

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

APPLICATION FOR WELL LICENCES AND REDUCED OIL WELL SPACING CABRE EXPLORATION LIMITED PROVOST FIELD

**Decision Report 98-8
Applications No. 970459 and 1010982**

1 INTRODUCTION

1.1 Applications and Intervention

Cabre Exploration Limited (Cabre) applied to the Alberta Energy and Utilities Board (Board) pursuant to Section 2.020 of the Oil and Gas Conservation Regulation for well licences to drill five wells. Two wells were proposed from a surface location at Legal Subdivision (Lsd) 9, two at Lsd 16 and one at Lsd 15, of Section 6, Township 38, Range 3, West of the 4th Meridian. Cabre also applied to establish one legal subdivision drilling spacing units with the target area being the central area of the Lsd in accordance with Section 4.030, Subsection (1)(c) of the Oil and Gas Conservation Regulation. In addition, the applicant requested pursuant to Section 5.190 of the Oil and Gas Conservation Regulation and Section 71, Subsection (4) of the Oil and Gas Conservation Act that the well spacing be further modified by the establishment of a holding and the suspension of the drilling spacing unit and target area provisions in the north-east quarter of Section 6, Township 38, Range 3, West of the 4th Meridian. Cabre asked that the suspension of the regulations apply to wells drilled for the production of oil from the Mannville Group.

Objections to the well licences and well spacing applications (the applications) were received from the surface owner of the north-east quarter of Section 6, Mr. Roy Hanson. In addition, interventions were received from adjacent landowners Mr. Darrell Dzurko, west half of Section 6, and Mr. Perry Nelson, south-east quarter of Section 6.

1.2 Hearing

The Board decided to hold a public hearing to consider the applications and scheduled a hearing for 7 November 1997. The hearing was rescheduled following a request from Mr. Hanson for additional time. The applications were considered at a public hearing on 9 and 11 December 1997 in Provost, Alberta before Board Chair C. Bélanger (Presiding Member) and Acting Board Members W.J. Schnitzler, P.Eng. and M.L. Asgar-Deen, P.Eng.

THOSE WHO APPEARED AT THE HEARING

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

Witnesses

Cabre Exploration Limited (Cabre)
H. R. Ward, L.L.B.

B. W. Edmonson, P.Geol.
C. Martin, P.Geoph.
R. Kaminski
G. Carnduff
R. Hari, P.Eng.

L. H. Ranching Limited (the Hansons)
K. Zages

R. Hanson
T. Hanson

Eastview Farms Limited

P. Nelson

D. Dzurko

D. Dzurko

Alberta Surface Rights Federation

T. Nahirniak

Alberta Energy and Utilities Board staff

S. Wilson, B.Sc.
L. Wilson-Temple
L. Schmidt, C.E.T.
B. Heggie, Board Counsel

Mr. Bill Lucey filed an intervention on behalf of the Confederation of Regions Political Party but did not appear at the hearing.

2 ISSUES

The Board considers the issues respecting the applications to be:

- the need for the wells and reduced well spacing,
- the impacts of the proposed development,
- public consultation,
- timing of drilling operations, and
- other matters.

3 THE NEED FOR THE WELLS AND REDUCED WELL SPACING

3.1 Views of Cabre

Cabre submitted it holds a valid petroleum and natural gas (P&NG) lease for the north-east quarter of Section 6-38-3 W4M and therefore it has the right to explore for and exploit any underlying hydrocarbons. Cabre stated it initially planned to drill an exploratory well at Lsd 16-6-38-3 W4M (the 16-6 well) to verify its geological interpretation and to confirm the presence of hydrocarbon in the area of application. It further stated that if the 16-6 well is successful, it then intended to drill four delineation wells. Cabre explained that the 16-6 well is intended to test both the Rex and Dina formations of the Mannville Group and that it is assuming a success rate of 50% and 20% respectively for the two target zones. Cabre submitted evidence to support its view that a stratigraphically controlled Rex channel deposit exists and that it trends in a north to south direction. It also provided details of the secondary target, the Dina, which it interprets to be a fluvial sandstone with oil reserves thought to be controlled by a structural trap.

