

Submit In Quadruplicate To:

**MONTANA BOARD OF OIL AND GAS CONSERVATION**  
2535 ST. JOHNS AVENUE  
BILLINGS, MONTANA 59102

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**SUNDRY NOTICES AND REPORT OF WELLS**

MONTANA BOARD OF OIL &  
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Operator <b>Alta Vista Oil Corporation</b>		Lease Name:	
Address <b>2611 East Highway 14</b>		Type (Private/State/Federal/Tribal/Allotted): <b>Private</b>	
City <b>Clearmont</b>	State <b>WY</b>	Zip Code <b>82835</b>	Well Number: <b>SPIDER MONKEY #1H</b>
Telephone <b>210-275-8895</b>		Fax	
Location of well (1/4-1/4 section and footage measurements): <b>SHL - SESE, 567' FSL &amp; 680' FWL FEL</b> <b>BHL - NWNE, 699' FNL &amp; 1635' FEL</b>		Unit Agreement Name:	
		Field Name or Wildcat: <b>Wildcat</b>	
API Number: <b>25   087   21744</b>		Township, Range, and Section: <b>T11N, R32E, Section 34</b>	
State	County	Well	County: <b>Rosebud</b>
Well Type (oil, gas, injection, other): <b>Oil</b>			

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans	<input type="checkbox"/>	Subsequent Report of Mechanical Integrity Test	<input type="checkbox"/>
Notice of Intention to Run Mechanical Integrity Test	<input type="checkbox"/>	Subsequent Report of Stimulation or Treatment	<input type="checkbox"/>
Notice of Intention to Stimulate or to Chemically Treat	<input checked="" type="checkbox"/>	Subsequent Report of Perforation or Cementing	<input type="checkbox"/>
Notice of Intention to Perforate or to Cement	<input type="checkbox"/>	Subsequent Report of Well Abandonment	<input type="checkbox"/>
Notice of Intention to Abandon Well	<input type="checkbox"/>	Subsequent Report of Pulled or Altered Casing	<input type="checkbox"/>
Notice of Intention to Pull or Alter Casing	<input type="checkbox"/>	Subsequent Report of Drilling Waste Disposal	<input type="checkbox"/>
Notice of Intention to Change Well Status	<input type="checkbox"/>	Subsequent Report of Production Waste Disposal	<input type="checkbox"/>
Supplemental Well History	<input type="checkbox"/>	Subsequent Report of Change in Well Status	<input type="checkbox"/>
Other (specify) _____	<input type="checkbox"/>	Subsequent Report of Gas Analysis (ARM 36.22.1222)	<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

**Describe Proposed or Completed Operations:**

Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

**The attached procedures will be followed for completion of the Spider Monkey #1H well. This sundry notice and the attached procedures are being submitted in accordance with the 36.22.608.**

The undersigned hereby certifies that the information contained on this application is true and correct:

10/1/2018 Date

Ben Shoup Signed (Agent)

**Ben Shoup, Regulatory Advisor**  
Print Name and Title

Telephone: 307-299-5950

**BOARD USE ONLY**

Approved OCT 09 2018  
Date

[Signature] Name

Petroleum Engineer Title

**SUPPLEMENTAL INFORMATION**

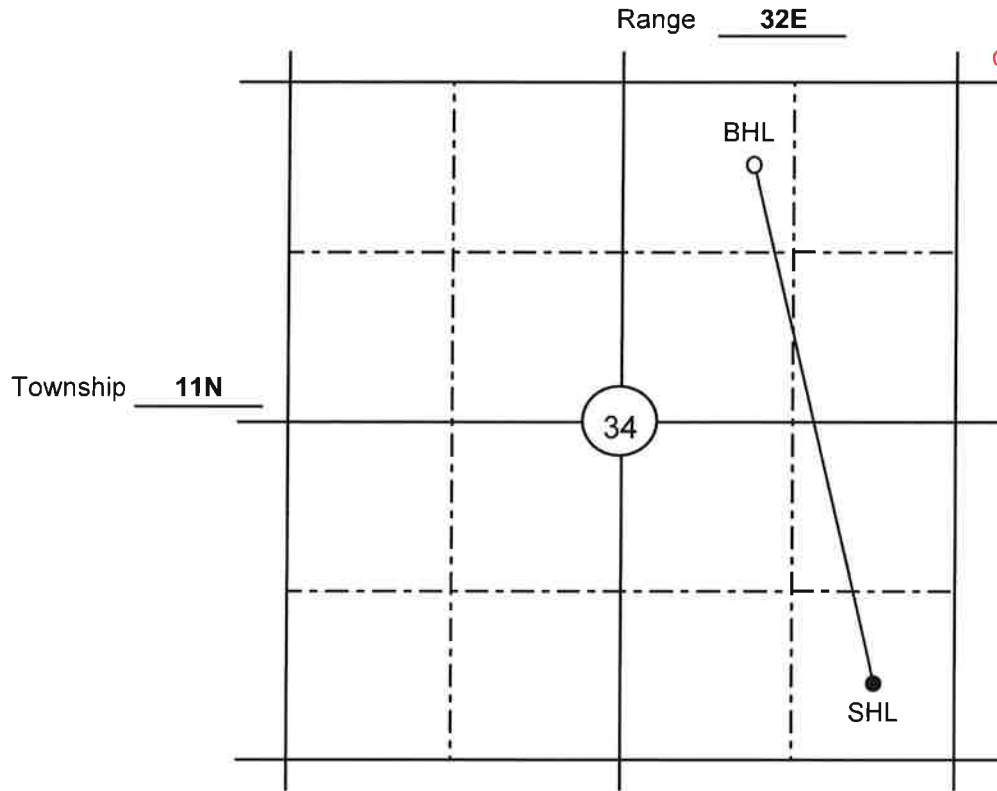
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NOTE: Additional information or attachments may be required by Rule or by special request.

Plot the location of the well or site that is the subject of this notice or report.

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**CONDITIONS OF APPROVAL**

The operator must comply with the following condition(s) of approval:

Failure to comply with the conditions of approval may void this permit.

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**SPIDER MONKEY 1H  
(CONFIDENTIAL)**

**API#: 25-087-21744  
AFE #: 27-18-0283-CP  
Routing ID: 572033**

**COMPLETION PROCEDURE  
20 STAGES**

**ROSEBUD COUNTY, MT**

**BY: RAY MILLER**

**OCTOBER 1, 2018**

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**OBJECTIVE:**

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The Spider Monkey 1H is a new horizontal to be fracture stimulated down 5-1/2" 20ppf HCP-110 EC casing. Well has a planned treated lateral length of 3,532 ft to be completed in 20 stages with 3.5 MM lb of sand (1,000 lb/FTL, 6% 40/70 mesh, 94% 20/40 White) and 66,000 bbls of 2% KCl water.

