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Idaho Dept. of Lands
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IDAHO OIL AND GAS CONSERVATION COMMISSION

Seismic Permit Application

Permit Number LU 600079

NAME OF COMPANY: GEOKINETICS USA INC Date: _____
Address: 1500 CITY WEST BLVD. SUITE 800
City: Houston State: TX Zip Code: 77042
Local Contact: JIMMY JEFFCOAT Telephone: (281) 838-5432

NAME OF CLIENT COMPANY: ALTA MESA HOLDINGS, L.P.
Address: 15021 KATY FREEWAY, SUITE 400
City: Houston State: TX Zip Code: 77094
Local Contact: MIKE MCMENNAMY Telephone: (281) 943-1379

NAME OF PLUGGING CONTRACTOR: _____
(If different than applicant)
Address: _____
City: _____ State: _____ Zip Code: _____
Local Contact: _____ Telephone: _____

Description of Plugging Contractors identifying mark on hat or non-metallic plug used for plugging:
Plug will be stamped with GOK12

DESCRIPTION OF SEISMIC PERMIT APPLICATION NEEDS

Section: _____ Township: _____ Range: _____ (or block and survey)
* (If more than one (1) township, please attach complete description) *

Type (2D, 3D) and Energy sources used (vibroseis, shot holes, both, other, etc.) and size and strength of charges:
3D VIBROSEIS + SHOT HOLES 2.2 lbs.

Approximate number, depth and location of seismic holes (e.g. number per mile):
130 VIBROSEIS or SHOT HOLES per sq mile 40' depth

Please attach Shot Hole map to application (scale – 1 inch/2 miles):
✓

Anticipated Date Work will Start: August-15-2012
Anticipated Date Work will be Completed: OCTOBER-25-2012
Anticipated Plugging Date: PLUG HOLE AT TIME OF DRILLING & AFTER DETONATION
Anticipated Reclamation Date: OCTOBER-25-2012

Description of Hole Plugging Procedure:

When drilled with water the hole will be backfilled with bentonite / water slurry to a depth of three feet then plugged with a non metalic permant plug either imprinted or tagged with the operators name. The remainder will be backfilled & tamped to the surface with cuttings & native soil. Bentonite will be used to backfill when water is encountered when air drilling.

Description of Surface Reclamation Procedure:

Every shot hole will be stripped of its size and leveled off with the ground surface after detonation. Any blowouts will be backfilled and tamped immediately. Artesian flows will be plugged with cement. The location of all shot holes drilled will be provided to the Department of Lands. Any damaged crops will be compensated for at fair market value.

- [x] Proposed route of seismic line on topo map or recent air photo base (attach to application) with surface waters, roads, section lines, additional area for alternative routing (must be within ½ mile), and labeled seismic line for future reference.
- [x] Minimum bond of ten thousand dollar ($10,000), or actual cost (to be attached).
- [ ] Minimum additional five thousand dollar ($5,000) plugging bond, if separate plugging contractor is used (to be attached).
- [x] Legal Notice Published in Newspaper of General Circulation
- [x] Land Owner Notifications Sent

CERTIFICATE: I, the undersigned, state that I am the PROJECT MANAGER of GEOKINETICS (company) and that I am authorized by said company to make this application and that this application was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

Signature: Jenny Jeffcoat Date: 8/6/12

FOR IDL USE ONLY:

Approved by: Thomas M. Schultz Approval Date: 8/8/12

NOTICE: Before sending in this form, be sure that you have given all information requested:

Compliance with IDAPA 20.07.02.360 is required. Please read these rules for specific details on charge weights, distances from structures, and other operational requirements. Reporting to IDL is required every thirty (30) days and upon project completion.

Willow 3D, Payette County

TWN9-RNG4	TWN8-RNG4	TWN8-RNG3	TWN7-RNG4	TWN7-RNG3
Sections	Sections	Sections	Sections	Sections
26	1	31	1	5
27	2		2	6
28	3		3	7
29	4		11	8
30	5		12	17
31	6		13	18
32	7			
33	8			
34	9			
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1500 CityWest Blvd
Suite 800
Houston Texas 77042, USA
Project manager: Jimmy Jeffcoat
(281)-838-5432

Proposed Operational Plan

Geokinetics- Willow 3D

Introduction

The proposed project is a 52 square mile 3-D seismic survey on BLM, State, County, City and Private Lands in Payette County, Idaho. The project will incorporate portions of TWN9-RNG4, TWN8-RNG4, TWN8-RNG3, TWN7-RNG4 and TWN7-RNG3 in Boise Meridian (see attached map). Inside the 3D boundary there two State permits: Idaho Fish and Game (734 acres) and State Lands (697 acres). The proposed action plan is needed to effectively evaluate hydrocarbon reserves underlying the project area for further development of oil and gas resources. The duration of the project will be approximately eight weeks in duration to be completed in the fourth quarter of 2012.