Cabre based its reservoir interpretation on an existing 2D seismic line in the north-east quarter of Section 6, which it correlated to a nearby 3D seismic line that was run over an adjacent Rex/Dina pool located in the west half of Section 5. It believed the anomaly identified in the north-east quarter section of Section 6 is a continuation of the Rex channel located in the west half of Section 5. However, Cabre said it expected to locate a new Rex pool because of evidence of a shallower oil-water contact in a well located on the north end of the adjacent pool. Cabre stated it would normally prefer to conduct a 3D seismic program over its mineral holdings but indicated it was refused surface access by the Hansons. Cabre further stated that 3D seismic information would assist in the optimal placement of the proposed well locations and would reduce the environmental impact by limiting the number of wells required to drain the reservoir. Alternatively, it recently reprocessed all the available seismic data in the area to shore up the basis for its interpretations.

The applicant stated the allowable spacing is one well per quarter section. Its experience has shown the most efficient way to produce and maximize the recovery of oil from the Dina is to reduce the well spacing so that up to four wells per Lsd can be drilled and produced. Cabre said the Dina has high porosity, good permeability and an active aquifer that provides pressure support to the oil reservoir. Cabre indicated the aquifer pressure support permits the production of large volumes of fluid and that oil production is a function of the volume of fluid produced and the number of producing wells in the pool.

Cabre said the Rex had lower porosity and permeability than the Dina, therefore ten-acre spacing is not as advantageous as it would not produce as much oil. The holding would provide the flexibility required to locate the exploratory and delineation wells in the optimum locations for success, and accommodate a combination of Rex and Dina producers. However, Cabre stated that should the 16-6 exploratory well not be successful, it would re-evaluate its geological interpretation to decide if additional wells are required.

3.2 Views of the Interveners

The Hansons and Messrs. Dzurko and Nelson (the interveners) stated Cabre failed to demonstrate the need for the wells and reduced well spacing, and therefore the development is not in the public interest. They also maintained that the applicant has no reliable or current seismic data to substantiate its geological interpretation. The interveners believe there is no evidence to suggest the quarter section will be productive. The interveners are of the view that the applicants intention to drill is solely based on economic benefit to the company at the expense of the surface owners on and adjacent to the proposed development. The interveners said, as stewards of the land and as ranchers, they cannot tolerate the drilling of these wells because the wells will cause irreparable damage to the environment. It is their contention the approval of the subject applications is simply a licence to exploit the riches of the land leaving the surface owners responsible for ongoing environmental liabilities associated with the oil company's activities.

The interveners are of the opinion that Cabre has other opportunities to explore for oil in areas that are not as environmentally sensitive.

3.3 Views of the Board

The Board notes that Cabre holds a valid P&NG lease for the north-east quarter of Section 6 and agrees this gives Cabre the right to explore for and develop any underlying hydrocarbons. The Board is satisfied that the applicant's geological interpretation of the Rex and Dina is reasonable. It is also satisfied the proposed 16-6 well is necessary to validate Cabre's geological interpretation and test for the presence of hydrocarbons in the north-east quarter of Section 6. The Board agrees that should the 16-6 well be successful, additional wells would be required to maximize the recovery of oil.

The Board agrees the requested change in well spacing would provide the flexibility necessary to place the additional wells in the optimum locations. Additionally, it notes that the requested well spacing is similar to the existing spacing in the west half of Section 5-38-3 W4M and is common throughout the Provost Field.

The Board believes additional 3D seismic information would be useful for reservoir delineation. It acknowledges the surface owner's right to refuse access for seismic purposes, however, the Board believes the absence of the data may negatively impact the recovery of oil and may result in more surface impact than necessary. Therefore, it would urge Mr. Hanson to reconsider his position with respect to this matter.

4 IMPACT OF THE PROPOSED DEVELOPMENT

4.1 Views of Cabre

Cabre acknowledged the drilling of the applied-for wells and the associated operations could impact the interveners with respect to groundwater, surface water, air quality and top soil preservation. The applicant stated it will strive to keep impacts to a minimum and will conduct its drilling and operations according to the EUB regulations.

In order to protect against groundwater contamination, Cabre indicated it would drill the wells using a fresh water drilling fluid to 675 meters and then use drilling mud. The drilling mud additive would be non-toxic and comply with the Canadian Association of Petroleum Producers'

list of approved drilling fluid additives. Cabre stated the wells would be drilled in an overbalanced condition, where the hydrostatic head of the drilling fluid would be higher than the pressure encountered for zones encountered. It submitted that this technique would prevent any flows of fluids into the well bore.

