
ENERGY RESOURCES CONSERVATION BOARD

Calgary Alberta**MEG ENERGY CORP.****APPLICATION FOR AN AMENDMENT****TO THE CHRISTINA LAKE REGIONAL PROJECT****ATHABASCA OIL SANDS****2012 ABERCB 001****Application No. 1571384**

DECISION

[1] Having considered Application No. 1571384, the Energy Resources Conservation Board (ERCB/Board) finds that the application meets ERCB requirements and that the proposed project is in the public interest. Accordingly, the application is approved subject to the two conditions stated in this section.

Condition One:

Prior to the commencement of steaming operations in an area, MEG Energy Corp. (MEG) shall repair or abandon all wells that could be impacted by thermal operations in a manner that is compatible with the thermal operations. MEG must contact the ERCB to obtain approval for the manner in which to repair or abandon wells not considered to be compatible with the thermal operations.

[2] To satisfy the first condition with respect to the wells with the unique well identifiers of 00/13-32-076-04W4/0 and 00/09-06-077-04W4/0,¹ MEG must submit a nonroutine well abandonment or repair plan for each well to the Well Operations Section of the ERCB's Technical Operations Group for review and approval, in accordance with Section 2 of *Directive 020: Well Abandonment*. The nonroutine well abandonment or repair plan must include an interpreted cement bond log and describe MEG's plans to ensure fluid containment within the reservoir and hydraulic isolation of all up-hole porous intervals. The approved operations for these two wells must be completed before MEG commences steaming operations in a steam assisted gravity drainage (SAGD) pattern that could impact these wells.

[3] To satisfy the first condition with respect to the wells with the unique well identifiers of 00/07-07-077-04W4/0 and 00/03-01-077-05W4/0, MEG must provide additional information about the maximum temperature that the cement the wells were constructed with can withstand before degradation. This information is required to determine if abandonment in accordance with *Directive 020* will ensure fluid containment within the target reservoir once steam injection commences. MEG must also provide a written assessment of fluid containment for each well, including a discussion of the temperature each well is expected to be exposed to and MEG's planned mitigation strategy to ensure fluid containment, both inside and outside of the casing of these two wells. Depending on the information provided, MEG may be required to apply to abandon or repair these wells on a nonroutine basis, receive ERCB approval, and complete

¹ The first two digits of a unique well identifier refer to a well's location exception code and are followed by the legal subdivision, section, township, range, and meridian of where it is located. The last digit refers to its event sequence code (see Appendix 2, *Directive 059: Well Drilling and Completion Date Filing Requirements*).

operations before commencing steaming operations in a SAGD pattern that could impact these wells.

Condition Two:

MEG shall provide a maximum operating pressure (MOP) and caprock integrity study (MOP study), for ERCB review and approval, prior to the commencement of steaming operations in the Phase 3A and 3B areas, respectively.

[4] To satisfy the second condition with respect to the MOP study for the Phase 3A development area, MEG must provide the Board with all of the mini-frac test data and reports that have been obtained for wells 100/1-1-77-5W4 and 100/6-5-77-4W4 and the related analysis of the data to fully address and support the proposed MOP for the Phase 3A development.

[5] To satisfy the second condition with respect to the Phase 3B development area, the MOP study MEG is to provide must include the results of mini-frac tests and the analysis to be conducted on the Wabiskaw-McMurray reservoir and overlying Clearwater caprock in the Phase 3B development area. The location of the mini-frac testing to be done in the Phase 3B development area must provide test results that are representative of the range of in situ stress fields and resulting fracture gradients and fracture orientations for this area and must be discussed with and approved by the ERCB prior to the testing.

[6] The MOP study for the Phase 3B development area must also address the proposed MOP for the Wabiskaw-McMurray reservoir over the life of the Phase 3B development (including steam injection during warm-up) and take into account the results of the mini-frac tests. The MOP study must also provide a technical justification for the MOP for all stages of operation and must address safety, environmental and conservation impacts, and operational procedures to ensure that the MOP is not exceeded. The proposed MOP should be based on the fracture closure pressure of the caprock at the shallowest depth of the base of caprock in the associated development area and incorporate a safety factor that accounts for the need for the proposed MOP, possible inaccuracies in the mini-frac test data and interpretation, and the potential for shear failure of the reservoir sands and the caprock.

