to 103 m, run csg. cement at 0630 hrs. Nipple up, pressure test. Pick up tools. Run in. Drill out. Drill starting at 1645 hrs to 496 m. KOP was at 398 m.  
Aug 11; Drill to 787 m with floc water. Mud up on the fly, drill build section.

## RECOMMENDATIONS:

Maintain Visc at 40 - 43 s/l with PolyXan mixed at 1 sxs over 1 circulation.  
IF VISC climbs from drilling shales to 45 s/l or over, lower by mixing Desco, 2 sxs over 1 circ thru chem bbl as required.

Maintain fluid loss at 5.0 - 6.0 cc with Drispac Super Lo, 2 sxs over 1 circ as required.  
We will use the Drispac by itself until it is gone, then switch back to UltraPac LV.

Maintain pH at 10.0 - 10.5 with Caustic. 1 sxs over 1 circ as required. We need pH higher on your papers which are consistently 1.0 lower than mine.

\*\*\*\* For every 100 m of new hole drilled, add 1 pail of OptiCon. Trickle in at suction over 60 minutes.

Tourly, add 1 pail of Bleach evenly over 1 circ.

Density low as possible w/ Centrifuges ran at all times & good screens on shaker.  
Run water as required to maintain volume. Add water below shaker.  
\*\*\* Note; Please record all mud used for cuttings clean up & any dumped mud in Pason.

Today; Add 1 pail of Opticon over 1 circ.

NOTE: Circ time in slim hole will be 60 minutes.

Thanks



## REPORT NUMBER: 3

B.H.L.: 8-21-39-2w4m  
LSD: 8-20-39-2w4m  
DATE: August 12, 2021  
SPUD DATE: August 9, 2021  
DAYS FROM SPUD: 3  
WAREHOUSE: BLACKFALDS, AB  
TRUCKER: Formula Powell  
PHONE: (403) 885-5151



1000, 639 - 5th Ave. SW, Calgary, Alberta, T2P 0M9  
Telephone (24hour): (403) 237-8900 Fax: (403) 265-6199