**WELL DATA:**

Well Name:	SPIDER MONKEY 1H	
Location:	ROSEBUD COUNTY, MT	
Field/Formation		
API#:	25-087-21744	
AFE#:	27-18-0283-CP	
Surf Latitude	46.6572	
Surf Longitude	-107.6741	
KB	21.0	ft
KOP, MD	4,212	ft, MD
TD	8,861	ft, MD
PBTD, MD	8,792	ft, MD
PBTD, TVD	5,165	ft, TVD
BHT	193	deg F
Packer Depth, MD		ft, MD
Heel Perf Limit	5,250	ft, MD
Top Perf (Detail Tab)	5,240	ft, MD
Stim. Lateral:	3,532	ft, MD
Total Stages:	20	
Clusters/stage:	5	
Cluster Spacing	35.8	ft
Avg. Stage Length	178	ft
Plug to Perf Distance	18	ft

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**VENDOR CHECKLIST**

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PURPOSE	VENDOR
FRAC	LIBERTY
WIRELINE	PIONEER
FRAC STACK	CACTUS
CHEMICALS/ACID	LIBERTY
KCL	ANCHOR FLUIDS
FLOWBACK IRON	FLARE
COILED TUBING	CTS
WATER TRANSFER	PHOENIX SERVICES
HOT OILERS/WT HEATERS	COMPLETE HEAT
MANIFOLDS/CONTAINMENT	RAIN FOR RENT
FRAC TANKS	"C" BREWER INC
RENTALS/TRAILERS	CIVEO

Casing	Size	Weight	Grade	Thread	Setting Depth
Surface Casing	13 3/8"	54.5	J-55	BTC	773' MD / 772' TVD
Intermediate Casing	9 5/8"	40.0	L-80	LTC	4,062' MD / 4,061' TVD
Production Casing	5.5"	20	HCP-110	DWC	PBTD (FC) @ 8,792' MD

Dimensions and Strengths	ID (in)	Drift (in)	Cap. (Bbl/ft)	Burst (80%)	Collapse	Body Yield Stgth (Thrd lbs)
13-3/8" 54.5# J-55	12.615"	12.459"	0.1546	2,730	1,130	909
9-5/8" 40.0# L-80	8.835"	8.679"	0.0758	4,600	3,090	728
5-1/2" 20# HCP-110	4.778"	4.653	0.0222	12,640	11,100	641

**NOTES:**

- 5.5" full string. Max Pressure = 10,000 psi
  - o Stagger trips from 9000-9500 psi
- H2S gas possible

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- Ensure all fluid that enters perms including pumpdown fluid contains Biocide & 2% KCL
- Please minimize flush/overflush volumes for these treatments

**NOTE:**

Please have Wireline company send out the following items:

- CCL log from first plug run
- Gun Schematic
- Final Perforation and Plug Records

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**DRIVING DIRECTIONS**

From Forsyth, Montana:

1. Beginning at the intersection of Interstate 94 and US Highway 12, travel northwest on US Highway 12 for 55 miles.
2. Turn north (right) onto Grebe Road\* (aka Oilfield Road) and travel north for 1.8 miles. (\*Note: no road sign present)
3. Turn west (left) onto an unnamed gravel road and travel northwest for 0.7 mile.
4. Turn south (left) onto an unnamed gravel road and travel south-southwest for 0.9 mile, then bear southwest (right) onto a proposed access road and travel 0.2 mile to the well pad.

The total distance from Forsyth, MT to the SPIDER MONKEY #1 location is approximately 58.6 miles.



Wellhead Information
A Section – 13-5/8" 5M w/ 2-1/16" 5M
B Section - 7-1/16" 10M w/ 1-13/16" 10M
Pre-Job Considerations
<ol style="list-style-type: none"> <li>1. Max Pressure – 10,000 psi</li> <li>2. Monitor pressure on backside</li> <li>3. See attached list for vendors and GL acct codes</li> <li>4. Conduct safety meetings/headcount each day prior to any activity</li> <li>5. Review JSA before every wireline run and pressure test</li> <li>6. Engineer contact: Ray Miller</li> <li>7. Send text updates: Glenn Bone, Neal Jack</li> </ol>

Use following Chemical Schedule: (Liberty to provide frac additives & acid).

<u>TYPE</u>	<u>CHEMICAL</u>	<u>CONC (gpt)</u>	<u>PLANNED VOLUME (gals)</u>	<u>COMMENT</u>	<u>CAS #</u>
CLAY STABILIZER (ON THE FLY)	2% Potassium Chloride	0.02	70000	RUN THROUGHOUT	
Clay Stabilizer	CSA-13	2.0	6000	Run Throughout	
SCALE INHIBITOR	SCI-38	0.5	1500	RUN THROUGHOUT	
SURFACTANT	SurFlow 420	0.25	800	RUN THROUGHOUT	
FR	FRP-E38	1.0	3000	AS NEEDED	
BIOCIDE	Aqucar 714	0.35	1100	RUN THROUGHOUT	
GUAR GEL	LGA-3J	5.0	15000	THROUGH CROSSLINK	
HI-TEMP BREAKER	BHL-68	1.0	3000	AS TESTED	
ENCAP. BREAKER	BLR-18	0.5	1500	AS TESTED	
LIQUID BREAKER	BE-3LT	1.0	3000		
LOW pH BUFFER	BFL-28	1.1	3300	AS TESTED	
HIGH pH BUFFER	BFH-98	0.5	1500	AS TESTED	
Surf CROSSLINKER	XLB-88	0.25	800	AS TESTED	
Delayed CROSSLINKER	XLB-36	1.3	3800	AS TESTED	
SOLVENT	7.5% HCl		2000	SPEARHEAD	



PROCEDURE

- 1.0 ND night cap and NU 10K Frac Stack (see diagram). Pressure and function test manual and hydraulic valves to 10,000 psi for 10 minutes.
- 2.0 MIRU frac crew, wireline company, flowback crew, lubricator, water transfer, and H2S monitors.
- 3.0 Set 8 water frac tanks, 2 KCl tanks, and 2 acid frac tank manifolded separately.
  - 3.1 Ensure that 6 upright tanks are arranged by clean pit for KCl plant
  - 3.2 Insert heaters & hot oilers into water transfer & pit arrangement so that water can be thoroughly heated prior to pumping
- 4.0 Pump stage 1 per attached pump schedule; perforations below:
  - 4.1 Perform injection test prior to running in to perforate clusters 2-5

Stage 1	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	PBTD
	1	1	4	4	90	8,781	8,782	8,792
Mid-Perf MD	2	1	4	4	90	8,745	8,746	
8,782	3	1	4	4	90	8,709	8,710	
Mid-Perf TVD	4	1	4	4	90	8,673	8,674	
5,160	5	1	4	4	90	8,637	8,638	
Total Holes								
20								

- 5.0 Continue to plug and perforate Stages 2-23 w/ 3-1/8" and 60 deg phasing as per table below.
  - 5.1 Run CCL log with Stage 2 plug and guns. Log OOH. Have wireline send Log and Gun Schematic to Engineer.
- 6.0 Frac Stages 2-20 per attached pump schedule
  - 6.1 **0.25 Loads 40/70 Mesh and 3.5 loads of 20/40 Each Stage**
  - 6.2 NOTES on Pump Schedule:
    - 6.2.1 "Ball Pressure" – Displace ball at 10 BPM. At constant rate, record pressure before ball hits, and after ball hits.
    - 6.2.2 "Breakdown Pressure" – maximum pressure right after ball hits
    - 6.2.3 "Acid Drop Pressure"– Allow acid to hit perms at 10-15 BPM for 1 minute. Record pressure at 1 minute mark, then increase rate for remainder of acid. Acid Pressure will be difference between Breakdown Pressure and that 1 Minute Pressure
    - 6.2.4 Record step-down test after acid (3-4 steps). Also record ISIP and 5/10/15 minute leakoff pressures for each stage
    - 6.2.5 Move to designed pump rate as quickly as possible, pressure allowing, after initial ISIP. Run sand slugs as per design & begin primary proppant ramp after full pad volume is pumped.