Cabre stated it planned to run 125 meters of surface casing and then to cement the casing string to surface. The company acknowledged it would be setting the surface casing shallower than the deepest fresh water aquifer identified at 204 meters in Alberta Environmental Protection's groundwater database but explained that the surface casing is primarily a component of well control. The company submitted that deeper surface casing is not required to protect the aquifers in this instance. Cabre said production casing would be run from total depth to surface and centralizers would be spaced to ensure the casing is centred in the hole. The production casing string would then be cemented full length. Cabre stated it takes care to condition the borehole properly before cementing and it ensures that cement returns are obtained at surface. Cabre is confident that by following these steps, protection of the fresh water aquifers and gas migration will not be a problem.

To further ensure protection of surface and groundwater, Cabre would use steel tanks to contain the drilling fluids on-site. The fluids would be transported to a remote sump for testing and land spreading. The applicant stated that no pits would be dug on any of the sites. Berms would be used to provide containment in case of a spill and they would be constructed so as not to restrict the natural drainage of the lands. Cabre pointed out that the surface location of one of the delineation wells (15-6) was moved so as not to impede the surface water pattern in the area.

Cabre stated it would test the quality of the water in the dugouts and the quality and flow of water wells or artesian wells within a 1.6 kilometre (km) radius of its wells. Cabre proposed sampling the water sources both before drilling operations commence and after the drilling concludes. The applicant saw no need for a water monitoring program that included piezometers located near the dugouts as requested by the interveners but did agree to provide replacement water for Mr. Hanson's cattle if his water is affected by Cabre's operations. Cabre acknowledged it failed to conduct post-drilling water testing on Mr. Dzurko's lands in 1997 but has arranged to remedy the oversight.

Cabre stated it would try to keep noise levels to a minimum during drilling and within EUB guidelines. Cabre also indicated that no firearms would be permitted on any lease on Mr. Hanson's lands.

In response to Mr. Hanson's suggestion that all equipment should be steam cleaned before it entered on to the proposed well sites, Cabre said it was prepared to clean all construction equipment in the interest of weed control. Cabre also agreed it would minimize the disturbance of the topsoil during construction of the roads to the proposed well sites.

Cabre agreed to use best efforts in reclaiming the drilling sites but could not commit to a 30-day deadline. It suggested that weather and soil conditions factored into the reclamation efforts, but confirmed it would proceed as soon as conditions allowed.

Cabre could not agree to a condition suggested by Mr. Hanson that none of the wells be used as disposal wells, however Cabre did commit not to drill potable water wells on the sites. Cabre also agreed to maintaining at least 30 meters between well bores to minimize the risk of migration of fluids from one well bore to another. Cabre also stated it has no immediate plans for

pad sites at this time but could not commit that future reservoir development would not require pad sites.

Cabre said oil produced from the Dina contains approximately 0.18% hydrogen sulphide (H₂S). Cabre disagreed with the Hansons' concerns that directional drilling from pads would increase the risk of sour gas releases occurring. In the event commercial quantities of hydrocarbon are present, solution gas containing H₂S would be separated from the oil and flared. Cabre confirmed that the flare stack emissions would not be analyzed but that the emissions would not result in provincial air quality regulations being exceeded.

Cabre objected to Mr. Hanson's request for a condition that any gas production be re-injected into the production zones, or alternatively, be transported by a pipeline to a central battery. Cabre said it would be necessary to flare produced gas during the 90-day production test period, and that even after the test, it may not be economic to dispose of the gas by any other means than flaring at the wells. With respect to production facilities, the applicant said that if commercial production is viable, it would use single well batteries for initial production operations. Cabre proposed that a typical single well facility would include a 400-barrel tank, pumping unit, flare stack, separator and pop-tank. Cabre suggested the economic success of the wells would determine whether it would tie-in the wells with pipelines to a satellite battery.

Cabre could not commit to Mr. Hanson's request that the well sites be electrified immediately after drilling. It stated it was unable to control TransAlta Utilities' schedule and the economics of the wells would dictate whether bringing power to the sites was practical.

Cabre committed to bear the cost of an environmental audit for the life of the wells if Mr. Hanson required one to sell or finance the property.

Respecting road conditions and traffic concerns expressed by Mr. Hanson, Cabre acknowledged there would be increased truck traffic during the drilling phase of the wells. If the wells are successful, truck traffic would be reduced to routine maintenance required and Cabre did agree to a condition prohibiting it from entering into a road use agreement with other operators. However, Cabre stated it could not agree to a request by Mr. Dzurko to prohibit traffic entering the well sites from using the county road in front of his home. Cabre was uncertain from which direction the rig would approach the sites, but in any case, was unwilling to guarantee that any one of the public roads would not be utilized. It would, however, try to ensure the majority of the well site traffic use the road allowance separating Sections 5 and 6. Cabre believed this measure would also address some of the concerns raised about dust and stated it would also employ dust control measures acceptable to the county during the summertime.

