

**ALBERTA ENERGY AND UTILITIES BOARD**

Calgary Alberta

**NORTHROCK RESOURCES LTD.  
APPLICATION TO CONSTRUCT A TEMPORARY  
SOUR SINGLE OIL WELL BATTERY  
KNOPCIK FIELD**

**Decision 2000-79  
Application No. 1063865**

**1 APPLICATION AND HEARING**

Northrock Resources Ltd. (Northrock) applied to the Alberta Energy and Utilities Board (EUB/Board), pursuant to Section 7.001 of the Oil and Gas Conservation Regulations, for approval to construct and operate a temporary sour single oil well battery in Legal Subdivision (LSD) 14 of Section 10, Township 73, Range 11, West of the 6th Meridian (14-10 well/facility). The 14-10 facility would handle light gravity sour crude oil and associated sour solution gas from the Charlie Lake Formation.

Northrock estimated that the 14-10 well would produce 5.0 cubic metres per day (m<sup>3</sup>/d) of oil, 1.0 m<sup>3</sup>/d of water, and 1.2 10<sup>3</sup> m<sup>3</sup>/d of solution gas. The gas would have a hydrogen sulphide (H<sub>2</sub>S) content of 8 moles per kilomole (mol/kmol), or 0.8 per cent H<sub>2</sub>S.

A notice of hearing was issued to all interested and potentially affected parties on November 7, 2000. Interventions were received from Mrs. Alma Jones, Mr. Gordon Jones, and Mr. Laurie Jones.

The application and associated interventions were considered at a public hearing held at the Grande Prairie Inn, Grande Prairie, Alberta, commencing November 30, 2000, before Board Members B. F. Bietz, P.Biol., Presiding Member, G. Miller, Board Member, and C. A. Langlo, P.Geol., Acting Board Member. Those who appeared at the hearing are listed in the following table.

**THOSE WHO APPEARED AT THE HEARING**

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Principals and Representatives  
(Abbreviations Used in Report)

Witnesses

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Northrock Resources Ltd. (Northrock)

B. K. O'Ferrall, Q.C.

George Collin  
Wayne Redlick

G. and L. Jones (Joneses)

Gordon Jones  
Laurie Jones

Alberta Energy and Utilities Board staff

D. Larder, Board Counsel

P. R. Forbes, C.E.T.

K. A. Giesbrecht, C.E.T.

M. D. Brown, M.Eng., P.Eng.

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The location of the proposed battery, area land ownership, and location of residences are shown on the attached map.

The Board considers the issues respecting the application to be

- C public consultation,
- C gas conservation, and
- C flaring technology.

## 2 VIEWS OF THE APPLICANT

The 14-10 well was originally completed in May 1987 in the Charlie Lake Formation and produced oil and slightly sour gas (0.02 mol/kmol H<sub>2</sub>S). In October 1988, the well was unsuccessfully recompleted uphole in the Rock Creek Formation (Ferne Group) and subsequently suspended.

In March 2000, the well was recompleted back to the Charlie Lake Formation by Northrock. The applicant carried out a 21-day test of the well and, based on the results of this test, estimated production to be 5.5 m<sup>3</sup>/d of oil, 0.5 m<sup>3</sup>/d of water, and 1.35 10<sup>3</sup> m<sup>3</sup>/d of solution gas. The H<sub>2</sub>S content of the solution gas was measured on site at 0.79 per cent. Northrock subsequently applied for a battery using estimated longer-term volumes of 5.0 m<sup>3</sup>/d of oil, 1.0 m<sup>3</sup>/d of water, and 1.2 10<sup>3</sup> m<sup>3</sup>/d of solution gas. It also expected that the H<sub>2</sub>S content of the solution gas would decline over time.

Northrock stated that its public consultation for the proposed facility was conducted in accordance with EUB *Guide 56: Energy Development Application Guide*. Northrock indicated that it identified and sent out a package describing its application to 26 residents within a 2 kilometre (km) radius notification zone. Northrock stated that it received objections to its proposed project from five parties.

