

# **ALBERTA ENERGY AND UTILITIES BOARD**

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**Calgary Alberta**

## **CRESTAR ENERGY INC. APPLICATIONS TO CONSTRUCT AND OPERATE SOUR GAS BATTERIES AND PIPELINES VULCAN FIELD**

**Decision 99-13  
Applications No. 1033453 and 1037084**

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### **1 DECISION**

The Alberta Energy and Utilities Board (the Board) has carefully considered the evidence received and approves Application No. 1037084. This approval is subject to Crestar Energy Inc. (the applicant) meeting all regulatory requirements and the conditions as set out in Attachment 1. Accordingly, Application No. 1033453 is denied.

Reasons for the Board's decision are as follows.

### **2 APPLICATIONS AND HEARING**

Those who appeared at the hearing and their abbreviations used in this report are indicated in the table at the end of this report in Attachment 2. An area map showing the locations of the proposed facilities relative to this proceeding is provided in Attachment 3.

#### **2.1 Application No. 1033453**

On 1 December 1998, the applicant applied pursuant to Part 4 of the Pipeline Act and Section 7.001 of the Oil and Gas Conservation (O&GC) Regulations. The application was for approval to construct and operate a sour gas pipeline and various surface facilities to tie in three wells. These are located at Legal Subdivision (Lsd) 12 of Section 36, Township 16, Range 24, West of the 4th Meridian (12-36 facility), Lsd 10-35-16-24 W4M (10-35 facility), and Lsd 7-26-16-24 W4M (7-26 facility), to an existing pipeline and proposed surface facility at Lsd 16-16-16-24 W4M (16-16 facility).

The 10-35, 7-26, and 16-16 facilities would each have a separator, a flare knockout drum, and a flare stack. The 12-36 facility would have two separators, one for each of the two producing zones at the 12-36 well, a flare knockout drum, and flare stack. Line heaters would be installed at the 12-36 and 7-26 facilities only. A compressor would be installed at the 16-16 facility, approximately six months from initial start up, once exact compressor sizing was determined by actual production. All fluids would be measured and re-injected into the pipeline for removal at the 16-16 facility. All proposed flare stacks would consist of a continuously burning sweet gas pilot and would be used for emergencies, routine well servicing, and pigging operations only.

The pipeline would consist of a 168.3-millimetre (mm) outside diameter (OD) pipeline, would be designated as a Level 1 facility, and would transport sour natural gas containing up to 18 moles of hydrogen sulphide (H<sub>2</sub>S) per kilomole of natural gas. The pipeline would tie in each of the proposed surface facilities to transport the gas to its Vulcan gas plant (the Vulcan plant), located at Lsd 8-24-15-22 W4M for processing.

## **2.2 Application No. 1037084**

In response to concerns raised by local landowners, on 5 February 1999, the applicant submitted an alternative proposal to Application No. 1033453, pursuant to Part 4 of the Pipeline Act and Section 7.001 of the O&GC. The difference between the two applications involved changes to the equipment to be installed at the 12-36 and 10-35 facilities, and the pipeline configuration and routing between the two facilities. The applicant proposed to remove the two separators and flare stack from the 12-36 facility, leaving one line heater only. The additional separators would be placed at the 10-35 facility, which would then consist of three separators, a flare knockout drum, and flare stack.

Two 114.3-mm OD Level 1 pipelines are proposed from the 12-36 facility to the 10-35 facility. One pipeline would be used for each of the two producing zones at the 12-36 facility. This would allow production from both zones to be independently transported to the 10-35 facility for measurement and re-injection back into the remaining pipeline system which runs from the 10-35 facility to the 16-16 facility, and which would remain as described in Application No. 1033453.

At the request of the landowner of Section 35, the applicant submitted an amendment to Application No. 1037084 on 12 April 1999, placing the pipeline within the existing 10-35 facility access road.

## **2.3 Intervention**

Mr. and Mrs. Graff's (the intervener's) residence is located in Lsd 10-36-16-24 W4M, approximately 540 metres from the 12-36 well site. The interveners raised concerns about flaring activities associated with the testing of the 12-36 well. They stated that members of the family have asthma and the family is concerned with the emissions from the flare test. The location of the residence relative to the 12-36 well site is shown in Attachment 3.