Cabre submitted it would fence the well locations and access roads and agreed to install a Texas gate with a single pole metal swing gate at the entrance to Mr. Hanson's lands.

Cabre stated it will adhere to the requirements and guidelines of the EUB and Alberta Environmental Protection in the abandonment and reclamation of any wells and well sites.

Cabre stated it is a prudent operator and has operated in the Provost area for approximately 16 years. The company stated it has an interest in establishing and maintaining a reputation for efficiency and competency. Cabre said it will continue to meet all statutory and regulatory requirements, besides adhering to the guidelines and direction set by the Board. Cabre stated it

was confident that the impacts of its proposed development could be minimized to an acceptable level.

4.2 Views of the Interveners

Mr. Hanson preferred that no oil and gas activity take place upon his lands. He expressed concerns about groundwater and surface water, degradation of the soil, effects on his crops, and effects on human and animal health.

Mr. Hanson suggested 32 conditions be imposed upon Cabre if the Board were to issue well licences to Cabre. The Hansons believed that their ranching operations would then be adequately protected. As justification for their concerns, and the requested conditions, the Hansons stated that:

- They are sensitive to H₂S emissions and have experienced watery eyes and mucus buildup when driving past well sites where sour gas is present.
- They believe they have seen increased reaction in their cattle to these emissions, noting a higher than normal barren rate and occurrence of cancer eye.
- They noticed the quality of their drinking water has deteriorated over time. The Hansons believe they can smell methane in their well water and resorted to using purchased bottled water approximately eight months ago. The Hansons maintain their successful ranching operations depend on a secure source of fresh water and demand that an extensive monitoring program be imposed on Cabre to ensure the quality of the water. They questioned whether the surface casing depth proposed by Cabre was adequate to protect the aquifers and prevent gas migration. They referred to statistics which they believe indicated problems with contamination of aquifers and gas migration have occurred but were unaware of specific instances in the immediate area, or with Cabre wells in particular. Mr. Hanson indicated he has refused to permit seismic activity on his lands in recent years due to a water well problem which occurred after activity some years ago.
- They are concerned about a study by the Alberta Research Council on hydrocarbon flaring noting that there are over 200 different combustion products that can result from flaring of gas, and that some of these substances are classified as carcinogens.

Messrs. Hanson, Nelson and Dzurko stated they believe the adverse effects of oil development on agriculture are significant. The effects include air quality degradation from flare stack emissions, contamination of the water because of gas migration, chemicals introduced into the soil regime and excessive dust created by truck traffic which coats the grass and makes it unpalatable to livestock.

Mr. Dzurko expressed concerns about the risk of contaminating two dugouts located in Lsd 14 and 15 to the west of the proposed well sites. He emphasized that the dugout on Lsd 14 is the only source of water for his cattle on the west half of Section 6. In addition, Mr. Dzurko was sceptical about Cabre's commitment to test and monitor surface water and aquifers. He cited a past experience when the company had failed to return to retest his water after drilling concluded. He also raised concerns about the amount of dust Cabre employees and contractors

were creating in the area. Mr. Dzurko requested Cabre implement permanent dust control measures around his property and to access their facilities without using the public road on the west half of Section 6.

Mr. Nelson submitted that contamination of topsoil as a result of well site run-off or migration through the top layers could affect the quality of water in his dugouts. He expressed concern about the effect of topography and drainage which could allow runoff containing contaminants to enter the dugouts he uses to supply water for his cattle.

Mr. Hanson stated he has no confidence in the industry policing itself, nor in the government enforcement of the regulations.

4.3 Views of the Board

The Board notes Cabre and the interveners shared common views on the following items: the value of pre and post-drilling water testing to ensure preservation of water quality; the importance and maintenance of natural drainage and concern for the aquifers; use of mud tanks and general timing of site reclamation; the restriction of firearms and joint-use road agreements on the Hansons' property; efforts to abate noise; distances between well bores; suitable fencing and gates to provide for the co-existent use proposed.

As stated previously, the Board believes the use of 3D seismic data would be useful in optimally locating the delineation wells so as to minimize surface impacts. Nevertheless, the Board accepts Cabre has selected surface locations for the proposed wells which take into account the topography, distance to water sources and impact to natural drainage. The Board notes that, while the interveners are not in agreement with the applied-for well sites, they suggested no alternative ones. The Board believes that, if impacts can be minimized, the applied-for locations would be preferable because they best suit the terrain and drilling target considerations.

