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**APPLICATION FOR A WELL LICENCE  
PERMIT TO CONSTRUCT A PIPELINE  
AEC WEST LTD.  
ELMWORTH FIELD****Examiner Report E 96-7  
Applications No. 960281 and 960350****1 INTRODUCTION****1.1 Applications**

On 22 December 1995, Conwest Exploration Company Limited (Conwest) applied to the Alberta Energy and Utilities Board (Board) pursuant to section 2.020 of the Oil and Gas Conservation Regulations for a licence to drill a well in Legal Subdivision 13 of Section 15, Township 71, Range 10, West of the 6th Meridian (Lsd 13-15). The purpose of the well, CONWEST ELMWORTH 13-15-71-10 (13-15 well) is to obtain production from the Falher Formation. The Board registered Application No. 960281 to consider the well licence application.

On 2 April 1996, Conwest submitted Application No. 960350 for approval to construct approximately 1.30 kilometres (km) of 114.3 millimetre (mm) outside diameter pipeline to transport sweet gas from the proposed 13-15 well to a well located at Lsd 10-16-71-10 W6M which connects to an existing pipeline.

At the hearing, Conwest advised that a corporate name change to AEC West Ltd. was imminent and that appropriate documentation would be forwarded to all parties. The Board subsequently received a certificate amending Conwest Exploration Company Limited to AEC West Ltd. effective 1 May 1996 and revised its records accordingly. In view of this, the following items with respect to Applications No. 960281 and 960350 are amended. The applicant's name is amended to AEC West Ltd. and the well name for the proposed 13-15 well is changed to AEC WEST ELMWORTH 13-15-71-10.

**1.2 Interventions**

Albert Vant Erve, the landowner where the well is proposed to be drilled, objected to the location of the well on his lands. Mr. Vant Erve opposed locating the well anywhere in the north-west quarter of Section 15, Township 71, Range 10, West of the 6th Meridian (Section 15) because it would disrupt his use of the land for crops and dairy cattle. In addition, the proposed well site was located up-slope from McNaught Lake with a natural drainage pattern toward the lake, wetland, and a dugout used to water the cattle. Mr. Vant Erve was concerned about the contamination of these water sources given the proximity of the proposed facility.

Interventions were also received from Ducks Unlimited and Euphemia McNaught regarding the potential for contamination of the lake and disruption to the local wildlife and waterfowl. Ducks Unlimited manages a wetland project on McNaught Lake and Miss McNaught is an adjacent

landowner. Miss McNaught was unable to appear at the hearing; but, her views were represented by Ducks Unlimited.

### 1.3 Hearing

A public hearing to review the well licence and pipeline applications was convened on 7 May 1996 in Grande Prairie, Alberta before examiners appointed by the Board. The hearing also included a visit to the proposed wellsite. The examiner panel consisted of M. J. Bruni, W. Elsner, P. Geol., and D. D. Waisman. Those who appeared at the hearing and abbreviations used in the report are listed in the following table.

#### **THOSE WHO APPEARED AT THE HEARING**

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

##### Witnesses

AEC West Ltd. (AEC West)  
Soren Christiansen

Ian McNary  
Don Rogerson

Albert Vant Erve  
J. Darryl Carter, Q.C.  
Tracy King

Bert Vant Erve

Ducks Unlimited Canada  
Mike Williams

Alberta Energy and Utilities Board staff  
L. D. Wilson  
V. J. Vogt

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## 2 ISSUES

The examiners consider the issues respecting the applications to be

- the need for the well,
- the location of the well, and
- the surface impact of the well and other matters.

## 3 CONSIDERATION OF THE APPLICATIONS

### 3.1 Views of the Applicant

AEC West submitted that it holds a valid petroleum and natural gas lease which would allow it to drill for hydrocarbons underlying Section 15. AEC West acknowledged that an error occurred on its licence application which suggested that the purpose of the well was to obtain oil production from the Falher Formation; but in fact, only sweet gas production was expected.