The Board received letters from the interveners dated 25 October 1998, 18 November 1998, 27 November 1998, and from their counsel on 3 March 1999, outlining concerns with the existing 12-36 well site and the proposed 12-36 surface facility. They were concerned with sulphur dioxide (SO<sub>2</sub>) emissions, increased traffic on a portion of the access road to their residence (which is shared by the applicant to access the 12-36 well site), the damage caused by existing applicant traffic, and emissions caused by blow down operations.

In their submission to the hearing dated 12 April 1999, the interveners said that Applications No. 1033453 and 1037084 should be denied. However, they indicated that, if the Board approves the applications, such approval should be subject to specific terms identified in their submission.

## **2.4 Hearing**

The applications were considered at a public hearing in Nanton, Alberta, on 21 April 1999, before Board Members G. Miller, T. McGee, and Acting Board Member H. O. Lillo, P.Eng. The panel viewed the sites of the proposed facilities on the afternoon of 20 April 1999. An account of evidence presented by all participants is detailed in the official transcripts to this proceeding, and is available for viewing at the Board's Information Services Section, Calgary Office.

## **3 ISSUES**

The Board believes the issues concerning the applications to be:

- need for the proposed facilities
- proposed facility options, impacts and ability to mitigate the impacts
- emergency response plans
- notification and public consultation
- area gas development
- facility access roads and
- indemnification

## **4 VIEWS OF THE BOARD**

### **4.1 Need for the Proposed Facilities**

The applicant submitted that the surface facilities and pipelines are needed to allow for the measurement and transportation of production from the existing 12-36, 10-35, and 7-26 wells to the 16-16 facility for removal of water, measurement of production and further transportation of production to the Vulcan plant. The interveners did not dispute the need for the proposed facilities and recognized that the applicant has the right to the resources through these wells. Given this, the Board is satisfied that there is a need for the proposed surface facilities and a new pipeline system in the area to allow for the transportation of production from the existing wells to the Vulcan plant.

### **4.2 Proposed Facility Options, Impacts, and Ability to Mitigate the Impacts**

The Board has reviewed the proposed 7-26 facility, 16-16 facility, and the connecting pipeline proposal from the 10-35 facility to the 16-16 facility, and accepts the applicant's commitment to meet all regulatory requirements associated with this part of the proposal. The interveners neither disputed nor objected to these facilities. Therefore, this decision report will focus on the options and issues concerning the 12-36 and 10-35 facilities, and associated pipeline routing options.

The Board has reviewed the proposed pipeline routing Options 1 and 2, Applications No. 1033453 and 1037084 respectively, and has considered the evidence of both parties. The applicant prefers Option 2, because it would place the pipeline within the existing 10-35 facility access road right of way and create less land disturbance. The interveners prefer Option 1 because they believe that it would involve less disturbance to their rotational pasturing system, avoid location of a pipeline within a waterway historically subject to major flooding, and cause

less disturbance and erosion to the creek bed. Additionally, the interveners stated that their preferred pipeline and access road routes take into careful account a justifiable need to maintain the value of their property by maximizing and preserving existing useable farming acreage. However, the Board notes, that the applicant was willing to mitigate these concerns by boring the pipeline under the creek and coulee, and was willing to reconstruct the rotational fencing and gate system, if necessary. The Board additionally understands that the landowner of Section 35, also prefers Option 2. Option 2 is a compromise agreement reached between the applicant and the landowner of Section 35 who will incur additional surface equipment at the 10-35 facility as a result of the proposed relocation of installations from the 12-36 facility.

There was insufficient evidence presented for the Board to determine if one pipeline routing option was economically more viable than the other. The Board believes that both options provide similar technical advantages and disadvantages and either could be operated to meet the Board's regulatory requirements. Additionally, the applicant has committed to implement a pipeline corrosion mitigation and monitoring program for either option, based on a two week schedule and adjusted as necessary in the future. However, considering the concerns of all parties, the Board believes that there are fewer land-use impacts and surface disturbances with Option 2, since it would be the most direct route, involves the least amount of pipeline length and could utilize directional drilling technology.

The Board has reviewed the surface facility proposals in Option 1 and 2. Option 2 is preferred by the applicant since this option directly addresses a key concern of the interveners by removing all of the surface equipment at the 12-36 facility, except the line heater. Similarly, the Board notes in the interveners' submission that approval of any of the proposals, should be contingent on removal of the flare stack and separators from the 12-36 facility.

