

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

CANADIAN 88 ENERGY CORPORATION APPLICATION TO DRILL A CRITICAL SOUR GAS WELL AND CONSTRUCT A PIPELINE AND RELATED FACILITIES CASTLE RIVER AREA

**Decision 2000-18
Applications No. 1040292
and 1045916**

1 DECISION

The Board, having carefully considered the evidence, believes that the proposed energy project development plan is acceptable and in the public interest. The Board therefore approves Canadian 88's Applications No. 1040292 and 1045916, subject to Canadian 88 meeting all regulatory requirements as well as all commitments made to area residents.

2 INTRODUCTION

2.1 Application and Intervention

Canadian 88 Energy Corporation (Canadian 88) applied on April 26, 1999, to the Alberta Energy and Utilities Board (the EUB/Board), pursuant to Section 2.020 of the Oil and Gas Conservation Regulations, for a well licence (Application No. 1040292) to drill one directional sour gas well from a surface location in Legal Subdivision (LSD) 12, Section 8, Township 6, Range 2, West of the 5th Meridian (12-8) to a bottomhole location with the same coordinates. During the course of the hearing Canadian 88 amended its application to drill from a surface location overlapping LSDs 10 and 15, Section 7, Township 6, Range 2, West of the 5th Meridian (10-7) to the bottomhole location at 12-8 (see figure attached). The purpose of the well is to obtain gas production from the Mississippian and Devonian age formations. Canadian 88 also applied under Part 4 of the Pipeline Act to construct and operate a pipeline and related facilities (Application No. 1045916) to transport the sour gas produced from the above-mentioned well.

In response to a concern by local residents to consider a total development plan for any new energy projects in the Screwdriver Creek valley, Shell Canada Ltd. (Shell) also submitted applications in association with the above Canadian 88 applications. The Shell applications are for four wells, pipelines, and related facilities for locations proximal to the Canadian 88 proposed developments. In accordance with the principles outlined in EUB *Informational Letter 93-9: Oil and Gas Developments Eastern Slope (Southern Portion) (IL 93-9)*, the applicants also jointly prepared an environmental assessment for the region.

Although the Canadian 88 and Shell applications were heard concurrently at the same public hearing, the two companies' applications are independent of each other and therefore are considered in separate decision reports. However, where necessary, to assess the broader effects of regional developments, both potential projects are referenced.

The EUB received objections to the subject applications from Dave and Jean Sheppard, Mike Judd and LeeAnne Touche, and Kim and Sylvia Barbero, whose residences are all located in the Screwdriver Creek valley near the proposed well and pipeline locations. James Rennie, a seasonal resident of Beaver Mines, and James Tweedie, representing the Castle Crown Wilderness Coalition (CCWC), also submitted objections to the applications. Accordingly, the EUB directed, pursuant to Section 29 of the Energy Resources Conservation Act, that a public hearing be held to consider the applications.

2.2 Preliminary Matters

The EUB originally scheduled the hearing to consider the applications and interventions commencing November 2, 1999. Due to requests from some of the parties and to allow for an interrogatory process to facilitate information exchange, the hearing was rescheduled to January 11, 2000.

During the course of the hearing an agreement was reached between Canadian 88 on the one hand and the Sheppards and the Barberos on the other that resulted in these residents withdrawing their objection to Canadian 88's applications. The commitments made by Canadian 88 to the Sheppards and Barberos were read into the record. The Board expects Canadian 88 to honour its commitments to residents and therefore will not specifically condition its approval in this regard.

2.3 Hearing

A public hearing was convened on January 11, 2000, in Pincher Creek before a Board panel consisting of Dr. B. F. Bietz, P.Biol. (Chair), Acting Board Member K. G. Sharp, P.Eng., and Acting Board Member W. G. Remmer, P.Eng. Prior to the hearing, the Board viewed the area of the proposed development.

Those who appeared at the hearing are listed in the following table.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives
(Abbreviations Used in Report)

Witnesses

Shell Canada Ltd. (Shell)

S. Densted.
B. Gilmore
J. Jamieson

I. Kilgour, P.Eng
M. Minchau, P.Eng.
G. Mulzet
K. Johnson, P.Eng.
D. Mead, Ph.D.
D. Leahey, Ph.D.,
of Jacques Whitford Environment Limited
R. Eccles, P. Biol.,
of AXYS Environmental Consulting Ltd.