6.2.6 Record step-down test after job (3-4 steps) and record Final ISIP and 5/10/15 minute leakoff

- 7.0 Set kill plug at +/- 4700' after all 20 frac stages are completed
- 8.0 RD Stimulation equipment, frac stack, and wireline.
- 9.0 MIRU 2-3/8" CTU with flowback equipment, double choke manifolds, plug catcher and hydraulic dump.
- 10.0 MU BHA as follows (see attached schematic):
  - 2.88" Weld-On Coil Connector/BPV + 2.88" bi-jar + 2.88" disconnect + 2.88" XRV + 2.88" Bend sub + 2.88" motor + 3.75" rotary sub + 4.5" roller cone bit (JZ Rock Bit)
- 11.0 RIH w/ 4-1/2" roller cone bit to drill out kill plug & first plug at +/- 5,451' MD. RIH at 120'/min to curve, slow down to 80-100'/min.
  - 11.1 At each plug record time tagged, tagged depth, set depth, pump rate, return rate, coil pressure, casing pressure, choke, drill time, wash down time, CT weight before, CT Weight on plug, and notes on returns.
  - 11.2 Pump 5 BBL gel sweeps before and after each plug.
  - 11.3 Drill out plugs with +/- 3 pts down.
  - 11.4 Short trips every 5-7 plugs OR as needed based on cutting size and DLS. Lead short trips by 10/10/10 BBL sweeps.
- 12.0 Continue down to PBTD at 8,792' MD. Circulate well clean 10/10/10 BBL sweeps. POOH at ~30 ft/min to +/- KOP at 4,212' MD.

<b>Directional Survey Information:</b>		
<b>Deviation</b>	<b>TVD</b>	<b>MD</b>
Deviation = 20° @	4,675	4,684
Deviation = 40° @	4,811	4,841
Deviation = 60° @	4,956	5,062
Deviation = 80° @	5,023	5,250
Deviation = 90° @	5,135	7,387

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- 13.0 Pump Hi Vis sweep down casing followed by **195 bbls** TFW. POOH and record Shut-in pressure.
- 14.0 RDMO all CT related equipment.
- 15.0 Make note of any equipment left on location after RDMO, provide flow back personnel list of equipment that they are responsible for releasing.
- 16.0 Will plan to flow up casing until well pressure is zero, then run tubing & ESP.
  - 16.1 Equipping procedure to follow

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PERFORATIONS

Stage 1	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	PBTD
	1	1	4	4	90	8,781	8,782	8,792
Mid-Perf MD	2	1	4	4	90	8,745	8,746	
8,782	3	1	4	4	90	8,709	8,710	
Mid-Perf TVD	4	1	4	4	90	8,673	8,674	
5,160	5	1	4	4	90	8,637	8,638	
<b>Total Holes</b>								
20								
Stage 2	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	8,587	8,588	8,613
Mid-Perf MD	2	1	4	4	90	8,551	8,552	
8,516	3	1	4	4	90	8,516	8,517	
Mid-Perf TVD	4	1	4	4	90	8,480	8,481	
5,151	5	1	4	4	90	8,444	8,445	
<b>Total Holes</b>								
20								
Stage 3	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	8,409	8,410	8,427
Mid-Perf MD	2	1	4	4	90	8,373	8,374	
8,338	3	1	4	4	90	8,338	8,339	
Mid-Perf TVD	4	1	4	4	90	8,302	8,303	
5,140	5	1	4	4	90	8,266	8,267	
<b>Total Holes</b>								
20								
Stage 4	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	8,231	8,232	8,249
Mid-Perf MD	2	1	4	4	90	8,195	8,196	
8,160	3	1	4	4	90	8,160	8,161	
Mid-Perf TVD	4	1	4	4	90	8,124	8,125	
5,131	5	1	4	4	90	8,088	8,089	
<b>Total Holes</b>								
20								
Stage 5	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	8,053	8,054	8,071
Mid-Perf MD	2	1	4	4	90	8,017	8,018	
7,982	3	1	4	4	90	7,982	7,983	
Mid-Perf TVD	4	1	4	4	90	7,946	7,947	
5,131	5	1	4	4	90	7,910	7,911	
<b>Total Holes</b>								
20								
Stage 6	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	7,875	7,876	7,893
Mid-Perf MD	2	1	4	4	90	7,839	7,840	
7,804	3	1	4	4	90	7,804	7,805	
Mid-Perf TVD	4	1	4	4	90	7,768	7,769	
5,134	5	1	4	4	90	7,732	7,733	
<b>Total Holes</b>								
20								