HYDRAULICS ANALYSIS										PRESSURE LOSS		PUMP DATA		# 1	# 2					
Interval	Hole (mm)	Wash (vol %)	Hole (Adjusted)	OD (mm)	ID (mm)	Length (m)	A.Vel.(m/min)	C.Vel (m/min)	Flow Profile	Ann,kPa	Pipe,kPa	Make	Gritmax	Emsco						
HWDP	205		205.00	102	63	103	48	54	TRANS	13	679	Model	1300	F-1000						
HWDP	200	10.00%	209.76	102	63	458	46	53	TRANS	51	3021	Liner (mm)	139.7	139.7						
DP	200	10.00%	209.76	102	83	481	46	53	TRANS	53	913	Stroke (mm)	304.8	254						
DP	159	10.00%	166.76	102	83	483	88	71	TURB	285	817	Output (L/stk)	14.01	11.67						
BHA	159	10.00%	166.76	121	63	40	116	87	TURB	57	284	SPM		103						
												Output (m³/min)		1.202						
												Pressure (kPa)		16900						
FLUID MANAGEMENT AND VOLUME SUMMARY (VOLUMES IN m³)										CASING DESIGN		DEVIATION SURVEY		Press loss @ bit		kPa	894			
										Type	OD(mm)	ID(mm)	Set @ (m)	Survey (deg)	90	ECO @ TD	kg/m³	1183		
ACTIVE SYSTEM				Surf	219	206		103	Survey (deg)	88.0	Surface to Bit	(min)	5.0							
Tank Volume:				37.0					Azimuth (deg.)	88.0	Bottoms Up	(min)	26.6							
Hole Volume:				47.2					Depth (mTVD):	742.00	Flowline to Suction	(min)	30.8							
Annular Volume:				34.3					Depth (mMD):	1565.00	Circulation time	(min)	85.2							
Pipe Capacity:				7.1					BIT INFORMATION											
Total Active:				78.4					Number:	2	Hours:	10	Nozzles							
FLUID ADDITIONS				FLUID LOSSES					Make:	Ulterra	RPM:	165	11.9	11.9	11.9	11.9				
Previous Additions:				Previous Losses:					Type:	CS13S	WOB:	2-9								
Daily Additions:				Daily Hole Losses:				O.H.	159	Size(mm):	159	N Vel. m/s:	35.96							
Total Additions:				Daily Surf. Losses:				TOTAL PRESSURE LOSS (kPa)		Depth In:	1042	TFA (mm)	557.04							
Daily Total Losses:				Accum. Int. Losses:				7146												
SOLIDS CONTROL EQUIPMENT DESCRIPTION										HRS		MATERIAL USAGE								
												PRODUCT	UNIT SIZE	UNIT PRICE	USAGE	BALANCE	SUB-TOTAL			
Shaker # 1										Derrick	SCREENS	230	230	230	230	BLEACH	20 L		1	12
Shaker # 2										Derrick	SCREENS	230	230	230	230	CAUSTIC SODA	22.7 kg		2	3
Shaker # 3											SCREENS				DESCO II	11.3 kg		2	54	
Shaker # 4											SCREENS				HUMALITE / LIGNITE	45.5 kg		8	7	
Centrifuge #1										Precision	OF(kg/m³)	1110	UF (kg/m³)	1820	OPTICON	20 L		4	60	
Centrifuge #2										Precision	OF(kg/m³)	1110	UF (kg/m³)	1820	ULTRA PAC LO	25 kg		12	12	
											OF(kg/m³)		UF (kg/m³)		ULTRA PAC REG	25 kg		8	24	
											OF(kg/m³)		UF (kg/m³)		TRAVEL CHARGE			50		
WELL DESIGN:										HORIZONTAL										
CURRENT WELL INTERVAL:										HORIZONTAL										
CURRENT FORMATION:										SPARKY (SS)										
CURRENT ACTIVITY:										DRILLING AHEAD - HZNTL SECTION										
ACTIVE SYSTEM FLUID TYPE:										PAC POLYMER										
FLUID PROPERTIES CHECK:										#1	#2	#3								
PRESENT DEPTH										mTVD	743									
										mMD	1565									
TIME SAMPLE TAKEN											10:30									
SAMPLE POINT										SHAKER										
FLOWLINE TEMPERATURE										deg.C	35			DAILY PRODUCT COST		\$	4,442.00			
FUNNEL VISCOSITY										s/L	44			ENGINEERING COST		\$	500.00			
FLUID DENSITY										kg/m³	1120			PREVIOUS COST		\$	3,129.25			
PRESSURE GRADIENT										kPa/m	10.99			CUMULATIVE COST TO DATE		\$	8,071.25			
pH											9			DAILY ACTIVITY / RECOMMENDATIONS / COMMENTS						
RHEOMETER READINGS										600 rpm	35			ACTIVITY:						
										300 rpm	21			Aug 10; Drill surface hole to 103 m, run csg, cement at 0630 hrs. Nipple up, pressure test. Pick up tools. Run in. Drill out. Drill starting at 1645 hrs to 496 m. KOP was at 398 m.						
										200 rpm	15			Aug 11; Drill to 787 m with flocc water. Mud up on the fly, drill build section to 1042 m - 1300 hrs, circ, trip for slim hole bha, drill lateral to 1131 m starting at 2230 hrs.						
										100 rpm	10			Aug 12; Drill lateral section						
										60 rpm				RECOMMENDATIONS:						
										30 rpm	3			Maintain Visc at 40 - 43 s/l with PolyXan mixed at 1 sxs over 1 circulation.						