THOSE WHO APPEARED AT THE HEARING (continued)

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Canadian 88 Energy Corporation (Canadian 88) R. Neufeld G. Moores	G. R. Gill, P.Eng. G. Dowling F. Ceh, C.E.T. G. Thompson, P.Geol. R. Eccles, P.Biol., of AXYS Environmental Consulting Ltd. M. Neville, of AXYS Environmental Consulting Ltd.
M. Judd and L. Touche M. Sawyer	Dr. B. Horejsi M. Judd L. Touche
J. Rennie	J. Rennie
Castle Crown Wilderness Coalition (CCWC) J. Tweedie	J. Tweedie
Alberta Energy and Utilities Board staff S. D. Wilson W. Y. Kennedy, Board Counsel J. Baker, P.Biol. A. Beken, P.Eng., P.Geol. M. Brown, P.Eng. R. Powell, P.Biol.	

3 ISSUES

The Board considers the issues with respect to the applications to be

- need for the well,
- well and pipeline location,
- flaring and associated air quality concerns,
- cumulative environmental effects, and
- noise and safety.

4 NEED FOR THE WELL

4.1 Views of the Applicant

Canadian 88 submitted its application to the EUB to drill a single well to explore and produce from the Mississippian and Devonian age formations. It said that there is a need to drill a well at the proposed bottomhole target to evaluate its mineral interests and potential reserves. Canadian 88 stated that its proposed bottomhole target in the northwest quarter of Section 8 is superior to the potential target in the southwest quarter of the section, since it allows it to drill a well with less horizontal displacement. Doing so minimizes geological risk and drilling and completion costs. Canadian 88 stated that it expected to achieve gas production from the Mississippian and Devonian age formations of up to 15 million cubic feet per day (422.6 thousand cubic metres per day). It estimated total (in-place) gas reserves in Section 8 as being approximately 40 billion cubic feet (1.13 billion cubic metres).

Canadian 88 stated that the Mississippian and Devonian age formations in this area were of very low porosity and permeability. The applicant indicated the formations were also subjected to thrust faulting and folding, which resulted in their fracturing, creating permeable fairways for the movement of hydrocarbons. The ideal locations to drill for hydrocarbons in the reservoirs are therefore at the structurally highest section, where the fracturing tends to be most intense.

The proponent stated that it identified favourable structures in the Castle River area based on the three-dimensional (3-D) seismic data and has high confidence in its ability to interpret the seismic data in this area. It added that the 12-8 bottomhole location is the optimum on-target location available to Canadian 88.

Canadian 88 stated that even if the proposed well (12-8) were not a successful gas producer, it would provide valuable geological information not only to Canadian 88, but also to Shell, especially with respect to the drilling of its proposed wells from the 10-7 surface location.

Given the complexities with regard to working with another company and the associated drilling sequence, Canadian 88 expressed the need to have some flexibility on the expiry dates for any EUB approval as a result of its applications and requested a three-year licence period instead of the standard one-year term.

4.2 Views of the Interveners

The interveners did not contest the evidence presented by Canadian 88 regarding the proposed bottomhole location or the proposed need for the well. They did, however, express the view that Canadian 88's need to drill for minerals was questionable, given the impacts that would occur in the area. They stated that the Board must consider the broader public interest, having regard for the social and environmental effects of the project on the Screwdriver Creek valley.

4.3 Views of the Board

The Board notes that Canadian 88 has acquired the appropriate petroleum and natural gas rights and is satisfied that Canadian 88 has the right to explore for and produce the reserves underlying the subject section and that the need for the well has been established.

With regard to the length of the permit, the approval for the proposed well at surface location 10-7 to a bottomhole location of 12-8 will be issued for a standard term of one year. If Canadian 88 experiences difficulty in spudding the well in the time frame granted, the Board is prepared to consider an extension if circumstances warrant. The associated pipeline licence will be granted a two-year term and will be cancelled if the well is not successful.

5 WELL AND PIPELINE LOCATION

5.1 Views of the Applicant

Canadian 88 stated that it had assessed a number of surface locations for its proposed 12-8 well. It submitted that the 12-8 location was the preferable surface location based on geological, environmental, and engineering considerations. It said that the original 12-8 surface location was defensible and credible on an objective basis. However, due to landowner concerns, the applicant stated that it had relocated the surface location to Shell's 10-7 surface lease. It noted that it would require only 350 m of new roadway to access the 10-7 surface location.