The Board notes Cabre's commitment to sample the water wells and dugouts within 1.6 km of its well sites. It believes the testing for water quality from all sources of potable water in addition to flow in the water wells before and after drilling will be adequate to determine if contamination has occurred. Therefore, a monitoring program involving the use of piezometers near the dugouts is not necessary. The Board understands the interveners' desire to protect the groundwater aquifers in this area and considers the casing and cementing procedures to be adequate safeguards in that regard. The Board notes Cabre has agreed to provide replacement water for any person and livestock should a problem occur with the water supply.

The Board notes Cabre's commitment to minimizing the spread of weed seeds by cleaning construction equipment before it is moved onto the sites and expects Cabre to do whatever is reasonably required to achieving this objective.

The Board believes that the productivity of the wells should dictate whether it is economic to pipeline production after the testing period and notes that Cabre will use underground electrical lines, as requested by the interveners, if economically feasible.

The Board acknowledges the Hansons' belief that they are sensitive to the flaring of sour gas but notes that no direct evidence was provided to support the Hansons' claim that their health concerns were a direct result of odours or emissions to which they were exposed. The Board also

notes that the Hansons indicated they noticed an increased occurrence of cancer eye and other ailments in cattle. However, the Hansons did not introduce direct evidence to substantiate or verify these observations. Absent any supporting information, the Board is unable to deal with these concerns.

With respect to the interveners' concerns regarding increased vehicular traffic, and the effects of the dust generated by the additional traffic, the Board notes Cabre's commitment to contributing to dust control measures acceptable to the county. Cabre would also try to ensure the majority of traffic accessing the well site would do so from the east side using the public road allowance between Section 5 and 6. The Board does not believe it is reasonable to restrict Cabre's right to use any public road as suggested by Mr. Dzurko.

The Board finds acceptable Cabre's proposed practices to preserve and manage the topsoil. Additionally, the Board believes the regulations and industry practice provide adequate protection for the topsoil.

Like the interveners, the Board is also concerned about gas migration and the possible contamination of aquifers. It has undertaken a program to identify and direct repairs or abandonment of wells with serious gas migration problems as they occur throughout the province. The Board notes there is no evidence of such occurrences on the lands under discussion in the subject applications. However, should a problem occur, the Board is confident the problem will be identified and handled through the Board's program.

For the wells under consideration, the Board believes the possibility of a well blowout during the drilling of these wells is low. It believes risk of damage to the environment is low and that public safety is a manageable issue. The Board notes that Cabre intends to operate within the Board's regulations and while the Board recognizes some impacts will result from the development, it believes Cabre's mitigative measures will adequately address the interveners' concerns about the drilling of the wells, and production facilities if the wells are successful.

5 PUBLIC CONSULTATION

5.1 Views of Cabre

Cabre stated it commenced its public consultation program by attempting to contact Mr. Hanson as early as March 1997 to discuss its drilling plans for on the north-east quarter of Section 6. After several attempts to make telephone contact failed, Cabre staff stopped by the Hanson property and Cabre was able to have the 16-6 well surveyed in late April 1997. When further discussions seemed to indicate that no consent for a surface lease would be obtained from the Hansons, Cabre concluded it should proceed to put forward all five well locations to the Hansons. Cabre indicated that Mr. Hanson was on-site when the additional well sites were staked and surveyed in late June and understood that Mr. Hanson disagreed in principle with the proposed well sites. Cabre personnel hand-delivered the surveys to Mr. Hanson's counsel. It further submitted that it normally would go directly to Mr. Hanson, however comments made by Mr. Hanson had made Cabre staff uncomfortable with further direct contact with Mr. Hanson.

Cabre stated it consulted only with Mr. Hanson, and had contacted no one else regarding the well sites because it understood it was not a requirement to notify owners or occupants of

neighbouring lands..

5.2 Views of the Interveners

The interveners were of the view that the company did not conduct adequate public consultation for the proposed wells. Mr. Hanson said he had concluded that Cabre was persuaded to abandon its efforts to drill on his lands when he did not hear from them for some time.

Mr. Dzurko stated he is the nearest resident to the proposed development and it is adjacent to a major part of his cattle operation. Mr. Dzurko was concerned Cabre did not notify him of the company's intentions. While he acknowledged Cabre has no regulatory requirement to notify him, Mr. Dzurko believed it to be common courtesy that the company notify its neighbours of its drilling activities. Mr. Dzurko spoke of an occasion where Cabre failed to notify him of an oil spill which contaminated some grazing land where he was an occupant at the time. Mr. Dzurko claimed to have lodged a number of complaints about flare stack emissions at the Cabre battery in Section 31.