Recording Crew Start Date = August 12th, 2012

Anticipated Completion date of Program = October 31, 2012

Scope of Program

The 3D receiver orientation will be SW to NE (diagonal) with a receiver interval 165 ft with a line spacing of 330 feet. The source orientation will be N to S with a source interval of 165 ft with a line spacing of 1320 ft. The source energy will be generated primarily utilizing the vibroseis method with some dynamite infill (shot holes) on steep slopes where source locations can't be occupied with vibrators.

Acquisition of seismic exploration data involves the synthetic generation of seismic waves and their subsequent detection after passing through or reflecting off the region of interest (i.e., the "target area"). A seismic survey typically involves generating hundreds to tens of hundreds of seismic source events at established locations in the survey area. The seismic energy generated at each source is detected and recorded at a variety of distances from the source location. To effectively generate 3-D seismic data, receiver points are placed in a grid pattern with multiple source points. Force waves are generated using the vibroseis method, (specifically designed servo hydraulic vibrators) or the detonation of shot holes, and are collected by the receivers and used to generate models of the subsurface geological structures.

Number of Receiver Points = 25,141 **Number of Source points = 6,378**

Survey & Hazard Assessment

Geokinetics will conduct a thorough hazard survey assessment of the project area. Crews will operate in small groups using the global positioning system (GPS). They will identify all culture in the area, both surface and sub-surface, to include, but not limited to, pipelines, fiber optics, waterlines, houses, and sensitive sites. All culture will receive proper 'buffers' in accordance with IAGC guidelines & 43 CFR 3150 regulations on federal land. The buffer of 300 ft. will be maintained for structures, houses and buildings. The buffer for water wells, irrigation wells, oil & gas wells is 300 ft. A buffer of 150 ft. will be maintained from paved roads, pipelines, waterlines and cemeteries. A buffer of 100 feet will be maintained from power, telephone and cable lines. The method of operation will utilize a helicopter, trucks, as well as utility terrain vehicles (UTV'S), traveling on roads, established two tracks, and source, and receiver lines that have been cleared from archeological sites. Crews will mark receiver locations with pin flags, source locations for vibrators will be marked with biodegradable paint, pin flags and/or wooden lathe. Vibrators will be equipped with GPS. Source locations for drills will be marked with survey lathe and a biodegradable paint spot.

Drilling

After review of the terrain in the project area, it is estimated that 15 percent of source points for the entire area will need to be drilled due to steep slopes, marshy areas or area where no vehicular traffic is allowed.

Buggy Drilling

It is estimated that approximately 10 percent of the source points in the entire project would be drilled by buggy mounted drill equipment. Buggy drills weigh less than 20,000 lbs and are outfitted with 2-3 ft wide low ground pressure tires. A 4 inch diameter bore hole would be drilled to a depth of 40 ft and loaded with 2.2 lbs of explosives, backfilled with bentonite/water slurry to a depth of 3 feet then plugged with a non-metallic, permanent plug either imprinted or tagged with the operator's name (GOK12). The remainder would be backfilled and tamped to the surface with, cuttings and native soil. A sufficient mound of native soil will be left over the hole to allow for settling. Buggy drill access would be via flagged drive routes. From one to four drilling buggies operating in different areas of the project would be used.

Heli-portable Drilling

It is estimated that 5 percent of the entire project would be drilled by heli-drill equipment. Heli-portable Drills will be used in areas where slope restrictions apply, where ground is too soft to support self propelled equipment or no vehicle traffic is allowed. Heli-portable drill access is by air. A helicopter deploys the drills by long line, each drill is operated by two people who typically enter the work area by helicopter and walk to point as the drill is being moved. A 4 inch diameter bore hole is drilled to a depth of 40 ft and loaded with 2.2 lbs of explosives, backfilled with bentonite/water slurry to a depth of 3 feet then plugged with a non-metallic permanent plug either imprinted or tagged with the operators

name(GOK12). The remainder would be backfilled and tamped to the surface with cuttings and native soil. A sufficient mound of native soil will be left over the hole to allow for settling.
No bentonite will be used if water is not encountered, the hole will be backfilled and tamped to the surface with cuttings and native soil to a depth of 3 feet then plugged with a non-metallic permanent plug either imprinted or tagged with the operators name (GOK12). The remainder would be backfilled and tamped to the surface with cuttings and native soil. A sufficient mound of native soil will be left over the hole to allow for settling.

Reclamation

Every shot hole will be stripped of its wire and leveled off with the ground surface after detonation. If any blow outs occur they will be backfilled and tamped immediately. A sufficient mound of native soil will be left over the hole to allow for settling. All debris will be gathered and removed. Any artesian flows will be plugged immediately with cement, backfilled and tamped to the surface with cuttings and native soil. The location of all blowouts and artesian flows will be documented. A record of all drilled locations will be provided to the Idaho Department of Lands upon completion.

Damaged crops will be compensated for at local market rates at the time the work is conducted. Prices and quantities will be obtained from the local elevator operators or farm agencies at the time the testing crew arrives to perform the work.

