

FORM NO. 22 R 10/09      SUBMIT IN QUADRUPPLICATE TO:      ARM 36.22.307  
ARM 36.22.601

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

Lease Name: Fletch 5-8

Lease Type (Private/State/Federal): Private

Application for Permit To:

Drill       Deepen       Re-enter   
Oil       Gas       Other

Well Number: #3H

Operator: Kraken Operating LLC  
Address: 9821 Katy Freeway Suite 460  
City: Houston      State: TX      Zip: 77024  
Telephone Number: 281-658-4048

Field Name or Wildcat: Wildcat  
Unit Name (if applicable): N/A

Surface Location of Well (quarter-quarter and footage measurements):  
SESW Sec 32 T26N R59E, 355' FNL 2361' FWL

Objective Formation(s): Bakken

Proposed Total Depth and Bottom-hole Location(s) if directional or horizontal well:  
TD 20,767' MD, 10,343 TVD  
SESW Sec 8 T25N R59E, 200' FSL, 1590' FWL

Township, Range, and Section: Sec 32 T26N R59E  
County: Richland County, MT  
Elevation (indicate GL or KB): 2080' GL

Size and description of drilling/spacing unit and applicable order, if any: 1280 acres (Sections 4 & 9, T25N-R59E)/Order 32-2018

Formation at total depth: Bakken

Anticipated Spud Date: 11/10/2018

Hole Size	Casing Size	Weight / Foot	Grade (API)	Depth	Sacks of Cement	Type of Cement
13 1/2	9 5/8	36	J-55	1875	608	See Attached
8 3/4	7	29# and 32#	P-110	10625	707	See Attached
6	4 1/2	11.6#	P-110	20769	563	See Attached

Describe Proposed Operations:  
Describe or attach labeled diagram of blowout preventer equipment. Indicate if air drilled or describe mud program.  
See attachments for details

Kraken Operating, LLC requests variance to not run open hole logs on the subject well. Offset logs can be found for the Slawson Exploration Co., Effie Owens #1-32, Sec 32-T26N-R59E, Richland Co, MT.

**BOARD USE ONLY**

Approved (date) OCT 12 2018      Permit Fee \$150.00

By [Signature]      Check Number 25521

Title Petroleum Engineer      Permit Expire APR 12 2019

Permit Number 32345

THIS PERMIT IS SUBJECT TO THE CONDITIONS OF APPROVAL STATED ON THE BACK

API Number: 25 - 083 - 23360

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

Signed (Agent) [Signature]      Title Sr. Regulatory Analyst

Date 9/21/2018

Telephone Number 713-360-7705 EXT. 156

Samples Required: NONE  ALL  FROM \_\_\_\_\_ feet to \_\_\_\_\_ feet

Core chips to address below, full cores to USGS, Core Laboratory, Arvada, CO. Required samples must be washed, dried and delivered prepaid to:

Montana Board of Oil and Gas Conservation  
2535 St. Johns Avenue  
Billings, MT 59102