APPLICATION

[7] On April 30, 2008, MEG applied to the ERCB, pursuant to Section 13 of the *Oil Sands Conservation Act*, to amend Approval No. 10773B to expand its existing Christina Lake Regional Project to Phase 3, with the addition of two new facilities and 138 additional SAGD well pads. Development related to the expansion would be located about 20 kilometres northeast of Conklin, Alberta, and increase the current production capacity by 150 000 barrels per day.

[8] MEG also prepared and submitted an environmental impact assessment (EIA) report as part of the subject application. On May 19, 2010, Alberta Environment (now known as Alberta Environment and Water [AEW]) declared that the EIA report was complete, pursuant to Section 53 of *Environmental Protection and Enhancement Act*.

[9] Chipewyan Prairie Dene First Nation (CPDFN), Conklin Métis Local No. 193 (CML), Whitefish Lake First Nation #128 (WLFN), and Canadian Natural Resources Limited (CNRL) objected to the application.

DISCUSSION

[10] The Board issued a Notice of Hearing on May 27, 2011, in which the ERCB scheduled a two-part public hearing of the application. The first part considered reservoir related issues and was to commence in Calgary, Alberta, on November 15, 2011. The second part considered nonreservoir related issues and was to commence in Fort McMurray, Alberta, on January 10, 2012. The public hearing was to be held before Board Members Brad McManus, Q.C. (Presiding Member), Theresa Watson, P.Eng, and Terry Engen.

[11] On November 1, 2011, the Board received a withdrawal of objection from CNRL. CNRL was the only intervener whose concerns related exclusively to reservoir issues. Therefore, on November 2, 2011, the Board issued a Notice of Cancellation to cancel the first part of the hearing that had been scheduled for November 15, 2011.

[12] On November 9, 2011, the Board received a withdrawal of objection from WLFN. On December 7, 2011, the Board received a withdrawal of objection from CML. On December 19, 2011, the Board received a withdrawal of objection from CPDFN. As no objections to the application remained, the Board issued a Notice of Cancellation on December 22, 2011, to cancel the second part of the hearing that had been scheduled for January 10, 2012.

[13] After the Board received the withdrawal of the objections from the intervening parties, it considered the additional information that MEG had provided on December 22, 2011, in response to an information request made by the Board on December 19, 2011. The additional information related to wells in the proposed development area that may not be abandoned or completed in a manner that is compatible with MEG's thermal operations.

[14] In its response, MEG identified two wells within or in close proximity to its proposed initial SAGD patterns that were completed without thermal cement, namely the 00/13-32-076-04W4/0 and 00/09-06-077-04W4/0 wells. MEG stated that it would abandon these wells in accordance with *Directive 020* requirements before thermal operations commenced near these wells. The information provided by MEG did not satisfy the Board that MEG's intended course of action would adequately ensure fluid containment within the target reservoir once steam injection commenced. MEG identified two other wells within its proposed initial SAGD patterns—the 00/07-07-077-04W4/0 and 00/03-01-077-05W4/0 wells—that have 30 per cent silica within the casing cement. MEG stated that these wells would also be abandoned in accordance with *Directive 020*. This information did not satisfy the Board that MEG's intended course of action would adequately ensure that the casing cement would resist degradation when exposed to steaming operations.

[15] The Board acknowledges MEG's commitment to follow the abandonment requirements in *Directive 020*; however, the Board is of the view that the well abandonment requirements set forth in *Directive 020* do not fully account for the potential impacts thermal operations may have on nearby wells that may not have been abandoned or constructed in anticipation of future thermal operations, such as the four wells identified in the first condition. In such cases, measures that go beyond the requirements in *Directive 020* are required to ensure the thermal compatibility of these wells. Therefore, the Board has imposed the first condition in relation to all wells that could be affected by thermal operations, which include specific measures to be taken with regard to the four wells identified in the first condition.

[16] With respect to its second condition, the Board considers the MOP study to be technical information that is required of an applicant seeking approval for a commercial in situ scheme or scheme amendment. This requirement includes mini-frac test data and reports associated with the MOP study, which MEG has not yet provided to the Board. Therefore, the Board has exercised its discretion to include the second condition in its approval in order to ensure that this application requirement is satisfied.

Dated in Calgary, Alberta, on January 31, 2012.

ENERGY RESOURCES CONSERVATION BOARD

<original signed by>

Brad McManus, Q.C.
Presiding Member

<original signed by>

T. L. Watson, P.Eng.
Board Member

<original signed by>

T. C. Engen
Board Member