Stage 7	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	7,697	7,698	7,715
Mid-Perf MD	2	1	4	4	90	7,661	7,662	
7,626	3	1	4	4	90	7,626	7,627	
Mid-Perf TVD	4	1	4	4	90	7,590	7,591	
5,135	5	1	4	4	90	7,554	7,555	
Total Holes								
20								
Stage 8	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	7,519	7,520	7,537
Mid-Perf MD	2	1	4	4	90	7,483	7,484	
7,448	3	1	4	4	90	7,448	7,449	
Mid-Perf TVD	4	1	4	4	90	7,412	7,413	
5,135	5	1	4	4	90	7,376	7,377	
Total Holes								
20								
Stage 9	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	7,341	7,342	7,359
Mid-Perf MD	2	1	4	4	90	7,305	7,306	
7,270	3	1	4	4	90	7,270	7,271	
Mid-Perf TVD	4	1	4	4	90	7,234	7,235	
5,134	5	1	4	4	90	7,198	7,199	
Total Holes								
20								
Stage 10	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	7,163	7,164	7,181
Mid-Perf MD	2	1	4	4	90	7,127	7,128	
7,092	3	1	4	4	90	7,092	7,093	
Mid-Perf TVD	4	1	4	4	90	7,056	7,057	
5,124	5	1	4	4	90	7,020	7,021	
Total Holes								
20								
Stage 11	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	6,985	6,986	7,003
Mid-Perf MD	2	1	4	4	90	6,949	6,950	
6,914	3	1	4	4	90	6,914	6,915	
Mid-Perf TVD	4	1	4	4	90	6,878	6,879	
5,107	5	1	4	4	90	6,842	6,843	
Total Holes								
20								
Stage 12	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	6,807	6,808	6,825
Mid-Perf MD	2	1	4	4	90	6,771	6,772	
6,736	3	1	4	4	90	6,736	6,737	
Mid-Perf TVD	4	1	4	4	90	6,700	6,701	
5,097	5	1	4	4	90	6,664	6,665	
Total Holes								
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Stage 13	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	6,629	6,630	6,647
Mid-Perf MD	2	1	4	4	90	6,593	6,594	
6,558	3	1	4	4	90	6,558	6,559	
Mid-Perf TVD	4	1	4	4	90	6,522	6,523	
5,084	5	1	4	4	90	6,486	6,487	
Total Holes								
20								
Stage 14	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	6,451	6,452	6,469
Mid-Perf MD	2	1	4	4	90	6,415	6,416	
6,380	3	1	4	4	90	6,380	6,381	
Mid-Perf TVD	4	1	4	4	90	6,344	6,345	
5,071	5	1	4	4	90	6,308	6,309	
Total Holes								
20								
Stage 15	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	6,273	6,274	6,291
Mid-Perf MD	2	1	4	4	90	6,237	6,238	
6,202	3	1	4	4	90	6,202	6,203	
Mid-Perf TVD	4	1	4	4	90	6,166	6,167	
5,062	5	1	4	4	90	6,130	6,131	
Total Holes								
20								
Stage 16	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	6,095	6,096	6,113
Mid-Perf MD	2	1	4	4	90	6,059	6,060	
6,024	3	1	4	4	90	6,024	6,025	
Mid-Perf TVD	4	1	4	4	90	5,988	5,989	
5,060	5	1	4	4	90	5,952	5,953	
Total Holes								
20								
Stage 17	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	5,917	5,918	5,935
Mid-Perf MD	2	1	4	4	90	5,881	5,882	
5,846	3	1	4	4	90	5,846	5,847	
Mid-Perf TVD	4	1	4	4	90	5,810	5,811	
5,053	5	1	4	4	90	5,774	5,775	
Total Holes								
20								
Stage 18	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	5,739	5,740	5,757
Mid-Perf MD	2	1	4	4	90	5,703	5,704	
5,668	3	1	4	4	90	5,668	5,669	
Mid-Perf TVD	4	1	4	4	90	5,632	5,633	
5,044	5	1	4	4	90	5,596	5,597	
Total Holes								
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Stage 19	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	5,561	5,562	5,579
Mid-Perf MD	2	1	4	4	90	5,525	5,526	
5,490	3	1	4	4	90	5,490	5,491	
Mid-Perf TVD	4	1	4	4	90	5,454	5,455	
5,039	5	1	4	4	90	5,418	5,419	
Total Holes								
20								
Stage 20	Cluster #	Gun Length, ft	SPF	Holes	Phasing	Top	Bottom	Plug
	1	1	4	4	90	5,383	5,384	5,401
Mid-Perf MD	2	1	4	4	90	5,347	5,348	
5,312	3	1	4	4	90	5,312	5,313	
Mid-Perf TVD	4	1	4	4	90	5,276	5,277	
5,029	5	1	4	4	90	5,240	5,241	
Total Holes								
20								

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# PUMP SCHEDULE: STAGES 1-20

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STAGE NAME	FLUID TYPE	PROPPANT TYPE	CLEAN VOL (BBLs)	SLURRY RATE (BPM)	FR (LB/GAL)	PROP CONC (PPA)	STAGE TIME (MINS)	CALC PROP VOL (LBS)
Establish Injection	SLICKWATER	-	200	10	0.50		20	
ACID	7 1/2% HCL	-	48	20	0.00		2	
Acid Flush/Ball Seat	20# Linear Gel	-	200	40	0.25		5	
PROPPANT	20# Linear Gel	40/70 White	240	40	0.25	0.50	6	5,040
Pad	20# Linear Gel		200	40	0.25		5	0
PROPPANT	20# Linear Gel	40/70 White	120	40	0.25	1.00	3	5,040
LG Pad	20# Linear Gel		100	40	0.25		3	0
XL Pad	20# Crosslink		100	40	0.25		3	0
PROPPANT	20# Crosslink	20/40 White	200	40	0.25	0.50	5	4,200
PROPPANT	20# Crosslink	20/40 White	200	40	0.25	1.00	5	8,400
PROPPANT	20# Crosslink	20/40 White	200	40	0.25	1.50	5	12,600
PROPPANT	20# Crosslink	20/40 White	230	40	0.25	2.00	6	19,320
PROPPANT	20# Crosslink	20/40 White	230	40	0.25	2.50	6	24,150
PROPPANT	20# Crosslink	20/40 White	230	40	0.25	3.00	6	28,980
PROPPANT	20# Crosslink	20/40 White	230	40	0.25	3.50	6	33,810
PROPPANT	20# Crosslink	20/40 White	200	40	0.25	4.00	5	33,600
FLUSH	SLICKWATER		200	40	0.50		5	0
Wireline	SLICKWATER		200	10	0.50		20	0
<b>TOTAL/STAGE</b>			<b>3,328</b>				<b>114</b>	<b>175,140</b>

Chemical	GAL/MGAL (Stage)	Total Gal
Bioocide	0.4	44
Surfactant	0	0
Scale Inhibitor	0.4	44
Friction Reducer	0.50	55
Gel	0.00	0
Breaker	0.00	0
Low Buffer	0.00	0
Cross Linker	0.00	0
Caustic	0.00	0
Clay Inhibitor	2.00	222
Treated Water Volume, BBL=		2,640

Average Rate:	40
Average Pressure:	9,000

Fluid Design (Stage):	
Total Water (bbis)	BBL
7 1/2% HCL	48
SLICKWATER	600
LINEAR GEL	860
XLINK GEL	1,820
<b>Total Fluid, bbl/stg</b>	<b>3,328</b>
<b>Total Fluid, gal/ft</b>	<b>964</b>
<b>Total Fluid, bbis</b>	<b>86,528</b>

Top Perforation:	0
Bottom Perforation:	11018
TVD:	6915
Wellbore Volume:	0

Proppant Design (Stage):	
40/70 White	0.2
20/40 White	3.5
	0.0
	0.0
<b>Total Sand, lb/stg</b>	<b>175,140</b>
<b>Total Sand, lb/ft</b>	<b>1,208</b>
<b>Total Sand, lb</b>	<b>4,553,640</b>