Canadian 88 stated that in order to accommodate its well at the 10-7 site, it would need to redesign and reconfigure the lease in consultation with Shell, its environmental consultant, and the landowners. Furthermore, the proposed pipeline would utilize the same right-of-way proposed by Shell to tie in its 10-7 well. This would avoid additional impacts on both landowners and the environment.

5.2 Views of the Interveners

Mr. Judd submitted that the 10-7 surface location would be in full view of his property and that this would affect the aesthetic value of the landscape and his guide outfitting business. In addition, Ms. Touche indicated that the location of the 10-7 surface location would disrupt their lifestyle and their peace of mind and would have a negative effect on her art education business.

5.3 Views of the Board

The Board notes that a number of criteria, including geological, engineering, and environmental considerations, in addition to the concerns of landowners, must be considered when identifying a suitable location for the well and pipeline. The Board notes that the proposed surface location has been chosen to be adjacent to existing surface disturbances and share a lease with Shell. The Board acknowledges that while there will be some impacts on all of the residents of the Screwdriver Creek valley from the proposed well, the 10-7 surface location provides a reasonable compromise among the needs of all parties. The Board believes that the proposed pipeline routing is acceptable for similar reasons. The Board notes Canadian 88's effort to

minimize new surface disturbance in its development plans and encourages future development in the area to follow this practice if at all possible.

The Board is encouraged by the fact that Canadian 88 is willing to work with another applicant on sharing a lease site, as such initiatives can further reduce new surface disturbance and associated road access. The Board believes that this approach meets both the spirit and the intent of *IL 93-9*, which states: “Operators proposing developments within this region (i.e., the Eastern Slopes) are expected to consolidate their plans and activities with other operators to the greatest degree practicable wherever this may reduce area impacts.”

6 FLARING AND ASSOCIATED AIR QUALITY CONCERNS

6.1 Views of the Applicant

If the proposed well were successful, Canadian 88 committed to limiting routine flaring during production from the proposed development to no more than one day per month per well and to eliminate routine flaring at the 10-7 surface location. In addition, it believed it could coordinate planned activity at the proposed well and Waterton Junction (a Canadian 88 facility) so that flaring would not occur simultaneously.

In response to questioning about techniques available to minimize or reduce flaring at Waterton Junction, Canadian 88 stated that it would apply the same technology used by Shell in the area eliminate sour gas flaring at Waterton Junction. This would be accomplished by using sweet fuel gas to purge the pigging barrels into the production pipeline and by burning the remaining sweet fuel gas from the barrels in the line heater, but some sweet gas flaring would still occur. The company committed to minimize flaring as much as possible and noted that it has access to the technology Shell utilized at Junction J, a nearby Shell facility.

Canadian 88 believed that operations associated with the proposed Castle River well would not significantly affect local air quality because flaring would be limited to the well cleanup period followed by in-line testing at the well, so that the only time that significant flaring would occur would be at start-up or in an emergency situation. Canadian 88 stated initial start-up would only require short-duration flaring to atmosphere in order to unload the wells. It said that this would normally require anywhere from four to eight hours and that it would do its best to minimize associated flaring. It noted, however, that some wells can take longer than expected for cleanup, as in its experience with the Canadian 88-operated Burmis wells. Pilot gas would be used to ensure a flare during the initial stages of the cleanup. Additionally, it stated that it would be using mobile downwind monitoring during start-up flaring and in-line testing.

Canadian 88 stated that the dispersion modelling of the combustion products arising from flaring carried out in its environmental assessment was based on 1999 protocols in place at the time the assessment was conducted and on its best estimate of the wellbore parameters. It maintained that while other approaches could be used for dispersion modelling, the method it had used was based on sound science, was sufficiently conservative, and was appropriate. Canadian 88 stated that it

did not intend to apply for a flare permit at this time but would apply in due course, pending more wellbore information. Canadian 88 said that it would meet the requirements of EUB's *Guide 60: Upstream Petroleum Industry Flaring Guide* and any other appropriate flaring regulations in place at that time.