The applicant believes that its proposed applications would not pose significant or unacceptable physiological risk, since the facilities at the 12-36 facility would be a closed system. In addition, the pigging operation at the 12-36 facility, a potential source of fugitive emissions, would incorporate an ammonia ( $\text{NH}_3$ ) based scrubber to capture any released  $\text{H}_2\text{S}$ . Therefore, the applicant believes there would be no fugitive emissions from routine operations at the 12-36 facility.

The interveners stated that their son is susceptible to asthma attacks, triggered by odours, specifically  $\text{H}_2\text{S}$ ,  $\text{SO}_2$ , and  $\text{NH}_3$ . The interveners believe that potential exposure to such odours from oilfield operations results in chronic psychological stress to their son. Therefore, the interveners believe that future livelihood and quality of life for their son are in jeopardy without an absolute guarantee that the planned oilfield development will be without human health impact.

The Board acknowledges that the risk analysis does not specifically address non-lethal criteria such as odour. However, the Board notes the applicant's expert testimony confirming that odours can be carried several kilometres downwind from a source. Additionally, the Board notes the testimony that psychological stress, as well as odours, can act as triggers for asthmatic attacks. In view of these facts, the Board appreciates the interveners' concerns and understands the special circumstances facing the interveners' family. However, the Board believes that requiring an absolute guarantee of no adverse human health effects, acceptable to the interveners, is not possible regardless of the proposed oil and gas activity. The Board believes that specific

measures to eliminate, minimize, and mitigate potential release of emissions from the planned facilities are attainable and that this requirement addresses, as best as possible, the legitimate health concerns expressed by the interveners.

Considering the above, the Board believes that both surface facility options are acceptable and could be operated to meet the Board's regulatory requirements. However, since the Board believes that moving the separators and flare stack from the 12-36 facility would move the flaring concerns of the interveners to the 10-35 facility, Option 2 is preferred by the Board and viewed as being in the public interest. Although the Board questions the annualization method used to adjust the probability of an uncontrolled release during servicing, this does not change the Board's conclusion regarding public safety for these facilities. Additionally, the Board notes the applicant's commitments to reduce fugitive emissions at its facilities and believes that these commitments should be incorporated as conditions to this report and subsequent approval.

### **4.3 Emergency Response Plans**

The interveners had concerns about the length of time the applicant took to respond to a particular event on their farm and a subsequent phone call made to the applicant on 16 April 1999. The interveners indicated that they called in the incident at 9:07 p.m., followed by an on-site response by 10:30 p.m.. The Board expects proponents to adhere to Emergency Response Plan (ERP) requirements and respond to incidents in a timely fashion to minimize delays in implementing an ERP. In this case, the Board believes that the applicant did not react in a timely fashion. The Board expects the applicant to adhere to commitments of the Crestar Energy Vulcan Sour Gas Pipeline and Plant ERP, incorporating all facilities tied into the plant. However, the Board accepts the applicant's testimony that it could respond to site specific areas within 30 minutes of a call and expects the applicant to adhere to this response time.

### **4.4 Notification and Public Consultation**

The Board believes that the applicant's initial 12-36 well notification and public consultation process could have been improved upon because the process failed to sufficiently address future development. The Board also expects the public and landowners to actively participate in a consultation process and not avoid it. The Board believes that both parties failed to actively determine a resolution to the proposals, resulting in a hearing.

### **4.5 Area Gas Development**

The Board notes that the Vulcan plant has a "grandfathered" approval to flare up to 4.9 tonnes/day sulphur without sulphur recovery. This approval condition predates the current Informational Letter (IL) 88-13 issued in 1988, and its attached report, ERCB-AE 88-AA, *Sulphur Recovery Guidelines for Sour Gas Plants in Alberta*. IL 88-13 requires new gas plants of this size to recover 69.7 per cent of the inlet sulphur on a calendar year quarterly basis. Given the recent new sour gas supply connections to the Vulcan plant, the Board believes that there is a need to review the grandfathered status of the Vulcan plant.

The evaluation must address the cumulative connection of new or incremental sour gas supplies, as well as any increases in daily capacity requirements. If the applicant concludes, as a result of plant life extension or the need for increased capacity, that sulphur recovery or acid gas injection

should be implemented at its Vulcan plant, then the report must provide a schedule for implementation of the necessary plant improvements. Additionally, the applicant must specifically address criteria that are consistent with the intent and current Board interpretation of IL 88-13. Grandfathered sour gas plants are expected to install or upgrade sulphur recovery if:

- approved inlet capacity is increased by more than 25 per cent above rates in effect in 1988; or,
- substantial new sour gas supplies are connected to the plant.