1638%

08721744

# AFE GL CODES

## SAN ANTONIO COMPLETIONS - GL CODES

	Acct #	G/L Acct Text	Account Description
CHANGED	70034	Formation and Well Stimulation Pumping Service	Use for horsepower and related pump charges. DOES NOT include proppant (70198), chemicals (70007), plugs (70289) or fuel (70037).
NEW	70007	Chemicals	Chemicals used in well stimulation activities including fracturing and coil tubing.
NEW	70198	Sand/Proppant	Cost of sand/proppant, including the cost of loading and transportation.
NEW	70248	Fishing and Milling	Fishing - Time required to fish w/pipe or wireline. Includes all operations from running free point indicator, back-off tools & time spent jarring & working pipe w/fishing bottom hole assembly. Milling - All time associated w/removing "metal" not drilling plugs
NEW	70285	Water Transfer	Costs related to the transport of water to location for operations, including pumps, equipment and personnel charges
NEW	70291	Frac Valve / Frac Tree	Includes the cost of the frac tree, frac head and frac valve rental, transport, maintenance.
NEW	70290	Water Heating	Costs associated with heating water or fluids during operations
NEW	70289	Frac Plugs	Cost of plugs used in hydraulic fracturing operations
NEW	70169	Camp Rentals	Rental and delivery costs associated with house trailers
NEW	70114	Emulsion/Clean Oil Trucking	Includes amount paid to third parties for trucking or hauling for handling of oil emulsion or clean oil
NEW	70186	Flowback Tester	Labor and equipment (test hands/maifolds, etc..) related to flowback and production testing. DOES NOT INCLUDE FLOWBACK EQUIPMENT DURING FRAC (70031)
NEW	70187	Pump Truck Service	Capital/Expenditure - Flash, Killwell/well control, load and test
NEW	70242	Slickline Services	Includes slickline (non-electric wireline) unit, tools & personnel - plugs / prongs, etc.
NEW	70529	Safety Case	Safety related costs, e.g. Safety Technicians on location DOES NOT INCLUDE SAFETY RESTRAINTS (70031)
NEW/NOT COMMON	70287	Microseismic	Costs related to the acquisition of Microseismic and all associated equipment and rentals.
NEW/NOT COMMON	70122	Pressure Truck Expense	To track pressure truck work used to inject methanol or condensate into a well or pipeline to break up hydrates, paraffin wax, or push stuck pigs. DOES NOT INCLUDE PUMPS FOR STIMULATION (70034)
NEW/NOT COMMON	70286	Water Treatment	NOT FOR WATER TREATED ON LOCATION. Includes equipment rental, chemicals, filtration and associated trucking/personnel for the purpose of recycling or reconditioning of water to be used for fracturing operations.
COMMON USE	70017	Contract Labor	Includes contract labor incident to any operations but not included under other account classifications
COMMON USE	70019	Contract Rigs - Daywork	Includes drillings, completions, recompletion, workover, service or pulling units and related work performed on an hourly, daily, or fixed-rate basis, including all third-party charges incident to the contract such as mudbuster and shaker screens
COMMON USE	70021	Contract Supervision	Includes fees, salaries, and expenses of a contract supervisor.
COMMON USE	70031	Equipment Rental	Includes equipment not furnished by the contractor such as trailer rental, blowout preventers, and de-gasers. DOES NOT include charges for frac tank and water tank rentals (70077)
COMMON USE	70035	Formation Testing	Includes bottom hole pressure gauges, DFIT, and Tracers
COMMON USE	70037	Fuel	Includes the power and fuel, such as gas, butane, fuel oil, gasoline, and electric power.
COMMON USE	70049	Logging	Includes openhole and cased hole electric line logging including CBL logs, perforating, and other Wireline and E-Line services. DOES NOT include slickline i.e. setting packers (70242).
COMMON USE	70065	Road and Site Preparation	Includes cleaning up location, building burms, filling cellars, and making entrances to location
COMMON USE	70067	Salt Water Disposal	Includes the handling, hauling, and disposing of salt water produced in conjunction with oil and gas products. Also includes the allocated costs of a salt water disposal system.
COMMON USE	70069	Coiled Tubing	Equipment and related services provided for coiled tubing operations including nitrogen services, pumping equipment and downhole tools.
COMMON USE	70074	Trucking and Hauling	Includes trucking or hauling incident to any operations but not included under other account classifications or the service unit.
COMMON USE	70075	Tubing Convey Perforating	Includes guns used for TCP work but not Coil work or BHA during toe-prep.
COMMON USE	70077	Water	Includes the cost of water/brine incident to any well operation including lease water and water tank rental. Does not include water transport (70285)
COMMON USE	71032	Other Subsurface Equipment	Includes subsurface equipment such as tubing anchor, retrievable packers, permanent packers, catchers, seating nipples, sliding sleeves, flow couplings, blast joints, mud/gas anchors, sinker bars, and gravel pack screens.
COMMON USE	71056	Wellhead Assembly	Includes Christmas trees, casing head, casing spool, tubing head, valves, flow beams, seal assemblies, spools, gaskets, studs, and bolts.
COMMON USE	71053	Tubing	Used for production tubing costs
NOT COMMON	70076	Tubular Inspection/Testing	Includes inspection of any tubular equipment
NOT COMMON	70003	Bits Coreheads and Reamers	Includes drilling bits, coreheads, and reamers used in project operations.
NOT COMMON	70005	Catering and Groceries	Includes food, food services and bunks for third-party crews.
NOT COMMON	70008	Communications	Communication equipment such as internet or cell phone boosters.
NOT COMMON	70012	Company Vehicle and/or Boat	Includes PMTA rates for vehicles and fixed rate charges for boats that are incident to lease operations. Actual operating expenses for vehicles and boats are recorded to 65505, such as gas, oil, repairs, etc.
NOT COMMON	70025	Drilling Fluids	Includes caustic soda, Quebraco, soda ash, sapp, crude oil, Hi-flow, and gelant used to condition the hole or maintain circulation.
NOT COMMON	70288	Snubbing	Equipment and all related services provided for snubbing operations including nitrogen services, pumping equipment and downhole tools.

All surface equipment associated with artificial lift should be charged to the Facilities/Equip AFE. Should a Facilities/Equip AFE not be available, code the surface associated equipment to 71033. Having this option does not release the coder of the responsibility of checking to see if a Facilities/Equip AFE has been written.



**WELL INFO**

**Shot Progression (Stage 1 - ACTUAL)**

Cluster #	Gun, ft	SPF	Holes	Phasing
1	1	4	4	90
2	1	4	4	90
3	1	4	4	90
4	1	4	4	90
5	1	4	4	90
<b>Total:</b>	<b>5</b>		<b>20</b>	

**Stage 1 Perforations:** Bottom (Toe) **8,782**  
FROM TOE PREP -> Top (Heel) **8,637**

**Shot Progression (Stages 2-20 - AS PLANNED)**

Cluster #	Gun, ft	SPF	Holes	Phasing
1	1	4	4	90
2	1	4	4	90
3	1	4	4	90
4	1	4	4	90
5	1	4	4	90
<b>Total:</b>	<b>5</b>		<b>20</b>	