Canadian 88 observed that a comprehensive corrosion management program is essential to protect pipeline integrity and stated that it had set in place the operational procedures necessary to ensure that leaks would not occur and therefore that public safety and air quality were protected. Canadian 88 maintained that while leak detection is important, of primary importance is the containment of the well effluent in the pipeline systems designed to produce and transport the gas; when properly done, there would not be a gas release to atmosphere. Canadian 88 noted that it would have well-test separators on location to separate and measure produced fluids. In its effort to avoid flaring, it felt confident that it would not negatively impact pipeline integrity as a result of the well testing.

6.2 Views of the Interveners

Mr. Judd, Ms. Touche, and Mr. Rennie all stated that they had had significant negative experiences with atmospheric emissions arising from leaks, flares, and other sour gas activity in the region, which has caused them emotional and physical stress. As a result, air quality issues associated with sour gas developments were of principle concern. They also stated their belief that Canadian 88 had used inappropriate and erroneous modelling approaches and had failed to demonstrate that its project would not result in contravention of the Alberta Ambient Air Quality Guidelines.

With respect to the emissions predicted by Canadian 88, the interveners questioned the length of time calculated for full-effluent flaring, the expected H₂S content of the flared gas, and the validity of the adjustment factor used in the Screen3 analysis conducted by Canadian 88's expert witness. In addition, the interveners questioned the practice of using a flat terrain assumption instead of a complex terrain assumption, which would better reflect conditions in the Screwdriver Creek valley. The interveners noted that Canadian 88's model predicted exceedances of Alberta Environment Air Quality Guidelines in extremely unstable atmospheric conditions. They requested, should the Board approve the application, that the applicant not be allowed to flare under these conditions.

The interveners also questioned whether, in preparing its application, Canadian 88 had followed the flaring guidelines in effect as of January 1, 2000, and outlined in the EUB's *Guide 60*. The interveners stated that Canadian 88's modelling approach was inconsistent with both *Guide 60* and the most recent draft guidelines from Alberta Environment. The interveners contended that Canadian 88 was aware of these new guidelines and chose not to consider them as part of the application. They requested, should the Board approve the application, that the applicant not be allowed to flare under these conditions.

6.3 Views of the Board

The Board notes the commitment that Canadian 88 has made with regard to eliminating routine flaring in the Screwdriver Creek valley and its proposal to use the innovative technical solutions Shell has developed to purge the pig barrels with sweet fuel gas at Junction J. The Board recognizes that there is a need for short-term flaring at newly drilled wells in order to clean up the wellbore to allow for proper testing of the well. The Board believes that Canadian 88's plan to in-line test the proposed well to an existing pipeline system is appropriate and will help to minimize sour flaring to atmosphere during this period. The Board recognizes that during emergency situations Canadian 88 may flare if the well cannot be shut in, as this practice is necessary to protect public safety. The Board also notes that Canadian 88 is aware of industry's experience with the potential for increased risk of initial pipeline corrosion associated with this approach, and the Board is satisfied that Canadian 88 will put the appropriate corrosion inhibition and monitoring systems in place. As a result, the Board believes that the proposed program will mitigate any risk of undue pipeline corrosion and subsequent leaks that could contribute to air quality concerns in the area.

With regard to the question raised as to the appropriate method for modelling of potential emissions, the Board agrees that the approach used by Canadian 88 was consistent with the requirements in place when the assessment was done. The Board also believes that for the purposes of considering the impact of approving the subject applications, this approach provides a reasonable estimate of the possible concentrations that may result from testing and predicted ground-level concentrations. The Board notes that Canadian 88 has committed to use the most recent applicable modelling approach, as well as to incorporate any data obtained during the drilling of the well, when it formally applies for a flare permit, and the Board confirms that Canadian 88 will be required to meet all aspects of the current approach at the time the permit is applied for. Should this modelling predict that exceedances of the ambient air quality guidelines may occur, then Canadian 88 will be required to design its well-testing program to ensure that it is able to meet the ambient air quality requirements in place at the time.

7 CUMULATIVE ENVIRONMENTAL EFFECTS

7.1 Views of the Applicant

In conjunction with Shell, Canadian 88 submitted an environmental assessment as part of its application in accordance with the requirements outlined in *IL 93-9*. As a result of the findings of this assessment, Canadian 88 submitted that it believed that there were significant regional cumulative environmental effects attributable to energy, agriculture, recreational, and residential development. Furthermore, Canadian 88 believed that while such thresholds were not yet established, it was possible that the biological thresholds for some species in the region were either being approached or may now have been exceeded. Canadian 88 argued, however, that the effects of its project, where the well site is an expansion of an existing site and the sharing of a pipeline right-of-way, would not result in a measurable change in the existing environment.