**SUPPLEMENTAL INFORMATION**

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

1. Attach a survey plat certified by a registered surveyor. The survey plat must show the location of the well with reference to the nearest lines of an established public survey.
2. Attach an 8 1/2 x 11" photocopy of that portion of a topographic map showing the well location, the access route from county or other established roads, residences, and water wells within a 1/2 mile radius of the well.
3. Attach a sketch of the well site showing the dimensions and orientation of the site, the size and location of pits, topsoil stockpile, and the estimated cut/fill at the corners and centerstake. (Note: the diagram need not be done by an engineer or surveyor). Attach a sketch of a top view and two side views of the reserve pit(s), if utilized. The reserve pit sketch must show the length, width, depth, cut and fill, amount of freeboard, area of topsoil stockpile, and the height and width of berms.
4. Describe the type and amount of material or liner, if any, to be used to seal the reserve pit. If a synthetic liner is used, indicate the liner thickness (mils), bursting strength, tensile strength, tear strength, puncture resistance, hydrostatic resistance, or attach the manufacturer's specifications.
5. Describe the proposed plan for the treatment and/or the disposal of reserve pit fluids and solids after the well is drilled. If the operator intends to dispose of or treat the reserve pit contents off-site, specify the location and the method of waste treatment and disposal. (Note: The operator must comply with all applicable federal, state, county, and local laws and regulations with regard to the handling, transportation, treatment, and disposal of solid wastes.)
6. Does construction of the access road or location, or some other aspect of the drilling operation require additional federal, state, or local permits or authorizations? If yes, indicate the type of permit or authorization required:
  - No additional permits needed
  - Stream crossing permit (apply through county conservation district)
  - Air quality permit (apply through Montana Department of Environmental Quality)
  - Water discharge permit (apply through Montana Department of Environmental Quality)
  - Water use permit (apply through Montana Department of Natural Resources and Conservation)
  - Solid waste disposal permit (apply through Montana Department of Environmental Quality)
  - State lands drilling authorization (apply through Montana Department of Natural Resources and Conservation)
  - Federal drilling permit (specify agency)
  - Other federal, state, county, or local permit or authorization: (specify type) \_\_\_\_\_

**NOTICES:**

1. Date and time of spudding must be reported to the Board verbally or in writing within 72 hours after the commencement of drilling operations.
2. The operator must give notice of drilling operations to the surface owner as required by Section 82-10-503, MCA, before the commencement of any surface activity.

**BOARD USE ONLY**

**CONDITIONS OF APPROVAL**

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

**WARNING: Failure to comply with conditions of approval may void this permit.**



**Typical Completion Procedure  
Bakken or Three Forks**

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**After Drilling Rig Moves Off Location**

1. MIRU wire line, RIH with gauge ring to at least 100 ft beyond liner top, POOH.
2. RIH and set retrievable plug in liner hanger or in completion liner, POOH with wireline. Run CBL-CCL-GR and casing inspection tool from liner top to surface.
3. Pressure test 7" (intermediate) casing and frac valve. Retrieve plug in liner top.
4. MI and fill frac tanks with fresh water to ensure there will be enough water for the designed frac job.
5. MIRU flowback company. Rig flowback iron from wellhead to 4 phase separator to open top tank.
6. MIRU all frac company equipment, wire line, and all ancillary equipment necessary to frac well.
7. Pump frac job as designed. RDMO frac equipment and wire line.
8. MIRU coiled tubing to mill out frac plugs.
9. Begin flowback of well. Once well has cleaned up, direct full well stream to production battery.
10. RDMO flowback equipment and crew.
11. Turn well over to production department.

**Note:**

If casing inspection log indicates excessive wear in 7" casing or other conditions require a frac string to be run, the CBL-GR-CCL and casing inspection tool will be run and the 7" casing pressure tested to a lower rating. After the frac string is run, a retrievable plug will be set and the frac string tested prior to the frac.