AEC West indicated that the preferred well location had been positioned as far west as possible in the gas target area given that a competitor was producing a well from the Falher zone immediately to the west in Section 16 of Township 71, Range 10, West of the 6th Meridian (Section 16). AEC West stated that the same competitor was also believed to have recently completed the same Falher zone in another well located to the north-east of the proposed 13-15 well at Lsd 1-22-71-10 W6M (1-22 well). AEC West acknowledged that it had not yet reviewed the data from that well as it was confidential. However, it had interpreted the presence of the newly cased 1-22 well as reconfirming AEC West's selection of the 13-15 site as the optimum location geologically and because it was midway between the two competitors' wells. AEC West submitted a map into evidence which was represented as its interpretation of the Falher reservoir. It linked the proposed 13-15 well with the well in Section 16, the 1-22 well, and another well several miles further west in Section 11 of Township 71, Range 11, West of the 6th Meridian. AEC West stated that it was anxious to proceed with drilling its location to prevent drainage by the offset wells.

AEC West stated that it would prefer not to drill an off-target location due to the competitive situation which existed. However, AEC West was unsure whether or not the offsetting mineral owner would object which would cause the Board to apply a penalty to any AEC West gas production. When questioned, AEC West representatives were unfamiliar with the means to vary spacing for the production of gas in the province and did not know whether that would be feasible in this particular case.

AEC West indicated that it had investigated the possibility of directionally drilling the 13-15 well, but was reluctant to seriously consider that option for several reasons. It estimated that the additional drilling costs were in the order of \$150 000 to \$200 000 to drill a directional well with a horizontal displacement in excess of 400 metres. AEC West stated that it believed additional costs could also be expected in workover costs required to repair worn or damaged tubing which were greater in deviated holes during the expected life of the well. AEC West described that it would be necessary to kick off and directionally drill immediately below the surface casing, build up to an angle of 25° in order to accomplish the horizontal displacement desired, and then drop the angle to near vertical above the Shaftesbury shale. AEC West submitted that this 'S' curve profile required in this case was difficult technically given the total depth of the well proposed. AEC West indicated that it had experienced problems with sloughing of unstable Shaftesbury and Fernie shales in the area which they attempt to avoid by drilling vertically through these zones. However, it acknowledged that sloughing of the shales also occurred in vertical wells and that the problem was not encountered exclusively in directional wells. AEC West maintained that it was critical to penetrate the target zone, the Falher, vertically to prevent early sandoff or multiple short radius fractures when stimulated.

AEC West stated that it was aware of the concerns raised regarding contamination of the nearby dugout and McNaught Lake. It confirmed that a berm would be constructed around the proposed 13-15 well location to prevent the escape of any fluids from the site and that the sump fluids would be removed and landspread in accordance with the Board's guidelines on drilling waste management.

AEC West stated that it was willing to consider any reasonable measure to minimize the effect of the well on the Vant Erves' land. A low profile road was planned and AEC West was willing to construct suitable fencing around the site with gates or cattle guards as the landowner may require.

In response to concerns about disruption to the local waterfowl on McNaught Lake, AEC West stated that it believed that the distance between the lake and the well site is sufficient to ensure the birds would be undisturbed. In addition, AEC West stated it is willing to abide by any Board ruling that would require drilling outside of the time frames designated as critical nesting periods by Ducks Unlimited.

With regard to the pipeline application, AEC West stated that if a successful gas well were drilled at the 13-15 location, it intended to construct approximately 1.3 km of 114.3 mm line to tie in the well to an existing facility at Lsd 10-16-71-10 W6M. AEC West indicated that it had verbal consent from the adjacent landowner for the portion of the line in Section 16 but did not have consent from the Vant Erves. During the site visit, it was noted that a pipeline right-of-way had been staked by a competitor across the Vant Erves' property, but AEC West was unaware of its existence and as to whether it would affect its plans. AEC West confirmed that a plant located to the south had capacity available to accept its production from the proposed well.

### **3.2 Views of the Interveners**

Mr. Albert Vant Erve owns the quarter section where the well is proposed, two other nearby quarter sections, and along with his wife and son, operates Vant Erve Dairy Limited. The dairy is located on their home quarter being the south-east quarter of 27-71-10 W6M. Mr. Vant Erve stated that the dairy is the only remaining operation of its type within a radius of 10 km, and that they are very committed to producing a top quality product for which they have received numerous trophies and recognition in the area. He is very concerned about any disruption to his operation and the effect that a well drilled on the 13-15 site could have.

