Executive Petroleum Services, LLC

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518
0504-up-03

March 4, 2005

Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

RE: Application for Authorization for Enhanced Recovery Unit

Pursuant to Colorado Oil and Gas Conservation Commission ("COGCC") Rules and Regulations, Series 400, the City and County of Denver ("City"), hereby applies for approval to conduct enhanced recovery operations on Denver International Airport lands as described on Exhibit I. This application is submitted by Executive Petroleum Services, LLC ("EPS") as Operator and Agent for the City. The City will be represented by Mr. Nick Pijoan, Assistant City Attorney for the City and County of Denver.

Attachment I – Land Map hereto shows the general area where the enhanced recovery unit is proposed. The surface and minerals are 100% owned by the City for the unit area shown, except for 10 acres in Section 18, T2S, R65W where the surface is owned by Encana Oil and Gas (this is also represented on the map).

The operation for which authorization is requested is to inject water into the J Sand formation for enhanced oil recovery within the proposed unit boundaries. All of the wells within the area of unitization are currently producing from the J Sand formation. At this time it is proposed to convert three existing producing wells to injection and continue injection into the Champlin 117 Amoco A-2. Additionally, as part of this application, the City requests approval to add injection wells as needed in the future within the unit boundaries. The three wells that would be converted to injection at this time would be the Champlin 117 Amoco A-5 (located in section 7), the Kallsen 3 and Kallsen 5 (located in section 18). It is estimated that the injection rate would be approximately 1500 BBL/Day per well.

A unit or cooperative agreement is not included with this application, as DIA owns all the surface and minerals in the unit and within ½ mile of the unit boundary. The only exception is 10 acres (NENENW Section 18, T2S, R65W, 6th PM) in which Encana Oil and Gas owns the surface only. This is shown on Attachment I.

Other data requested per COGCC Rule 401.b.(4) is as follows:

A. The Cretaceous J Sand (Horsetooth Member) is the only oil and gas producing reservoir in the unit area. The proposed injection wells and all producing wells are currently completed in this reservoir. No other intervals exist in these wells with producible oil and gas reserves. The J Sand in this area occurs at an average depth of 8,275' and is approximately 40' thick.

B. The deepest source of drinking water, which may be affected by the proposed activity, would be the Fox Hills Aquifer, the base of which occurs at 1,650' or less in the injection wells.

C. An Induction-Electric Log run from the bottom of the surface casing to the total depth of each of the proposed injection wells is included with this application. See Exhibit I.

D. Schematic drawings of the injection wells are included with this application. See Exhibits II, III and IV.

E. It is planned to inject water from the current source well in the SESW Section 7, T2S, R65W, 6PM. The water well was drilled per water well permit Nos. 053102F, 053103F and 053104F. It is completed in the Upper Arapahoe Aquifer at a depth of 670'. The well tested at 200 GPM (6,857 BWPD). The permit allows for a maximum rate of 250 GPM (8,571 BWPD), not to exceed 430.3 acre-ft annually (4,056,192 BWPY). Calculated injectivity is 750 to 1,000 BWPD, the Champlin 117 A-2, the current injection well, has taken up to 1,700 BWPD at 0 psi surface pressure. It is anticipated the injection into all the wells may be achieved by gravity feed as the current bottom hole pressure of the J Sand is estimated at 500 psi. Hydrostatic pressure of a hole full of fresh water is 3,584 psi at a depth of 8,275'. This would yield an approximate injection pressure of 3,084 psi at the sand face. Estimated fracture gradient is 0.7 psi per foot or 5,793 psi. Therefore a surface injection pressure of 2,709 psi would be required to reach fracture pressure at the sand face. Review of other J Sand water injection projects indicates that little or no surface pressure will be required at this time. Chemical analysis of the J Sand water and injection water is attached, as well as a compatibility report. See Exhibits V and VI. Mineralogical analysis by X-ray diffraction of the J Sand cores from the original injection well were conducted by Amoco research with the conclusion that all of the cores were 98% quartz and 2 feldspar, with no calcite, acid soluble minerals, or swelling clays present.

F. The only stimulation program for the injection wells would be to reperforate the injection zone and stimulate it if necessary to provide maximum injectivity. Prior to injection, a mechanical integrity test will be conducted and reported in accordance with COGCC Rule 404 and 326 for each well. Additionally, a CBL will be run on each one to verify that the injection zone and fresh water aquifers are isolated by cement.

G. The operator of the project is as follows:

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Those persons notified by the applicant:

Encana Oil and Gas Inc.
370 17th Street, Suite 1700
Denver, CO 80202-5632

Respectfully submitted this 7th day of March, 2005.

Julie M. Branting

Julie M. Branting, Manager