In its environmental assessment Canadian 88 stated that on a regional level it had focused particularly on the potential impacts on two species, elk and grizzly bears. Canadian 88 maintained that its development would not contribute significantly to the existing cumulative effects on either elk or grizzly bears, nor adversely affect the potential for future management initiatives for these species. It noted in particular that it did not believe that the Screwdriver Creek valley would be a suitable candidate site for any regional wildlife management initiatives due to the existing level of human activity in the valley and the surrounding area.

Canadian 88 argued that, according to the Castle River Sub-Regional Integrated Regional Plan (IRP), its proposed project is an acceptable land-use activity for public (Crown) land and that the landowners had given their consent to the project where the project crossed private land. Canadian 88 submitted that its reclamation plans for the project would enhance vegetation for livestock and some wildlife species, both of which are stated in the IRP to be a priority for the management of Crown land.

7.2 Views of the Interveners

The Castle Crown Wilderness Coalition (CCWC) indicated that it had decided not to debate its issues with Canadian 88 at the hearing. The CCWC did make a general statement in terms of its ongoing and increasing concerns regarding the overall state of the ecosystem of the Castle region and the negative effect that industrial activity has had on that ecosystem.

Mr. Judd and Ms. Touche indicated that they agreed with the Canadian 88's conclusion that the cumulative effects of human activity in the region were significant and that the biological threshold for the long-term viability of some species had been exceeded. They did not accept, however, Canadian 88's conclusion that the proposed project would not contribute significantly to regional cumulative environmental effects. The expert witness for the interveners stated that various forms of human encroachment were the main causes of habitat loss and that roads, cut lines from seismic operations, and other access trails in particular contributed to habitat loss, as well as to fragmentation of the landscape. The interveners suggested that a coordinated, integrated effort on behalf of the responsible land management agencies would be necessary to restore the ecological integrity of the local region back to an acceptable level. They suggested that this could be accomplished, at least in part, by closing and reclaiming roads, cut lines, and other trails in the area. Mr. Judd further commented that he did not believe that there could be effective enforcement of the existing regional access management plan due to the high density of access points already in the region.

The interveners noted that thresholds that measure ecological integrity are lacking and that the province's natural resource management agencies need to set such thresholds and measurable targets to effectively protect areas such as the Castle Crown region. They maintained that no development of any sort should be allowed in an area where the thresholds had already been exceeded and that industrial development should be directed to areas where thresholds had not been exceeded. The interveners took the position that the Board needs appropriate guidelines or thresholds for industrial activity in order to be able to balance this against the human use of the landscape.

7.3 Views of the Board

With regard to the environmental assessment carried out by Canadian 88, the Board believes that the proponent has met or exceeded the requirements stated in *IL 93-9*. Specifically, the assessment has considered the sensitivity of the development area, as well as the region, and the concerns raised by the landowners. The Board notes that all parties accepted that the region contains significant ecological values and, furthermore, that these values had to some degree been compromised by the range of human activities in the area. The Board believes that this is a reasonable conclusion from the work carried out by the proponent, particularly in the absence of any evidence to the contrary.

In this instance the Board notes that the proposed Canadian 88 development is on the periphery of areas within the region of greatest importance to key wildlife species, such as elk and grizzly bears. Furthermore, the development as proposed does appear to be generally consistent with the present IRP. Therefore, although it is clear from the evidence presented that the development will likely have a small incremental effect on regional wildlife populations, the Board is prepared to accept Canadian 88's position that these effects will not be sufficiently large so as to outweigh the other public benefits arising from the proposed development. The Board also agrees with Canadian 88's position that even if regionally based actions are eventually taken to address regional effects, the 10-7 site selected by Canadian 88 and Shell for its wells is unlikely to be a candidate for such actions, given the high level of human activity and the preponderance of private lands.