**Toe Hardline:**  
**Heel Hardline:**  
**Marker Joints:** MKR at 4192' & 5321'  
**Other:**

**Well Name:** SPIDER MONKEY 1H  
**Location:** ROSEBUD COUNTY, MT  
**Field/Formation:** 25-087-21744  
**API#:** 27-18-0283-CP  
**APE#:** 46.6572  
**Surf Latitude:** -107.6741  
**Surf Longitude:** 21.0 ft  
**KB:** 4,212 ft, MD  
**KOP, MD:** 8,861 ft, MD  
**TD:** 8,792 ft, MD  
**PBTD, MD:** 5,165 ft, TVD  
**PBTD, TVD:** 193 deg F  
**BHT:** ft, MD  
**Packer Depth, MD:** 5,250 ft, MD  
**Heel Perf Limit:** 5,290 ft, MD  
**Top Perf (Detail Tab):** 3,532 ft, MD  
**Stim. Lateral:** 20  
**Total Stages:** 5  
**Clusters/stage:** 35.8 ft  
**Cluster Spacing:** 178 ft  
**Avg. Stage Length:** 18 ft  
**Plug to Perf Distance:** ft

**Directional Survey Information:**

Deviation	TVD	MD
Deviation = 20° @	4,675	4,684
Deviation = 40° @	4,811	4,841
Deviation = 60° @	4,956	5,062
Deviation = 80° @	5,023	5,250
Deviation = 90° @	5,135	7,387

**Casing Detail**

Casing	HOLE SIZE	OD	WT.	Grade	I thread	ID, in	Drift, in	Top, MD	Bottom, MD	Burst, psi	80% Burst	TOC, ft
Conductor	24	20	78.60	UK	WELDED	19.250		Surface	101			Surface
Surface	17 1/2	13 3/8	54.50	J-55	BTC	12.615	12.459	Surface	773	2,730	2,184	Surface
Inter 1	12 1/4	9 5/8	40.00	L-80	LTC	8.835	8.678	Surface	4,062	5,750	4,600	500
Prod 1	8 1/2	5 1/2	20.00	P-110 EC	DWC/C	4.778	4.653	Surface	8,846	14,360	11,488	4,160

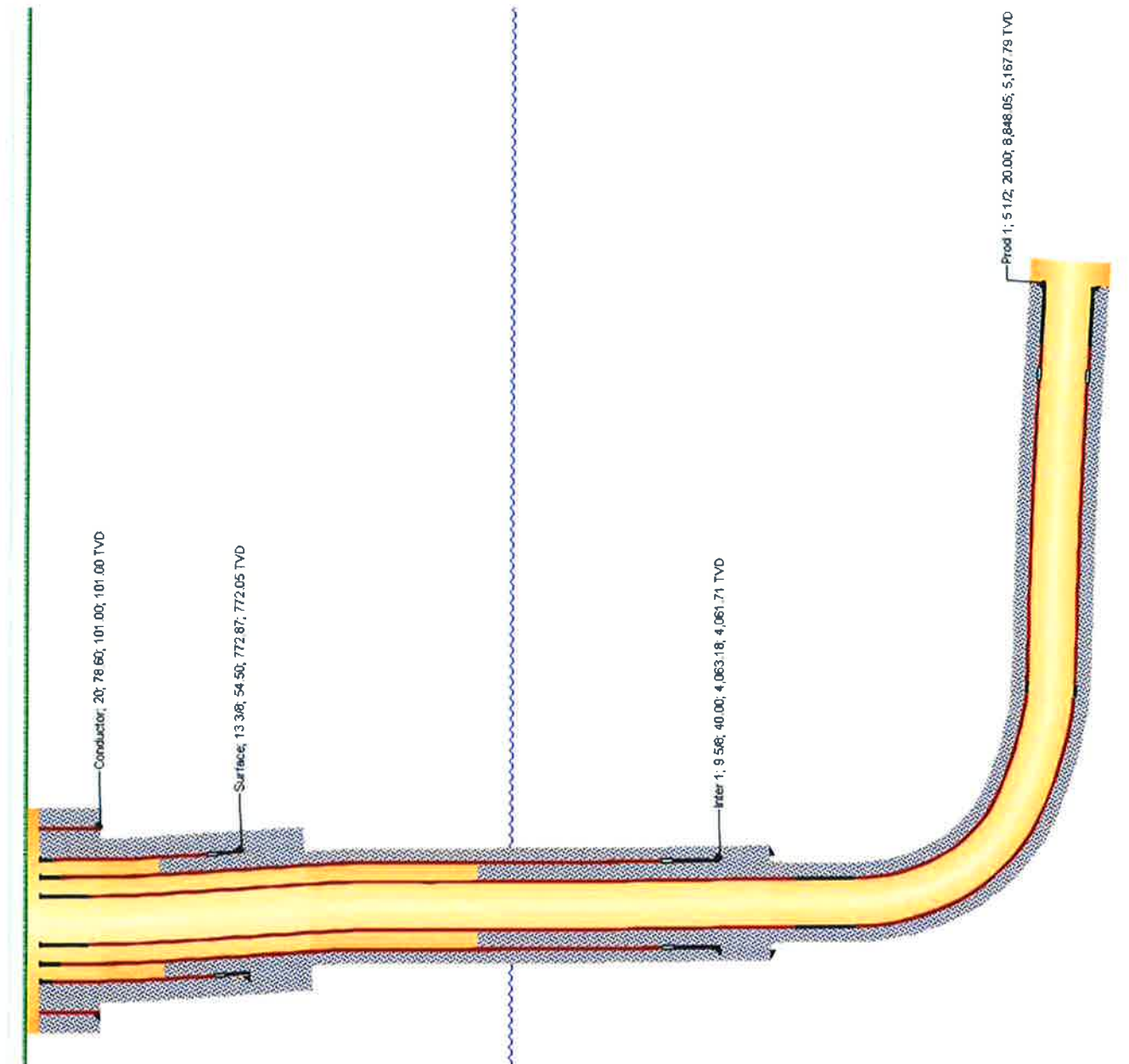
**Production Casing Volumes to PBTD:** 194.98 BBL (9.625 in. Capacity 0.07583 BBL/ft & 5.5 in. Capacity 0.02218 BBL/ft)