The Board believes that the connection of new sour gas supplies, equivalent to eight or more years throughput at the approved 1988 capacity, warrants upgrading of grandfathered plants. The Board notes that the intent of the guidelines with respect to connection of new supplies is to limit the life of grandfathered approvals. Consequently, new sour gas supplies are interpreted as any connection of sour reserves not known to exist in 1988 that have the effect of extending the plant life. It is the Board's view that applicable new sour gas supplies may come from connection of new fields; new pools within existing plant supply areas, and the extension of known pools within plant supply.

The applicant stated that it would accept an undertaking as a condition of approval and file its assessment of sulphur recovery or acid gas injection at its Vulcan plant within six months of approval of its application.

#### **4.6 Facility Access Roads**

As part of their intervention, the interveners proposed an alternate access road to the 12-36 site. The interveners submitted that the Board has the jurisdiction to prescribe and vary the access to this site by virtue of Section 14.1(1) of the O&GC Act. The applicant submitted that in order for the Board to consider matters relating to changing the approved access to a well site, the interveners would have to file a formal application for review of the well licence pursuant to Section 42 of the Energy Resources Conservation Act (ERC Act).

The Board has concerns that the existing access road to the 12-36 well site may not be appropriate for the purposes of the proposed surface facility as it utilizes a portion of the existing private road. While the Board is of the view that it has the jurisdiction to prescribe an alternate access road to the 12-36 site within the context of these applications, it believes that it has insufficient evidence to make a determination on the issue of access at this time. The Board believes that there may be other more appropriate alternatives than that proposed by the interveners. The Board is also concerned that there may be other parties potentially affected by the interveners' proposed alternative, or other alternatives, who must be afforded an opportunity to present their views on the matter. The Board encourages the parties to come to an acceptable solution regarding access through discussions with all potentially affected parties and to notify the Board accordingly.

This decision in no way prejudices or prevents the interveners from bringing an application for a review of the matter of the existing access road pursuant to Section 42 of the ERC Act.

#### **4.7 Indemnification**

The Board has reviewed issues on farm relocation and indemnification against farm relocation. The Board has no jurisdiction to require a party to indemnify another party against farm relocation. The Board also believes that the issues of indemnification against farm relocation are compensatory in nature. Submissions relating to such issues of compensation for land usage are not dealt with by the Board but may be referred to the Alberta Surface Rights Board.

### **5 DECISION**

Refer to section 1 of this report.

DATED at Calgary, Alberta, on 2 June 1999.

*[Original signed by]*

G. Miller  
Board Member

*[Original signed by]*

T. McGee  
Board Member

*[Original signed by]*

H. O. Lillo, P.Eng.  
Acting Board Member

**ATTACHMENT 1 TO DECISION 99-13****Condition 1**

Facilities to be installed at the Lsd 12-36-16-24 W4M location must be designed as closed systems. The pressure rating of piping and equipment together with the design of Emergency Shutdown Device (ESD) systems will be such that there will be no flaring or venting of sour gas at the 12-36 facility.

**Condition 2**

Equipment and piping systems, as well as operating procedures must be designed such that depressurization of the 12-36 facilities for maintenance will be through flare facilities installed at the 10-35 facility.

**Condition 3**

The applicant must install H<sub>2</sub>S detection devices, an H<sub>2</sub>S alarm beacon and automated call-out system for the 12-36 facilities. The 10-35 and 16-16 facilities must also be equipped with automated call-out systems that will monitor separator high-pressure alarms and other ESD conditions. The automated call-out system and the applicant's operating procedures must provide for an on-site response within 30 minutes of an incident.

**Condition 4**

No gas volumes will be routinely or continuously flared or vented at the 10-35 or 7-24 sites. Flare stacks at these sites may be used for emergency and maintenance depressurizing. Sour water storage tank vents and vents from sour gas compressors located at the 16-16 facility must be recovered or flared.

**Condition 5**

Flare systems must be designed to comply with Section 7 of the draft "Upstream Petroleum Industry Flaring Guide", as well as current Board requirements.

**Condition 6**

Flare stacks at the 10-35, 7-26 and 16-16 facility locations must be equipped with automatic ignitors that ensure reliable ignition of gas streams vented to the stacks.

**Condition 7**

The applicant must implement procedures and employ appropriate equipment to prevent off-site odours that may result from pipeline pigging operations.