Historically, the Board has turned to the regional IRP for guidance as to acceptable forms of activity and development, particularly on Crown lands. In this case, however, the Board notes that both the public and the industry participants took a common view that it was possible or even likely that the biological thresholds for at least some key species identified as important in the IRP may now have been exceeded in the region. This would appear to strongly suggest that the current publicly available planning tools for the region may now be outdated and inadequate to address the current level of development. The Board also agrees with the position taken by the parties that, in the absence of threshold values against which to measure such ecological effects, it is difficult for an applicant, the public, or the Board to evaluate to what degree incremental impacts from new development would be acceptable. Nor is it possible to determine what mitigative actions, such as facility, road, or cut-line abandonment and reclamation in other portions of the region, might be used to reduce the cumulative effects to suitable levels.

For almost two decades the EUB has been directly involved in adjudicating conflicts in the Castle Crown region between the proponents for new energy development and members of the public that believe that the ecological values of the region are at risk. The Board expects that there will continue to be applications in the region for new energy development into the foreseeable future. The evidence provided at this hearing suggests that at least some of the predicted environmental effects may now be occurring, although clearly not only because of oil and gas development. In order to ensure that future energy development in the region continues to be environmentally acceptable, the Board strongly believes that additional evidence such as would be found in an updated integrated resource management strategy must be developed to confirm that the region's environmental values are being adequately protected. Alternatively, work needs to be initiated in a timely fashion to create strategies to address the future cumulative

effects of human activities, including energy development, in the Castle Crown region. The Board intends to raise this issue with the appropriate land management agencies to consider such an initiative for this region of the province. The Board expects that the energy industry would also be interested in participating in such an initiative in order to establish some certainty for future development.

8 NOISE AND SAFETY

8.1 Views of the Applicant

Canadian 88 stated that it did not expect that there would be any significant noise at either the Barbero or Sheppard residences from its proposed development. However it agreed to meet the noise control commitments made by Shell at its drilling operation at the proposed 10-7 surface location.

Canadian 88 stated that it had agreed to use a modern electric top-drive rig with a noise suppressant muffler to eliminate the diesel engine noise common with older rigs. It stated that it would also follow Shell's plan to use wood planking on decks to further reduce noise levels. In addition, Canadian 88 agreed to orient the rig so as to minimize noise at the Sheppards' residence as well as for other area residents.

Canadian 88 stated that it believed that the Sheppards' concerns related to noise had been resolved and that a cooperative relationship on this issue had been developed. Canadian 88 stated that it did not expect any significant noise issues with the Barberos. The applicant stated that it had made a written commitment that if the Barberos find the noise levels excessive, all reasonable steps would be taken to further reduce noise at their residence. Canadian 88 stated that it had agreed to do this even if measures in excess of the EUB's *Interim Directive (ID) 99-8: Noise Control Directive* were required.

Canadian 88 acknowledged the possibility that two wells could be drilled simultaneously in the Screwdriver Creek valley and that the noise resulting from such a drilling event at any given residence had not been assessed. Canadian 88 agreed to coordinate its drilling efforts with those of Shell in order to minimize the noise resulting from drilling.

With regard to safety issues, Canadian 88 agreed to file with the EUB an emergency response plan (ERP) for the new proposed well site at 10-7 within one month of the closing of the hearing and to communicate this plan to the public. It also committed to keep the Sheppards and Barberos informed of ongoing and future operations through a program of communication and consultation. In particular, Canadian 88 committed to advise and consult with the Sheppards and the Barberos respecting the location of the emergency shutdown (ESD) valves that may be required on the 10-7 to 6-17 pipeline. The company also agreed to test the Sheppards' and Barberos' water for hydrocarbons prior to drilling the 10-7 well. The well would then be tested for a full range of water quality parameters following the completion of drilling operations at 10-7.

Canadian 88 noted that the drilling of its well could occur in the same time frame as the drilling of one of the Shell wells. Canadian 88 stated that it had committed to consult with Shell regarding its drilling plans in order to ensure that drilling through the critical zone would not occur simultaneously.

Canadian 88 noted that with respect to the pipeline leak detection concerns raised by Mr. Rennie, it was confident that the measures taken would maintain pipeline integrity and provide protection to the community. These measures included visual inspections by operators and other staff, corrosion prevention programs with inhibitors, testing of the pipeline with internal inspection tools, and monitoring of pressures. Canadian 88 noted that effective communication with residents was also important, especially if the public noticed something unusual, because a call would allow the company to dispatch personnel immediately to investigate. The company maintained that while leak detection was important, containment of the product in the systems designed to produce and transport the gas was the primary concern, and when the vessels designed for this operate as expected the public should never be exposed to H₂S gas. In response to a request from Mr. Rennie, Canadian 88 stated that it did not believe that present technology would allow for effective H₂S detection monitoring along the entire pipeline right-of-way.