Explosive Storage

Explosives magazines would be permitted and placed on non-federal lands. Daily inventories will be maintained, and explosives will be stored, transported, handled, and secured in accordance with U.S. Bureau of Alcohol, Tobacco and Firearms regulations 27CFR55 and 49CFR177. Geokinetics and the project drill subcontractors will maintain federal explosive licenses, which are available on request.

Staging

Recording equipment would initially be transported to the program site staging areas by truck using existing roads and trails. All staging areas will be on private ground. Geokinetics would consult with local land owners to identify potential staging areas at convenient locations on private property throughout the project area. Existing well pads and maintained facilities would be given priority and all equipment and vehicle storage will be located within the perimeter of these staging areas. Smaller temporary staging areas would be located along trails and roads throughout the project area and would be used to expedite the deployment and retrieval of equipment. The helicopter would typically land at these staging areas: however, it may also land adjacent to existing roads and trails to pick up or drop off equipment.

Recording System & Equipment Deployment

Geokinetics would use a radio telemetry or wireless system to facilitate the recording operations. The data is stored in remote data collection units and periodically collected to compile shot records during the recording phase. Equipment associated with this system would consist of geophones, cables, batteries, and data boxes. This equipment will be deployed with the use of a helicopter every six receiver stations. One helicopter will be used to deploy the gear, operating only in the daylight hours,

ferrying the receiver-station cache bags. The helicopter will move six to eight cache bags at time suspended by a "long line" operating at approximately 100 to 300 feet above the receivers. The cache bags will be located using a global positioning system (GPS) on the receiver line at designated pin-flagged locations, provided by the surveyors.

Access

Access to the job location will be primarily on Highway 52, and Highway 72. In addition county roads will be used for rural access and cross country travel. Crew members will carpool out to the job location in the morning and return to the town of Payette, Idaho in the evening. Approximately 65 crew members would conduct operations during a dayshift only. The crew will be divided up into approximately 6 crews of 4-5 personnel that will be deploying and retrieving equipment as well as groups of troubleshooters who will maintain the equipment and a group of individuals that operate the vibrators.

Line Layout

Crew members will walk to the first dropped cache bag on their receiver line, prepare, and connect the seismic equipment and manually deploy the data recording units and the geophones. Seismic cables may be laid out continuous along the receiver line with a radio telemetry system, geophones would be laid out by hand around each station in a pre-determined pattern and connected to the cable or data recording unit. The geophones would be mounted on a 3 or 4-inch spike and placed into the soil using foot pressure. The crew members would then proceed in this manner at each receiver station throughout the prospect area. The crew would continue this operation as they move "down line" to the next cache bag. Approximately 3136 stations (6 square miles) would be active at any given time throughout the seismic data acquisition. Individual troubleshooters (four to six personnel) will repair any line issues that may arise during the seismic data acquisition process. Troubleshooting and line maintenance operations will utilize utility terrain vehicles (UTV'S), traveling on roads, established two tracks, and source, and receiver lines that have been cleared from archeological sites.

Recording

Once enough recording equipment has been deployed (28 lines by 112 stations on each line), the recording crew would commence with the vibroseis operation. During the vibroseis operations, a fleet of two vibes will navigate to a predetermined source location using GPS. Vibes will emit energy into the ground simultaneously through vibration. Each vibroseis buggy will be lifted up onto a vibrator pad mounted to the buggy, and the two buggies would vibrate in unison to create the energy source. The resulting energy would then be recorded. Geokinetics will use M22 buggy vibrators. These vibrators weigh approximately 32,000 – 35,000 pounds and are 25 feet long, 8 feet wide, and 10 foot 8 inches tall. The vibrators will be equipped with forestry tires (66 X 43 X 25 inches) that help to distribute their weight evenly over the substrate to minimize impacts.

Demobilization

The recording equipment will be retrieved on foot and bagged, reversing the placement procedure, and moved to staging by helicopter or truck in preparation for demobilization. Project clean up would proceed concurrently with data acquisition. All flagging, pin flags and related seismic debris would be gathered daily as the field groups and crew member's complete data-acquisition portions of the project. The debris will be collected at points on roads or trails and transported by vehicle or helicopter to staging areas where personnel organize materials, handle equipment, and dispose of used/ unusable materials. Disposal of such materials will occur at local facilities or local landfills.

PUBLIC NOTICE

Notice of Seismic Operations
AM Idaho Holdings and GC Permits wish to inform the public that seismic exploration activity will occur in Payette County. This operation is permitted by Idaho Department of Lands, pursuant to IDAPA 20.07.02.000 through 20.07.02.370, and the rules promulgated thereunder. Our companies expect to begin activity on August 12 and expect it to continue through October 31. The nature of the exploration is to perform what is usually referred to as "3-D seismic exploration" and will utilize a primarily vibrator trucks and geophones. Anyone with questions about the operations should contact GC Permits at 310-994-2310.
No. 3771 August 8, 15, 2012