										8 rpm	2			IF VISC climbs from drilling shales to 45 s/l or over, lower by mixing Desco, 2 sxs over 1 circ thru chem bbl as required.						
GEL STRENGTHS										10 sec. (Pa)	1			Maintain fluid loss at 5.0 - 6.0 cc with Drispac Super Lo, 2 sxs over 1 circ as required.						
										10 min. (Pa)	3			We will use the Drispac by itself until it is gone, then switch back to UltraPac LV.						
										30 min. (Pa)	5			Maintain pH at 10.0 - 10.5 with Caustic. 1 sxs over 1 circ as required. We need pH higher on your papers which are constantly 1.0 lower than mine.						
PV @ 35 deg.C										mPa's	14			**** For every 100 m of new hole drilled, add 1 pail of OptiCon. Trickle in at suction over 60 minutes.						
YP @ 35 deg.C										Pa	3.5			Tourry, add 1 pail of Bleach evenly over 1 circ.						
n											0.737			Density low as possible w/ Centrifuges ran at all times & good screens on shaker.						
k										Poise	1.086			Run water as required to maintain volume. Add water below shaker.						
API FLUID LOSS										mL/30 min	5.6			*** Note; Please record all mud used for cuttings clean up & any dumped mud in Pason.						
FILTER CAKE THICKNESS										mm	1.6			Prior to TD, increase Visc to 55 - 58 s/l with Polyxan. 8 - 10 sxs mixed at 20 min/sxs.						
SAND										%				Have volume at 35 m3 at TD so that we do not have to build volume after wiper trip.						
OIL										%	0.5			Prior to pooh to run casing, mix 1 bbl M&D Lube and 10 sxs SunBurst Beads into +/-15 m3 mud and spot in lateral section. Drilling Foremen will give you exact fluid amounts and spotting strokes.						
WATER RETORT										%	92.1			Thanks						
TOTAL SOLIDS										%	7.4									
MBT										kg/m³	28.0									
HIGH GRAVITY SOLIDS										% by volume										
HIGH GRAVITY SOLIDS										kg/m³										
LOW GRAVITY SOLIDS										% by volume	7.38									
LOW GRAVITY SOLIDS										kg/m³	191.88									
DRILLED SOLIDS										kg/m³	163.88									
ALKALINITY										Pf	mL	0.10								
										Mf	mL	0.70								
HYDROXYL ION										mg/L										
CARBONATE ION										mg/L	120									
BICARBONATE ION										mg/L	610									
Pm ALKALINITY																				
FREE LIME										kg/m³										
TOTAL HARDNESS										mg/L	40									
CALCIUM ION										mg/L	40									
MAGNESIUM ION										mg/L										
CHLORIDES ION										mg/L	1800									
POTASSIUM ION										mg/L										
FILTRATE DENSITY (for brine/silicate)										S.G.										
Make Up Water pH																				
Make Up Water Alkalinity																				
Make Up Water Ca++										mg/L										
PPHA Excess										kg/m3										
Amine Excess										L/m3	0.50									
RIG TIME BREAKDOWN																				
1	RIG UP AND TEAR DOWN			10	DEVIATION SURVEY			19	STUCK / FISHING			28								
2	DRILL ACTUAL			11	WIRELINE LOGS			20	DIRECTIONAL WORK			29								
3	REAMING			12	RUN CASE & CEMENT			21	SAFETY MEETING			30								
4	CORING			13	WAIT ON CEMENT			22	MIX LCM											
5	CONDITION MUD & CIRC			14	NIPPLE UP B.O.P.			23	TIGHT HOLE / WASH											
6	TRIPS			15	TEST B.O.P.			24	CIRC GAS / WELL FLOW											
7	RIG SERVICE			16	DRILL STEM TEST			25	MSC			TOTAL HOURS								
8	REPAIR RIG			17	PLUG BACK			26	Other			Cumulative Drilling Hours:								
9	CUT OFF DRILLING LINE			18	SQUEEZE CEMENT			27				Total N.P.T.								
Field Representative: Brian Mielke																				
Email: mudman78@telus.net																				
Mobile: (780) 753-0374																				
The information contained in this report represents our best judgment based on industry experience. It is solely intended to aid our customer without risk of liability for any loss which may result from its use. In addition, nothing contained herein shall be construed as a recommendation to use any product with existing patents covering any material or its applications.																				