In an effort to address the residents' concerns, Northrock stated that it had made two substantive changes to its application. First, Northrock revised its application for a permanent battery to one requesting approval to develop a temporary (six-month) facility. Northrock stated that this would allow it to better assess the production rates and H<sub>2</sub>S concentration of gas from the well and the economics of its proposal, including the potential for solution gas conservation. Northrock noted that the six-month period would also provide opportunity for the local community to assess the impacts of its operations before a more permanent operation was considered.

Second, Northrock stated that it was prepared to install an enclosed flare system equipped with a continuous pilot and an automatic ignition system in order to address residents' concerns with emissions. The six-month period requested would also be used to assess the effectiveness and the acceptability of the alternative enclosed flare technology. Northrock believed that its proposed enclosed flare would result in more effective combustion. It stated that the enclosed flare would not be affected by wind, would have a higher combustion temperature, and would result in higher combustion efficiency. Northrock stated that it did not expect significant fluctuations in the flow rates of gas to the enclosed flare and noted that the unit was capable of efficient operation at various flow rates.

The applicant stated that its modelling results had confirmed that use of the enclosed flare system would satisfy provincial air quality guidelines. It added that at the end of the six-month period, the company and the residents would meet again to discuss the future of the well and the enclosed flare.

Northrock noted that the changes to its original application had alleviated the concerns of two of the five opposing residents, who had withdrawn their opposition to the proposal.

Northrock stated that the Joneses remained opposed to the development if it would result in any emissions from flaring. In trying to address those concerns, the applicant noted that it had evaluated the gathering and pipelining of the predicted volumes of solution gas as an alternative to flaring, but had concluded that it was not economically feasible to conserve such a small amount of gas. Northrock also noted that it had identified the closest tie-in point to be its existing pipeline at 16-15-73-11W6M, approximately 2 km away. Northrock stated that, in addition to being economically prohibitive, pipelining of the gas would create other sources of additional public impact, as a compressor installation would be required.

Northrock confirmed that it had a number of facilities in the vicinity of the Joneses residences and that there had been some impacts from its operations on the family in recent years. It believed, however, that these events were relatively minor and had been promptly and effectively addressed. Northrock also confirmed that while the H<sub>2</sub>S content of this well was too low to require a site-specific emergency response plan (ERP), it had a corporate ERP, which it planned to test in December 2000.

### **3 VIEWS OF THE INTERVENERS**

The Joneses stated that while they were not opposed to Northrock operating this well and exploiting the oil reserves, they were categorically opposed to the company flaring the associated gas. The Joneses stated that their cattle operation was absolutely critical to their livelihood and that their primary concern was over flaring and its effect on themselves and the cattle. The Joneses argued that if the gas could not be conserved as the oil was produced, then both should be left in the ground. The Joneses stated that they were amenable to a gas-run pumpjack if that would consume the gas in a meaningful way. However, they also accepted the information provided by the supplier of this equipment that it would not be safe to operate, due to corrosion and possible leaks, if the gas contained H<sub>2</sub>S.

The Joneses believed that the 21-day test should have been long enough to assess the viability of the well. They noted that during the test period there had been a significant amount of flaring, with associated noise levels. Furthermore, at one point the flare had gone out. They were concerned about the possibility of the flame going out again during the proposed test. They also stated that their research into the enclosed flare technology being proposed by Northrock suggested that the technology was in fact more sensitive to variations in gas flow and therefore might not achieve the desired combustion efficiency.

The Joneses indicated that they were concerned about the quality of some of the information provided by Northrock, particularly with regard to the economics of gas conservation and the

company's ability to respond to an emergency. However, the interveners did not provide alternative information in this regard. They also noted previous operational problems, including the loss of a water well, odours from various Northrock wells, and a slow response from the applicant regarding the installation of fencing.