08721744



# CURRENT WELLBORE DIAGRAM

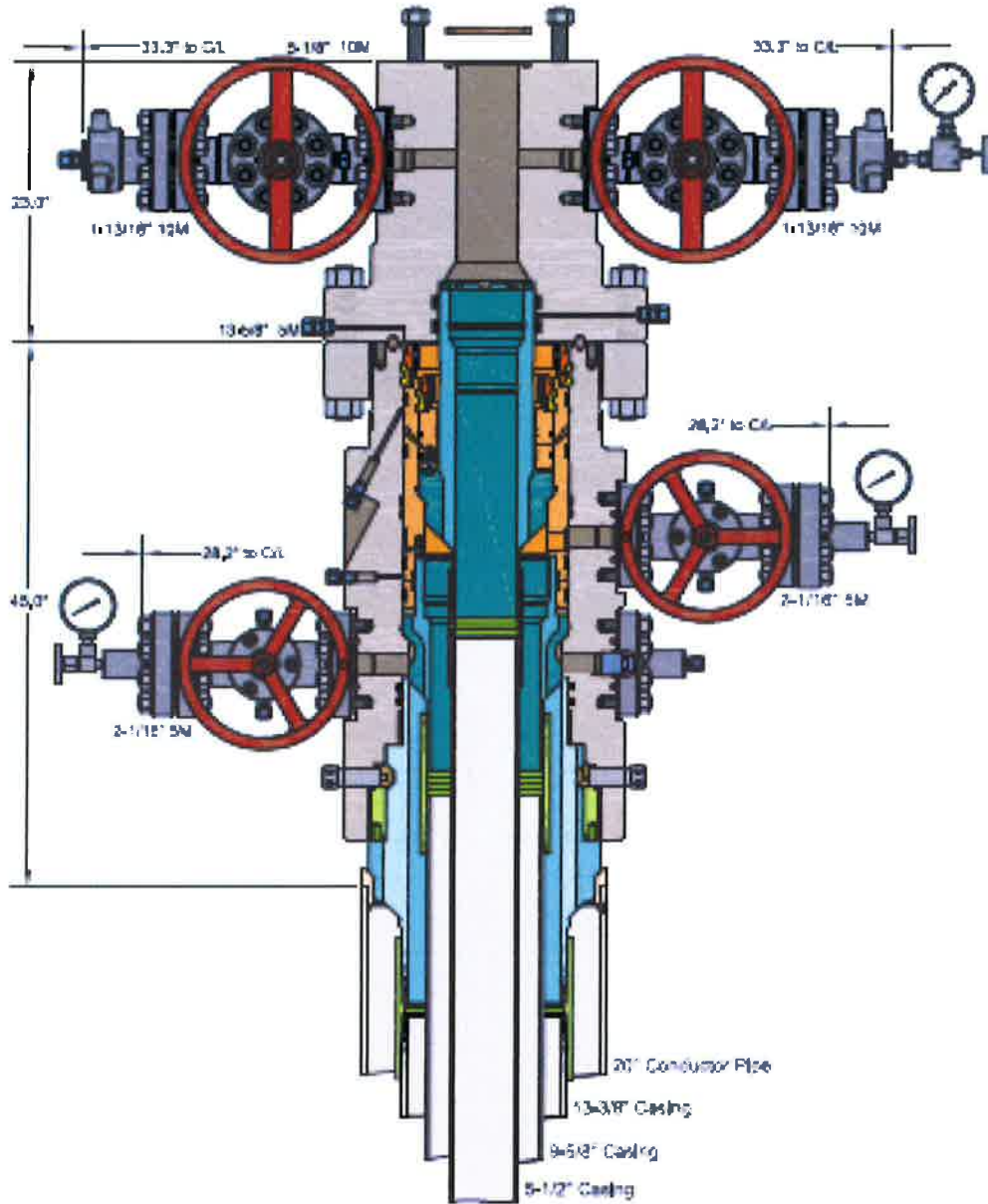
MONTANA BOARD OF OIL &  
GAS CONSERVATION • BILLINGS



FRAC STACK DIAGRAM

OCT - 3 2018

MONTANA BOARD OF OIL &  
GAS CONSERVATION - BILLINGS



DRILLOUT BHA DIAGRAM

Tool OD (in.)	Tool ID (in.)	Tool Diagram	Length (ft.)	Description	Connection (Make-Up Torque)	Drop Ball	Part #/Asset #
2.88	0.94		1.84	Coil Connector / Back Pressure Valve (MHA) w/ 2.00" Coil	2-3/8" PAC Pin Dn (2,300 Ft/Lbs)		MHA287-705
2.88	1.00		3.83	Hailey Bi-Directional jar	2-3/8" PAC Box Up (2,300 Ft/Lbs) x 2-3/8" PAC Pin Dn (2,300 Ft/Lbs)		
2.88	0.66		2.24	Hydraulic Disconnect	2-3/8" PAC Box Up (2,300 Ft/Lbs) x 2-3/8" PAC Pin Dn (2,300 Ft/Lbs)	3/4" (.750)	MHA287-900
2.88	0.56		1.58	Dual Circulating Sub w/Rupture Disc	2-3/8" PAC Box Up (2,300 Ft/Lbs) x 2-3/8" PAC Pin Dn (2,300 Ft/Lbs)	5/8" (.625)	DCS287-400
2.88			2.23	XRV Extended Reach Tool Optimized for 3-3.5 BPM	2-3/8" PAC Box Up (2,300 Ft/Lbs) x 2-3/8" PAC Pin Dn (2,300 Ft/Lbs)		XRV288-700
2.88	1.00		1.50	Bend Sub	2-3/8" PAC Box Up (2,300 Ft/Lbs) x 2-3/8" PAC Pin Dn (2,300 Ft/Lbs)		BPV288-400
2.88			13.52	Titan Supermax Motor w/ Power Plus 4.7	2-3/8" PAC Box Up (2,300 Ft/Lbs) x 2-3/8" PAC Box Dn (2,300 Ft/Lbs)		MTR287-761
3.75	1.25		0.50	Rotary Sub	2-3/8" PAC Pin Up (2,300 Ft/Lbs) x 2-7/8" REG Box Dn (5,479 Ft/Lbs)		
4.50			0.75	Roller Cone Bit	2-3/8" REG Pin Up (2,586 Ft/Lbs)		RBIT450-238R
Overall Length:			27.70	BHA Prepared By: MICHAEL WHATLEY		Date: 5/3/16	

Notes: Jar length is unstroked add (.8) max pull on on loaded jar 32k



**\*\*CELLS WITH BLUE BACKGROUND ARE THE ONLY CELLS TO BE EDITED\*\***

Fracture Start Date/Time:	
Fracture End Date/Time:	
State:	Montana
County:	Rosebud
API Number:	25-067-21744-0090
Operator Name:	Spider Monkey #1
Well Name:	Spider Monkey #1
Federal Well:	No
Indian Well:	No
Longitude:	-107.674715
Latitude:	43.657166
Long/Lat Projection:	NAD83
True Vertical Depth (TVD):	5092
Total Clean Fluid Volume* (gal):	2,746,800



Additive	Specific Gravity	Additive Quantity	Mass (lbs)
Water	8.34	2,746,800	22,908,312
Potassium Chloride	0.09	2,746,800	247,212
FRP-E3-8	10.01	496	4,964
Surflow 420	9.12	687	6,263
CSA-13	8.97	5,994	49,281
LGA-51	8.80	764	99,042
BFH-98	10.98	382	3,899
XLB-36	10.43	1,987	21,539
BHL-68	8.76	766	706
BE-3LT	(already reported in lbs)	626	626
BLR-18	(already reported in lbs)	400	3,455,600
HCL-7.5	8.64	400	4,137
ICI-5L	7.79	50	623
ASF-67	10.43	1,373	14,314
SC1-38	8.64	961	8,100
Aquear 714	(already reported in lbs)	3,502,800	3,502,800
Crystalline Silica Quartz	(already reported in lbs)		
Total Slurry Mass (Lbs)			30,39,767