Mr. Vant Erve characterized the land in the quarter section as exceptionally fertile with a high yield of alfalfa. He described their extensive efforts to maintain the land's high productivity by working in large volumes of manure, and then alternating between hay crop and summer fallow with their dairy cattle turned out into the spring and fall pasture. The Vant Erves produce 100 per cent of their own feed and are very resistant to the idea of replacing any crop loss with purchased feed. The Vant Erves stated that they produce weed and thistle free feed which they maintain is critical to the milk production and the health of the dairy herd. They also stated that a portion of the quarter section is used as pasture for their young purebred stock which are moved on-site in May and back to the home quarter in November of each year. The Vant Erves maintained that an additional value of the quarter section is its isolation from beef cattle herds in the area. The Vant Erves advised that they have made a substantial investment in their operations over the years to maintain purebred Holstein cattle and use only artificial insemination to maintain the purity of the stock. They stated that they have experienced difficulty in the past at other locations where their heifers were at risk to unwanted pregnancies from nearby unapproved bulls. Under these circumstances, the Vant Erves do not believe that the fencing and gates proposed by AEC West offer sufficient protection for their herd.

The Vant Erves did not dispute AEC West's right to exploit reserves underlying Section 15; however, they maintained that AEC West could, and should, drill a directional well off of their land from Section 16 to the west to access those reserves. They characterized the land use on that quarter section as less sensitive with only crop use.

The Vant Erves indicated that they have a very intensive use of this land and have made substantial improvements over the years. They stated that the usable land area is already reduced

by the presence of McNaught Lake and the associated wetland which they have fenced off from their cattle. The Vant Erves indicated that they constructed a dugout to water their cattle in a low area between the lake edge and the rest of the property. They maintain that the natural drainage pattern on the property results in runoff from the quarter section, and beyond, draining towards both the dugout and the lake. The Vant Erves were concerned that a well site located out in the middle of the quarter section may impede that flow, and further, that they had little confidence in the berm proposed protecting against any possible contamination in the event of heavy runoff. The Vant Erves indicated they had also contemplated building a retirement home on the quarter section sometime in the future. As the well site proposed by AEC West is directly in line between their preferred building site and a view of the lake, the Vant Erves stated they would likely not build in the event the well were to be drilled at the proposed location.

Mike Williams represented both the views of Ducks Unlimited Canada and the concerns expressed by Euphemia McNaught who was unable to attend the hearing. Mr. Williams stated that Ducks Unlimited manages a wetland project on McNaught Lake which is located over 500 metres from the proposed well site. He indicated that the lake is very productive for a variety of water fowl including ducks, geese, great blue herons, and trumpeter swans. Mr. Williams revealed that both the great blue herons and the trumpeter swans enjoy special status from the Committee on Endangered Species in Canada. He also stated that the trumpeter swans have difficulty pioneering new lakes, and that once a pair settles on a lake, they usually stay for life. Mr. Williams emphasized that McNaught Lake is unique in Alberta in that it is the only known lake where breeding trumpeter swans co-exist with a great blue heron nesting colony. Mr. Williams submitted that although the waterfowl would eventually become accustomed to activity at a distance, he stressed that the nesting periods of the various birds were the most critical time to avoid any disturbances. Mr. Williams emphasized that drilling and construction should occur only outside the breeding and nesting periods of 1 April to 15 July, or abandonment of the nest may result from a disturbance. He also pointed out that the heavy alfalfa crop described in the Vant Erves' fields was an ideal upland cover used by waterfowl for their nests. Mr. Williams also referenced the Migratory Bird Act which prohibits the destruction of a waterfowl nest under severe penalty by federal law.

Mr. Williams expressed concern about the well's position in relation to the natural drainage pattern towards the lake. He stated that Ducks Unlimited had recently dealt with the contamination of a wetland when a berm failed to contain a spill because of higher than normal spring runoff. He was uncertain whether that would be a problem in this case as the well was not expected to produce any liquids, but emphasized the need for caution to ensure proper management of any on-site fluids.