8.2 Views of the Interveners

Area residents had indicated concerns about potential noise impacts in regard to the initial application for the proposed well at the 12-8 surface location. By agreeing to move the proposed well to the 10-7 surface location, Canadian 88 avoided some of these potential impacts. None of the interveners stated specific objections to noise levels at the hearing.

With regard to safety issues, Mr. Judd and Ms. Touche both expressed concern over the level of H₂S associated with the proposed well. They also expressed concern about the EUB's ability to respond to an emergency situation in a timely manner, given the distance of the two relevant EUB field centres (Medicine Hat and Calgary) from the region. Mr. Judd and Ms. Touche also expressed concern about evacuation in the event of an emergency. They noted that the only escape route out of the area would be through the centre of the ERP zone. They indicated that this was not acceptable because it endangered the health and safety of residents at the Judd residence, as well as potential business clients. Mr. Judd and Ms. Touche also expressed some concern regarding the impacts to their safety from the number of vehicles and the speed at which they travel on the road into the Screwdriver Creek valley. Ms. Touche expressed concern for the safety of her students due to the vehicular traffic generated by the oil and gas operators, especially in the summer months when her students were in the area, in addition to disturbance from noise and dust.

Mr. Rennie expressed a general dissatisfaction with the ERP submitted by Canadian 88. Mr. Rennie also stated that he is not satisfied with past responses by industry with respect to investigation into potential gas leaks in pipelines. He stated that, in his opinion, residents in the area adjacent to existing well sites and pipeline rights-of-way were considered to be the first line of defence when it came to emergency response. He felt that this was unacceptable.

Mr. Rennie was also concerned about the lack of leak detection equipment along the pipelines (specifically H₂S monitoring devices that would shut down the pipeline at a defined limit), and he asked the Board to require the pipeline to be shut in if this limit were reached. He indicated that he had been exposed to H₂S gas by accidental releases of sour gas in or around the Beaver Mines area and was concerned for the safety of both his family and the general public.

8.3 Views of the Board

The Board recognizes the considerable efforts made by the Sheppards, the Barberos, and Canadian 88 in coming to an agreement regarding acceptable noise levels for the proposed site.

With regard to public safety issues, the Board notes that while Canadian 88 has been able to effectively address the concerns of some residents, unfortunately other landowners remain unconvinced of the applicant's abilities to effectively respond to an emergency should one occur. The Board encourages Canadian 88 to work closely with all area residents and with Shell in the development of the drilling and emergency response plan. The Board does believe that Canadian 88's efforts to date have been reasonable, and as a result of considering all the evidence before it, the Board is convinced that the well and associated pipeline and facilities can be drilled, constructed, and operated safely. The Board also believes that Canadian 88 has an appropriate procedure in place to react effectively in the event of an emergency.

In order to assist Canadian 88 in its efforts to meet public concerns, the EUB will work closely with the applicant as the ERP and drilling plan are being finalized. The Board will also bring the issues raised by the interveners regarding the EUB's ability to respond effectively to a complaint or emergency to the attention of its Field Surveillance and ask them to determine if action is required and what options exist to further mitigate the concerns.

With regard to the public's role in identifying leaks or situations near them to operators, the Board notes that this should not be considered the first line of defence. However, the public should not ignore odours and other unusual occurrences and should be prepared to call operators if they have any concerns regarding their safety. Furthermore, the Board believes that the public should, in turn, receive a timely response from the industry.

With respect to Mr. Rennie's request that H₂S monitoring devices be required along the pipeline routes, the Board concurs with the proponent that the technology is not adequately advanced to require that applicants consider such a step. The Board does note that the industry in general and Shell in particular have made a significant effort recently to better understand and control sources

of pipeline leaks, have communicated this knowledge to other operators, such as Canadian 88, and thereby have contributed to increasing public safety.

Dated at Calgary, Alberta, on March 8, 2000.