Mr. Dzurko stated Cabre failed to honour a previous commitment with respect to testing a water well and two dugouts on his property. He believed Cabre took samples prior to drilling a nearby well only from his water well, and took none from the dugouts. He claimed no one had returned to take post-drilling samples from either the water well or the dugouts. Although Mr. Dzurko acknowledged he had not experienced any problems with his water, he believed that Cabre should have met its commitment and he cited this incident as a reason he had very low trust in Cabre. Mr. Dzurko emphasized that the spring-fed dugout on Lsd 14 is the main source of water for his livestock and that his water well is his family's only source of water within several miles. He believed Cabre should be denied licences for any wells on Lsd 14 or 15 due to the near proximity of his dugouts and the high value he placed on the water present.

Mr. Nelson stated he is an adjacent landowner with land in the south-east quarter of Section 6. He expressed concerns about Cabre's well sites affecting the quality of water in his dugouts. Mr. Nelson also said he believed Cabre's survey plans were deficient because they did not identify residents within a one-mile radius of the well sites.

5.3 Views of the Board

The Board notes the numerous attempts made by Cabre to contact Mr. Hanson regarding the applications. The Board concludes that communication broke down several times as positions became polarized and the parties were unable to reach agreement. The Board confirms that Cabre did meet minimum standards with its public consultation program and notes that the company did try to identify Mr. Hanson's issues and resolve them. The Board agrees with Mr. Dzurko that, in the interest of improving relations with those who live closest to the proposed wells, Mr. Dzurko should have been contacted to determine his concerns and their resolution.

The Board appreciates that it was an oversight when Cabre neglected to conduct follow-up tests on Mr. Dzurko's water well and dugouts after previous drilling the area. However, it wishes to

emphasize the importance of ensuring commitments are met. When a company undertakes operations in an area, it becomes a member of that community and its reputation can easily be tarnished by the action, or inaction, of its employees or contractors. The Board expects companies to be diligent at all times to ensure their obligations are met.

With regard to the concern raised by Mr. Nelson about a deficiency on the survey plans, the Board finds no omission in the plans for each of the applied-for wells.

6 TIMING OF DRILLING OPERATIONS

6.1 Views of Cabre

Cabre said it could not accept a restriction on the timing of its proposed drilling activity because it could not control rig availability, and as such, would want to drill when there were rigs available in the area. Cabre did concede that if licensing and access were delayed, it would try to accommodate the interveners preferred July/August time frame. Cabre indicated it would make all attempts to mitigate environmental impacts and impacts on the ranching operations, whatever the season.

6.2 Views of the Intervenors

The intervenors requested that any well licences issued as a result of these applications be conditioned to prohibit winter drilling. They stated a preference for the drilling activity be timed to occur following spring ranching activities such as calving and seeding and as late as July or August.

6.3 Views of the Board

The Board does not believe it is necessary to condition any licence with regard to the timing of drilling operations unless exceptional environmental circumstances exist. The Board believes the conditions to which Cabre has agreed should provide sufficient protection of the interests of the intervenors in this case. Therefore, the Board will not place any restriction on the timing of Cabre's drilling activity.

7 OTHER MATTERS

The use of a particular testing company for water sampling and analysis was an issue raised at the hearing and was of particular importance to the intervenors. The Board believes that it is important to use a credible laboratory to ensure confidence in the test results, but is not prepared to specify a particular service provider.

Mr. Hanson requested that Cabre post a \$1,000,000 performance bond with Alberta Environmental Protection until a reclamation certificate is issued for each site. The Board notes that Cabre carries the necessary and appropriate insurance to be recognized by the EUB as a licensee and operator in the Province of Alberta. In addition, Cabre satisfied the Board that it maintains required blowout and liability insurance in the event of a mishap. Therefore, the Board believes the posting of a performance bond is unnecessary and will not require Cabre to post such a bond.

8 DECISION

The Board has considered all of the evidence and is prepared to approve the well licence applications and the reduced spacing application.

DATED at Calgary, Alberta on 7 April 1998.

ALBERTA ENERGY AND UTILITIES BOARD

<Original signed by>

C. Bélanger
Presiding Member

<Original signed by>

W.J. Schnitzler, P.Eng.
Acting Board Member

<Original signed by>

M.L. Asgar-Deen, P.Eng.
Acting Board Member