Mr. Williams commented that Euphemia McNaught was a well known artist and naturalist and he understood her to be concerned about the same issues as he had brought forward. In Miss McNaught's letter filed with the Board, she stressed that maintaining the pristine environment of McNaught Lake was very important and thus, she was concerned about ensuring no contamination of the lake.

### **3.3 Views of the Examiners**

The examiners accept that AEC West holds a petroleum and natural gas lease which covers Section 15. However, the examiners believe that AEC West failed to provide sufficient data to establish a need for the well at either the applied-for surface or bottom-hole locations. In

addition, the panel does not believe it heard compelling evidence which convinced it that possible alternatives had been fully examined given the considerable surface impact of the proposed well.

In assessing the issue of the location of the proposed well, the examiners considered factors concerning both the surface location and the bottom-hole location. The examiners note that AEC West emphasized the need for a bottom-hole location in Lsd 13-15. The panel also recognizes that the selection of a site mid-way between two competitors wells may have some merit under certain circumstances, and be an acceptable target when other impacts are not an issue. However, when it considers the need for precision of a bottom-hole location as requested, the examiners would normally expect to review significant geological or other technical data which would support the applicant's interpretation. The examiners note that AEC West presented only an area map which connected the proposed well location to others nearby by circling wells that it thought to be in the same pool. The examiners could not question or test the accuracy of the interpretation, or enquire about the general features or trend of the reservoir as AEC West had no one present at the hearing to speak to the evidence. The examiners therefore must assign less weight to its value than other direct evidence and testimony. The examiners wish to emphasize that it is incumbent on the applicant to provide sufficient information, technical data and witnesses, as necessary, to reasonably address the issues raised when considering such applications. The examiners therefore conclude that the bottom-hole target is not as critical as originally maintained based on the evidence submitted.

With regard to the surface location, the examiners believe that it heard insufficient evidence to convince them that the surface location of the well must remain as proposed. Although technically challenging, the examiners concluded from the applicant's evidence that a well could be directionally drilled from another location less disruptive to the surface land use. The examiners did not hear sufficient information to discount the possibility of drilling a deviated wellbore from Section 16, for example, with equal opportunity for a successful well as a vertical presentation. The examiners believe that various techniques were mentioned that have been employed by AEC West, and others in the area, to overcome the drilling difficulties described such as sloughing of the unstable shales. The panel understands that drilling a deviated well is not AEC West's preferred presentation; however, it appears to the panel to be an acceptable alternative when the surface impacts are substantial.

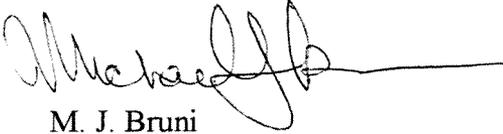
The examiners accept that the Vant Erves have an intensive use of their property and recognize that they have made significant effort to maintain and improve the lands and to customize it for their particular use. The examiners therefore acknowledge that the impact of this well, as surveyed, may have substantial negative effect on their operation. The examiners also have concern regarding the potential for disruption to the waterfowl which enjoy a unique habitat locally known as McNaught Lake. The examiners heard considerable evidence from Ducks Unlimited which convinced them that a moratorium on drilling and construction between 1 April and 15 July would be necessary to ensure the waterfowls' nesting period is not disrupted. The examiners believe that an adequate berm could be constructed, and along with careful liquid material handling on site, the possible risk of contamination of the wetland would approach zero probability.

In conclusion, the examiners believe that the applicant failed to present convincing evidence as to the need for the well at the applied-for surface location and to provide sufficient and substantial data which would establish any degree of exactness in the bottom-hole location selected. The examiners therefore recognize that the impact on the Vant Erves' operations outweighs the need for the well to exist as proposed.

#### 4 RECOMMENDATION

The examiners have carefully considered the evidence presented at the hearing and recommend that Application No. 960281 for a well licence for AEC WEST ELMWORTH 13-15-71-10 be denied. As the pipeline application then becomes redundant, the examiners recommend as well that Application No. 960350 be denied.

DATED at Calgary, Alberta, on 9 July 1996.



M. J. Bruni



W. Elsner, P. Geol.



D. D. Waisman