

**Montana Board of Oil and Gas Conservation
Environmental Assessment**

Operator: Apache Corporation
Well Name/Number: Jayhawk Strong 4-1
Location: C NW Section 47 T34N R46E
County: Daniels, **MT;** **Field (or Wildcat)** Wildcat

Air Quality

(possible concerns)

Long drilling time: No, 20 to 30 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill a vertical pilot hole to the Duperow Formation to 7450 TVD. Plug back to 5400' and drill a horizontal Ratcliffe Formation well test, 6085'TVD/9123'MD.

Possible H2S gas production: Possible H2S gas from Mississippian and Duperow Formations.

In/near Class I air quality area: Yes, closest Class I air quality area is the Fort Peck Indian Reservation, about 7 miles to the south from this location.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:

- Air quality permit (AQB review)
- Gas plants/pipelines available for sour gas
- Special equipment/procedures requirements
- Other: _____

Comments: No special concerns – using a rig to drill a vertical pilot hole to the Duperow Formation to 7450 TVD. Plug back to 5400' and drill a horizontal Ratcliffe Formation well test, 6085'TVD/9123'MD. If there are existing pipelines for natural gas in the area then associated gas must be tied into gathering system or if no gathering system nearby associated gas can be flared under Board Rule 36.22.1220.

Water Quality

(possible concerns)

Salt/oil based mud: Yes, freshwater and freshwater gel polymer mud system on surface hole. Pilot hole and horizontal lateral will be drilled with a oil based invert mud system.

High water table: No high water table anticipated at this location.

Surface drainage leads to live water: Yes, closest drainages are Police Creek, an ephemeral drainage, about 3/16 of a mile to the east northeast and unnamed ephemeral tributary to Police Creek, about 1/8 of a mile to the southeast from this location.

Water well contamination: No, closest water wells are further than 1 mile in any direction from this location. Surface hole will be drilled with freshwater and surface casing set and cemented to surface at 1250'. (Rule 36.22.1001)

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: No, Class I stream drainage in the area of review.

Mitigation:

- Lined reserve pit

- Adequate surface casing
- Berms/dykes, re-routed drainage
- Closed mud system
- Off-site disposal of solids/**liquids** (in approved facility)
- Other: Cuttings pit will be lined with a 16 mil

liner.

Comments: 1250' of surface casing cemented to surface adequate to protect freshwater zones. Also, fresh water mud systems to be used. (Rule 36.22.1001)

Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: None

High erosion potential: No high erosion potential due to small cut and fill. Location requires a small cut, up to 5.5' and a small fill, up to 3.5', required.

Loss of soil productivity: No, location will be restored after drilling, if nonproductive. If productive unused portion of drillsite will be restored.

Unusually large wellsite: No, a large well site, 400X400' location size required for one vertical well location, Jayhawk Strong 4-1.

Damage to improvements: Slight, surface use is a cultivated field.

Conflict with existing land use/values: Slight

Mitigation

- Avoid improvements (topographic tolerance)
- Exception location requested
- Stockpile topsoil
- Stream Crossing Permit (other agency review)
- Reclaim unused part of wellsite if productive
- Special construction methods to enhance reclamation
- Other _____

Comments: Will use existing county road, Police Creek Road. About 1/4 of a mile of access road will be built into this location. Oil based invert drilling fluids will be recycled. Cuttings will be buried on the wellsite in the lined cuttings pit. Oil based drilling fluids will be recycled and completion fluids will be hauled to commercial Class II saltwater disposal facility. Solids will be allowed to dry in the lined cuttings pit. Pit will be back filled when dry with clay subsoils and then topped with topsoil. No special concerns.

Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Closest residence is about 3/8 of a mile to the north northwest from his location. The town of Peerless, Montana is about 6.4 miles to the northwest and the town of Scoby, Montana is about 13.6 miles to the northeast from this location

Possibility of H2S: Possible H2S gas from Mississippian and Devonian Formations.

Size of rig/length of drilling time: Triple drilling rig 20 to 30 days drilling time.

Mitigation:

- Proper BOP equipment
- Topographic sound barriers
- H2S contingency and/or evacuation plan
- Special equipment/procedures requirements
- Other: _____

Comments: Adequate surface casing and operational BOP should mitigate any problems. (BOP's 5,000 psig annular, pipe and blind rams) rule 36.22.1014. No concerns.

Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None identified.

Proximity to recreation sites: None identified.

Creation of new access to wildlife habitat: No

Conflict with game range/refuge management: No

Threatened or endangered Species: Species identified as threatened or endangered are the Whooping Crane. Candidate species is the Sprague's Pipit. NH tracker website indicates four(4) species of concern: Baird's Sparrow, Sprague's Pipit, Bobolink and Iowa Darter.

Mitigation:

Avoidance (topographic tolerance/exception)

Other agency review (DFWP, federal agencies, **MTDNRC "Trust Lands",**)

Screening/fencing of pits, drillsite

Other: _____

Comments: Private surface land, cultivated. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over MTDNRC "Trust Lands" surface lands.

Historical/Cultural/Paleontological

(possible concerns)

Proximity to known sites: None identified.

Mitigation

avoidance (topographic tolerance, location exception)

other agency review (SHPO, **MTDNRC "Trust Lands",** federal agencies)

Other: _____

Comments: State of Montana "Trust Lands" cultivated surface land. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. The Board of Oil & Gas has no jurisdiction over MTDNRC "Trust Lands", surface lands.

Social/Economic

(possible concerns)

Substantial effect on tax base

Create demand for new governmental services

Population increase or relocation

Comments: Wildcat well. No concerns

Remarks or Special Concerns for this site

Well is a wildcat exploratory. The operator will drill a vertical pilot hole to the Duperow Formation to 7450 TVD. Plug back to 5400' and drill a horizontal Ratcliffe Formation well test, 6085'TVD/9123'MD.

Summary: Evaluation of Impacts and Cumulative effects

No, long term impacts expected. Some short term impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki
(title:) Chief Field Inspector
Date: January 8, 2013

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website

(Name and Agency)
Daniels County water wells
(subject discussed)
January 8, 2013
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Daniels County, Montana
(subject discussed)
January 8, 2013
(date)

Montana Natural Heritage Program Website
(Name and Agency)
Heritage State Rank= S1, S2, S3, Location T34N R46E
(subject discussed)
January 8, 2013
(date)

Montana DNRC "Trust Lands" website
(Name and Agency)
Location Section 4 T34N R46E
(subject discussed)

January 8, 2013 _____
(date)

If location was inspected before permit approval:

Inspection date: _____

Inspector: _____

Others present during inspection: _____