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Mass per Component (LBS)	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Operator	Carrier	Carrier	7732-18-5	100.00%	22,908,312	75.56899%	
Potassium Chloride	Operator	Clay Control	MSDS and Non-MSDS Ingredients Listed Below					
FRP-E3-8	Liberty Oilfield Services	Friction reduction	MSDS and Non-MSDS Ingredients Listed Below					
Surflow 420	Liberty Oilfield Services	Slickant	MSDS and Non-MSDS Ingredients Listed Below					
CSA-13	Liberty Oilfield Services	Clay Control	MSDS and Non-MSDS Ingredients Listed Below					
BFH-98	Liberty Oilfield Services	Gear Slurry	MSDS and Non-MSDS Ingredients Listed Below					
XLB-36	Liberty Oilfield Services	Buffer	MSDS and Non-MSDS Ingredients Listed Below					
BHL-68	Liberty Oilfield Services	Crosslinker	MSDS and Non-MSDS Ingredients Listed Below					
BE-3LT	Liberty Oilfield Services	Breaker	MSDS and Non-MSDS Ingredients Listed Below					
BLR-18	Liberty Oilfield Services	Breaker	MSDS and Non-MSDS Ingredients Listed Below					
HCL-7.5	Liberty Oilfield Services	Solvent	MSDS and Non-MSDS Ingredients Listed Below					
ICI-5L	Liberty Oilfield Services	Iron Sequestering Agent	MSDS and Non-MSDS Ingredients Listed Below					
ASF-67	Liberty Oilfield Services	Nanomic Non-Emulsifier	MSDS and Non-MSDS Ingredients Listed Below					
SC1-38	Liberty Oilfield Services	Scale Control	MSDS and Non-MSDS Ingredients Listed Below					
Aquear 714	WST	Biocide	MSDS and Non-MSDS Ingredients Listed Below					
Crystalline Silica Quartz	Liberty Oilfield Services	White Sand	MSDS and Non-MSDS Ingredients Listed Below					
The trade name(s) of the additive(s) used, supplier(s), and the purpose(s) of the additive(s) are listed above. The ingredient(s) for the above additive(s) are listed below.								
Crystalline Silica Quartz	Liberty Oilfield Services	White Sand	Crystalline Silica in the form of Quartz	14808-60-7	99.00%	3,499,297	11.53720%	
Hydrochloric Acid	Operator	Solvent	Hydrochloric Acid	7647-01-0	7.50%	239,170	0.8523%	
Potassium Chloride	Operator	Clay Control	Potassium Chloride	7447-40-7	100.00%	247,212	0.81487%	
Choline Chloride	Operator	Gear Slurry	White mineral oil (petroleum)	8042-47-5	65.00%	64,377	0.21219%	
Water	Operator	Clay Control	Choline Chloride	67-48-1	75.00%	36,961	0.12183%	
Ulexite	Operator	Clay Control	Water	7732-18-5	30.00%	14,784	0.04873%	
Petroleum distillates, hydrorefined light	Operator	Crosslinker	Petroleum distillates, hydrorefined light	1319-93-1	50.00%	10,770	0.03550%	
Water	Operator	Crosslinker	Water	64742-47-8	40.00%	8,616	0.02840%	
Alkyl Sulfonic Acid Amine Salt	Operator	Surfactant	Alkyl Sulfonic Acid Amine Salt	Approved as per MBOGC	100.00%	6,889	0.02271%	
Ethylene Glycol	Operator	Scale Control	Ethylene Glycol	107-21-1	40.00%	5,723	0.01887%	
Sodium Hydroxide Solution	Operator	Buffer	Sodium Hydroxide Solution	1310-73-2	60.00%	5,033	0.01659%	
2-Propenoic acid, polymer with 2,5-furandione, sodium salt	Operator	Scale Control	2-Propenoic acid, polymer with 2,5-furandione, sodium salt	52255-49-9	30.00%	4,294	0.01415%	
Phosphonic acid, [(phosphonomethyl)imino]bis(2,1-ethanedithiolobis(methylene))tetrakis	Operator	Scale Control	Phosphonic acid, [(phosphonomethyl)imino]bis(2,1-ethanedithiolobis(methylene))tetrakis	15827-60-8	25.00%	3,378	0.01179%	
Phosphonic acid, [(phosphonomethyl)imino]bis(6,1-hexanedithiolobis(methylene))tetrakis	Operator	Scale Control	Phosphonic acid, [(phosphonomethyl)imino]bis(6,1-hexanedithiolobis(methylene))tetrakis	34690-00-1	20.00%	2,663	0.00944%	
Citic acid	Operator	Scale Control	Citic acid, polymer with sodium phosphate	71050-62-9	20.00%	2,663	0.00944%	
Danilates (osteoleum), hydrorefined light	Operator	Iron Sequestering Agent	Danilates (osteoleum), hydrorefined light	77-92-9	60.00%	2,482	0.00818%	
Ethylene Glycol	Operator	Friction reduction	Ethylene Glycol	64742-47-8	45.00%	2,234	0.00736%	
Borate Salt	Operator	Crosslinker	Borate Salt	107-21-1	55.00%	2,190	0.00723%	
Gluaraldehyde	Operator	Crosslinker	Gluaraldehyde	1303-06-4	30.00%	1,193	0.00394%	
Phosphonic acid, [(1,6-hexanedithiolobis(methylene))tetrakis	Operator	Biocide	Phosphonic acid, [(1,6-hexanedithiolobis(methylene))tetrakis	11130-8	14.00%	1,162	0.00383%	
Ammonium Persulfate	Operator	Scale Control	Ammonium Persulfate	23605-74-5	5.00%	716	0.00236%	
Ammonium Persulfate	Operator	Breaker	Ammonium Persulfate	7727-54-0	100.00%	626	0.00206%	
Methanol	Operator	Breaker	Methanol	7727-54-0	75.00%	550	0.00175%	
Tert-Butyl Hydroperoxide	Operator	Breaker	Tert-Butyl Hydroperoxide	67-56-1	50.00%	312	0.00103%	
Alcohols, C12-16, ethoxylated propoxylated	Operator	Breaker	Alcohols, C12-16, ethoxylated propoxylated	75-91-2	7.00%	257	0.00085%	
Quaternary Ammonium Compounds	Operator	Friction reduction	Quaternary Ammonium Compounds	68213-24-1	5.00%	248	0.00082%	
Acrylic Copolymer	Operator	Breaker	Acrylic Copolymer	68424-83-1	2.50%	208	0.00064%	
Proprietary Ingredient	Operator	Breaker	Proprietary Ingredient	Approved as per MBOGC	20.00%	141	0.00047%	
Dibutylene Glycol Monobutyl Ether	Operator	Breaker	Dibutylene Glycol Monobutyl Ether	Approved as per MBOGC	6.00%	42	0.00014%	
Ethanol	Operator	Biocide	Ethanol	112-54-5	5.00%	35	0.00013%	
	WST	Biocide	Ethanol	64-17-5	0.30%	25	0.00008%	

\*Total Water Volume sources may include fresh water, produced water, and/or recycled water  
 \*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(c) and Appendix D.