**Kraken Operating, LLC Proposed Well Stimulation**

Total Clean Fluid – 235,000 bbls

Maximum Anticipated Treating Pressure – 9,800 psi

**Hydraulic Fracturing Fluid Components Information Disclosure:**

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)**
Water	Operator	Carrier	Carrier				
Surf-Flo 430	Innospec	Flowback Additive	MSDS and Non-MSDS Ingredients Listed Below	7732-18-5	100.00%	82,215,800.00	84.06572%
FRP-1S	Liberty Oilfield Services	Friction reduction	MSDS and Non-MSDS Ingredients Listed Below			7,435.80	0.00759%
DVA-75	Liberty Oilfield Services	Diverting Agent	MSDS and Non-MSDS Ingredients Listed Below			252,833.79	0.25823%
BioClear 5000	Lubrizol	Biocide	MSDS and Non-MSDS Ingredients Listed Below			469.00	0.00048%
ScaleCease 7103	Innospec	Scale Inhibitor	MSDS and Non-MSDS Ingredients Listed Below			8,387.32	0.00857%
HCL-15	Liberty Oilfield Services	Solvent	MSDS and Non-MSDS Ingredients Listed Below			15,850.17	0.01619%
ACI-300	WST	Corrosion Inhibitor	MSDS and Non-MSDS Ingredients Listed Below			17,295.26	0.01766%
WA-100	WST	Wetting Agent	MSDS and Non-MSDS Ingredients Listed Below			67.43	0.00007%
IC-50S	WST	Iron Control	MSDS and Non-MSDS Ingredients Listed Below			34.79	0.00004%
Liberty Clean Out	Liberty Oilfield Services	Cleanup Solution	MSDS and Non-MSDS Ingredients Listed Below			125.74	0.00013%
Crystalline Silica	Liberty Oilfield Services	Sand	MSDS and Non-MSDS Ingredients Listed Below			74.86	0.00008%
The trade name(s) of the additive(s) used, supplier(s), and the purpose(s) of the additive(s) for the above additive(s) are listed below.							
	Liberty Oilfield Services	Sand	Crystalline Silica (quartz)	14808-60-7	99.90%	15,284,700.00	15.60963%
	Liberty Oilfield Services	Sand	Aluminum Oxide	1344-28-1	1.00%	153,000.00	0.15625%
	Liberty Oilfield Services	Friction reduction	Petroleum distillates, hydrotreated light	64742-47-8	45.00%	113,784.20	0.11620%
	Liberty Oilfield Services	Sand	Iron Oxide	1309-37-1	0.10%	15,300.00	0.01563%
	Liberty Oilfield Services	Sand	Titanium Oxide	13463-67-7	0.10%	15,300.00	0.01563%
	Innospec	Scale Inhibitor	Water	7732-18-5	95.00%	15,057.66	0.01538%
	Liberty Oilfield Services	Solvent	Water	7732-18-5	85.00%	14,700.97	0.01501%
	Liberty Oilfield Services	Friction reduction	Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched	69011-36-5	3.00%	7,585.61	0.00775%
	Innospec	Flowback Additive	Water	7732-18-5	95.00%	7,064.01	0.00721%
	Liberty Oilfield Services	Solvent	Hydrochloric Acid	7647-01-0	15.00%	2,594.29	0.00265%
	Lubrizol	Biocide	2,2-dibromo-3-nitropropionamide	10222-01-2	10.00%	838.73	0.00086%
	Innospec	Scale Inhibitor	BHMT Phosphonate	Proprietary	5.00%	792.51	0.00081%
	Innospec	Scale Inhibitor	Proprietary Ingredient	Proprietary	5.00%	792.51	0.00081%
	Innospec	Flowback Additive	Benzeneulfonic Acid, dodecyl-cmpd, with 2-aminoethanol	26836-07-7	10.00%	743.58	0.00076%
	Innospec	Flowback Additive	Dodecylbenzene sulfonate, triethanolamine salt	27523-41-7	10.00%	743.58	0.00076%
	Liberty Oilfield Services	Diverting Agent	Poly lactide Resin	9051-89-2	100.00%	469.00	0.00048%
	Innospec	Flowback Additive	Sodium Alpha Olefin Sulfonate	68439-57-6	5.00%	371.79	0.00038%
	WST	Iron Control	2-hydroxypropane-1,2,3-tricarboxylic acid	77-92-9	60.00%	75.45	0.00008%
	Liberty Oilfield Services	Cleanup Solution	Oxygenate and paraffinic stream	876065-86-0	99.00%	74.11	0.00008%
	WST	Wetting Agent	Ethoxylated Decyl Alcohol	78330-20-8	40.00%	13.92	0.00001%
	WST	Corrosion Inhibitor	2-Propyn-1-ol compound with methylxirane	38172-91-7	15.00%	10.11	0.00001%
	Liberty Oilfield Services	Cleanup Solution	C.I. Solvent Yellow 33	8003-22-3	1.00%	0.75	0.00000%
	Innospec	Flowback Additive	Triethanolamine	103-71-6	0.01%	0.67	0.00000%
	Innospec	Flowback Additive	Ethanolamine	141-43-5	0.01%	0.67	0.00000%