**DRILLING FLUIDS REPORT (WBM)**  
**REPORT NUMBER: 4**

WELL NAME: Surge 103 Hz Provost  
U.W.I.: 103  
OPERATOR: Surge Energy Inc  
OPERATOR REP: Shawn Schuster / Wade Zakaluzny  
PHONE NUMBER: (306) 830-5903  
RIG NUMBER: Star Valley Drilg #102  
RIG MANAGER: Daryl Johnson  
PHONE NUMBER:

B.H.L.: 8-21-39-2w4m  
LSD: 8-20-39-2w4m  
DATE: August 13, 2021  
SPUD DATE: August 9, 2021  
DAYS FROM SPUD: 4  
WAREHOUSE: BLACKFALDS, AB  
TRUCKER: Formula Powell  
PHONE: (403) 885-5151



1000, 639 - 5th Ave. SW, Calgary, Alberta, T2P 0M9  
Telephone (24hour): (403) 237-8900 Fax: (403) 265-6199

HYDRAULICS ANALYSIS										PRESSURE LOSS		PUMP DATA		#1	#2	
Interval	Hole (mm)	Wash (vol %)	Hole (Adjusted)	OD (mm)	ID (mm)	Length (m)	A.Vel.(m/min)	C.Vel.(m/min)	Flow Profile	Ann.kPa	Pipe.kPa	Make	Grixmax	Emeco		
HWDP	205		205.00	102	63	103	52	93	LAMI	25	369	Model	1300	F-1000		
HWDP	200	10.00%	209.76	102	63	458	49	92	LAMI	100	1642	Liner (mm)	139.7	139.7		
DP	200	10.00%	209.76	102	83	481	49	92	LAMI	105	525	Stroke (mm)	304.8	254		
DP	159	10.00%	166.76	102	83	1230	84	111	TRANS	860	1343	Output (L/stk)	14.01	11.67		
BHA	159	10.00%	166.76	121	63	40	124	126	TURB	58	143	SPM		110		
												Output (m <sup>3</sup> /min)	1.284			
												Pressure (kPa)	14800			
FLUID MANAGEMENT AND VOLUME SUMMARY (VOLUMES IN m <sup>3</sup> )										CASING DESIGN		DEVIATION SURVEY		BIT INFORMATION		
ACTIVE SYSTEM										Type	OD(mm)	ID(mm)	Set @ (m)	Survey (deg)	90	
Tank Volume: 35.0										Surf	219	206	103	Azimuth (deg.)	89.0	
Hole Volume: 63.6										Inter				Depth (mTVD):	743.00	
Annular Volume: 44.5										Inter				Depth (mMD):	2312.00	
Pipe Capacity: 11.1																
Total Active: 90.7										Liner top				Number:	2	
FLUID ADDITIONS										Liner				Hours:	18	
Previous Additions:														Make:	165	
Daily Additions:														Type:	CS135	
Daily Total Additions:														WOB:	2-9	
Accum. Int. Losses:														Size(mm):	159	
														N Vel. m/s:	38.41	
														Depth In:	1042	
														TFA (mm <sup>2</sup> )	557.04	
SOLIDS CONTROL EQUIPMENT DESCRIPTION										TOTAL PRESSURE LOSS (kPa)		MATERIAL USAGE				
										6209						
Shaker #1 Derrick SCREENS 230 230 230 230										BARITE		UNIT SIZE	UNIT PRICE	USAGE	BALANCE	SUB-TOTAL
Shaker #2 Derrick SCREENS 230 230 230 230										BLEACH		40 kg		18		
Shaker #3 SCREENS										CAUSTIC POTASH		20 L		5		
Shaker #4 SCREENS										CAUSTIC SODA		25 kg		4		
Centrifuge #1 Precision OF(kg/m <sup>3</sup> ) 1130 UF(kg/m <sup>3</sup> ) 1820										DESCO II		22.7 kg		12		
Centrifuge #2 Precision OF(kg/m <sup>3</sup> ) 1130 UF(kg/m <sup>3</sup> ) 1820										M&D LUBE		11.3 kg		1		
										NUT SHELL M		22.7 kg		7		
										OPTICON		20 L		10		
										POLY XAN		25 kg		13		
										SUNBURST BEADS		22.7 kg		10		
										ULTRA PAC LO		25 kg		7		
										CRISPAC SUPER LO		22.7 kg		29		
										TRAVEL CHARGE				50		
WELL DESIGN: HORIZONTAL																
CURRENT WELL INTERVAL: HORIZONTAL																
CURRENT FORMATION: SPARKY (SS)																
CURRENT ACTIVITY: CIRCULATE / CONDITION HOLE																
ACTIVE SYSTEM FLUID TYPE: PAC POLYMER																
FLUID PROPERTIES CHECK:																
PRESENT DEPTH																
TIME SAMPLE TAKEN																
SAMPLE POINT																
FLOWLINE TEMPERATURE																
FUNNEL VISCOSITY																
FLUID DENSITY																
PRESSURE GRADIENT																
pH																
RHEOMETER READINGS																
GEL STRENGTHS																
PV @ 37 deg.C																
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DRILLED SOLIDS																
ALKALINITY																
HYDROXYL ION																
CARBONATE ION																
BICARBONATE ION																
Pm ALKALINITY																
FREE LIME																
TOTAL HARDNESS																
CALCIUM ION																
MAGNESIUM ION																
CHLORIDES ION																
POTASSIUM ION																
FILTRATE DENSITY (for brine/silicate)																
Make Up Water pH																
Make Up Water Alkalinity																
Make Up Water Ca++																
PHPA Excess																
Amine Excess																
RIG TIME BREAKDOWN																
1 RIG UP AND TEAR DOWN																
2 DRILL ACTUAL																
3 REAMING																
4 CORING																
5 CONDITION MUD & CIRC																
6 TRIPS																
7 RIG SERVICE																
8 REPAIR RIG																
9 CUT OFF DRILLING LINE																
10 DEVIATION SURVEY																
11 WIRELINE LOGS																
12 RUN CASE & CEMENT																
13 WAIT ON CEMENT																
14 NIPPLE UP B.O.P.																
15 TEST B.O.P.																
16 DRILLSTEM TEST																
17 PLUG BACK																
18 SQUEEZE CEMENT																
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22 MIX LCM																
23 TIGHT HOLE / WASH																
24 CIRC GAS / WELL FLOW																
25 MISC																
26 Other																
27																
TOTAL HOURS																
Cumulative Drilling Hours:																
Total N.P.T.																
Field Representative: Brian Melke										Email: mudman78@telus.net						
										Mobile: (780) 753-0374						
The information contained in this report represents our best judgment based on industry experience. It is solely intended to aid our customer without risk of liability for any loss which may result from its use. In addition, nothing contained herein shall be construed as a recommendation to use any product with existing patents covering any material or its applications.																