ALBERTA ENERGY AND UTILITIES BOARD

(Original signed by)

B. F. Bietz, Ph.D., P.Biol.
Chair

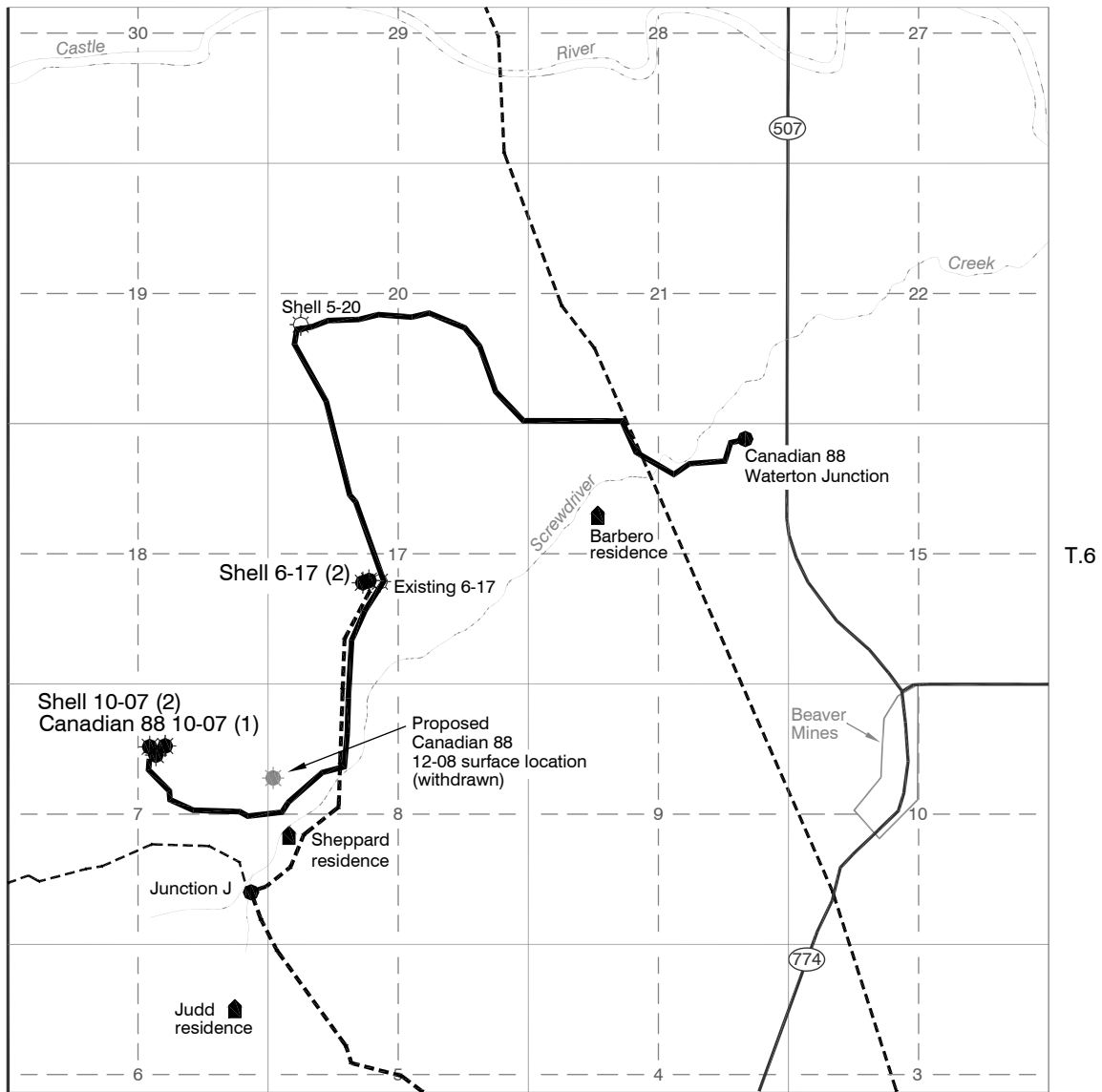
(Original signed by)

K. G. Sharp, P.Eng.
Acting Board Member

(Original signed by)

W. G. Remmer, P.Eng.
Acting Board Member

R.2W.5M.



Legend

- Existing pipelines
- Proposed pipeline
- ☼ Existing well
- ★ Proposed well

Castle River Area
Applications No. 1040292 and 1045916
Canadian 88 Energy Corporation

Decision 2000-18