#### **4 VIEWS OF THE BOARD**

The Board notes that neither party to this application opposed Northrock's right to produce the 14-10 well. Rather, the primary issue was under what conditions any production should take place.

The Board believes that, in preparing its application for this facility, Northrock has met EUB expectations with regard to public consultation. The Board notes the measures undertaken by Northrock to deal with the objections to its proposal, such as providing additional information, meeting with the interveners to discuss options, and including the options in an amended application. While public consultation cannot guarantee that all issues will be addressed to the satisfaction of the interveners, the Board does believe that Northrock's efforts in this case were effective.

With regard to Northrock's application to install a temporary facility rather than a permanent facility, the Board notes that this concession appears to have helped to address the concerns of the nearest landowners. The Board accepts that this approach has been useful in that it will allow the residents an opportunity to determine what the longer-term effects of the facility might be. The Board notes that additional notification and consultation will be required should a permanent facility be applied for.

The Board also believes that additional production data will be useful in confirming the well economics and operational characteristics. The Board is satisfied that gas conservation cannot be justified on economic grounds in this instance and accepts Northrock's commitment to re-examine this issue as it relates to any future applications and as new information becomes available.

The Board notes the mutual aid arrangements that Northrock has established with other area operators and is satisfied that the company could respond effectively should operational problems occur at the facility during the test period. The Board does note, however, that the Joneses have already been affected by Northrock's previous operations and will expect the company to continue to meet all regulatory requirements for facilities of this type. Any failure to do so will result in the appropriate enforcement actions by the EUB.

The Board notes that the dispersion modelling conducted by Northrock indicated that downwind concentrations resulting from the enclosed flare would be well below Alberta Ambient Air Quality Guidelines. The Board is confident about the protection provided by the Air Quality Guidelines but also recognizes that there has been significant and growing public concern regarding effects from flaring emissions. This has led the Board to establish the targets for flaring reduction included in EUB *Guide 60: Upstream Petroleum Industry Flaring Guide*, July 1999.

The Board is comfortable that the enclosed flare would provide additional combustion efficiency as a result of the sheltered mixing and burning of the solution gas and air inside the enclosed flare system. Although the enclosed flare would not include features such as the ability to specifically vary and control flow rates of fuel gas and air in response to the flow of waste gas, the Board believes that it would provide improvements in combustion efficiency over a conventional open flare. The continuous pilot and automatic ignition system should also provide further assurance of the flame not extinguishing. The Board believes that the proposal of the enclosed flare system is a positive response to the concerns expressed by the residents. While the Board understands and appreciates the concerns raised by the Joneses regarding the potential impacts of flaring on their cattle operations, the Board in this case does not believe that the proposal will result in any negative environmental effects.

The Board notes that Northrock proposes to burn sour gas containing 8 mol/kmol of H<sub>2</sub>S through an enclosed flare with a height of 7.3 m. The Board cautions the applicant that Section 7.3.3 of *Guide 60* requires that flare stacks for sour gas containing more than 10 mol/kmol of H<sub>2</sub>S must have a height of at least 12 m above ground level. Should H<sub>2</sub>S concentrations at the facility exceed 10 mol/kmol at any time during the test period, the applicant will be required to either elevate the stack to 12 m or cease flaring through the 7.3 m stack.

## **5 DECISION**

Having carefully considered all of the evidence, the Board believes that Northrock's proposed project is in the public interest. The Board therefore approves Application 1063865 subject to Northrock meeting all regulatory requirements. The approval will be issued in due course.

Issued at Calgary, Alberta, on December 14, 2000.

### **ALBERTA ENERGY AND UTILITIES BOARD**

*(Original signed by)*

B. F. Bietz, P.Biol.  
Presiding Member

*(Original signed by)*

G. Miller  
Board Member

*(Original signed by)*

C.A. Langlo, P.Geol.  
Acting Board Member