**Condition 8**

The applicant must implement measures to prevent odours from the loading and trucking of sour water and other liquids from the 16-16 facility.

**Condition 9**

The applicant must submit a written evaluation of sulphur recovery or acid gas injection at the Vulcan plant within six months of the date of this report and more particularly as described in section 4.5 of this report.

**Condition 10**

The applicant must submit a pipeline corrosion mitigation program within a suitable time frame, but not later than one year from the date of this report.

**ATTACHMENT 2 TO DECISION 99-13****THOSE WHO APPEARED AT THE HEARING**

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**Principals and Representatives  
(Abbreviations Used in Report)**

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**Witnesses**

Crestar Energy Inc. (the applicant)  
B. J. Roth

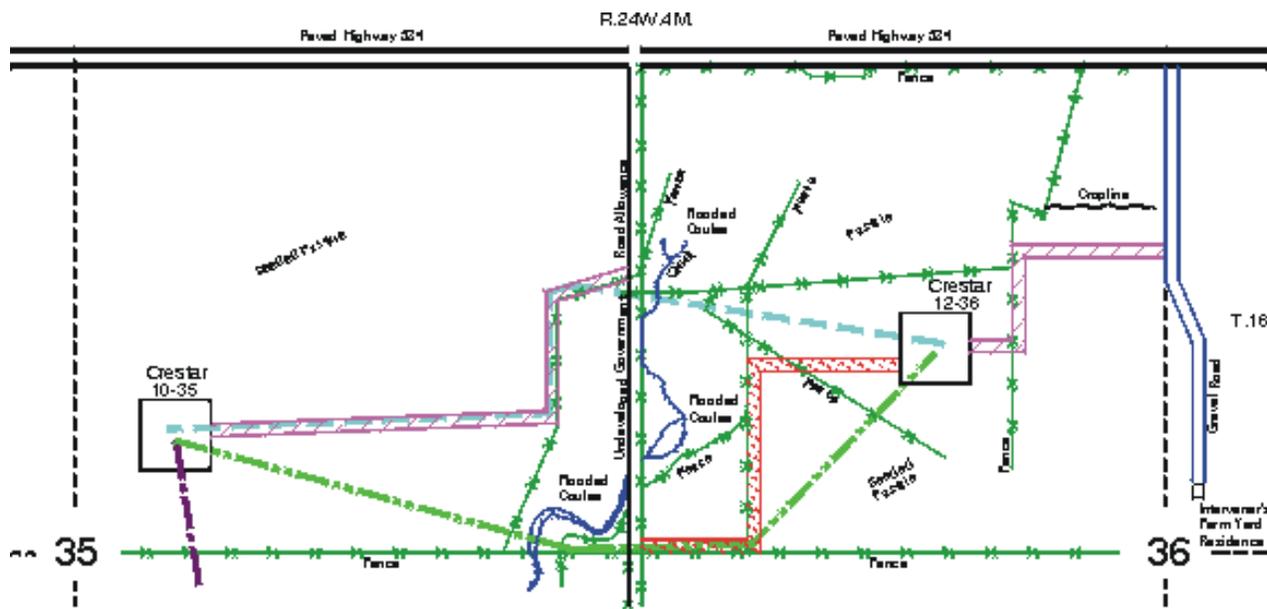
D. M. Leahey, Ph.D.  
of Jacques Whitford Environment  
Limited  
M. R. Young, M.D., Ph.D.  
J. Delsing, P.Eng.  
J. L. Gouw  
K. W. Odland, P. Eng.

L. & B. Graff (the interveners)  
T. D. Weiss  
B. K. O'Ferrall

L. Graff  
B. Graff

Alberta Energy and Utilities Board staff  
D. F. Brezina, Board Counsel  
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B. K. Eastlick, M.E.Des., P.Eng.  
J. I. Fujikawa, B.Sc., M.Sc.  
M. D. Brown, P.Eng.

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**Legend**

-  Existing Access Road
-  Intervenor's Existing Farm Access Road
-  Intervenor's Preferred 12-36 Facility Access Road
-  Option 1 Pipeline Route Application No. 1033453
-  Option 2 Pipeline Route Application No. 1037084
-  Remaining Proposed Pipeline Route

VULCAN FIELD  
 Attachment 3  
 Applications No. 1033453 & 1037084  
 Crestar Energy Inc.

Decision 99-13