

ALBERTA ENERGY AND UTILITIES BOARD

Calgary, Alberta

**APPLICATION FOR A WELL LICENCE
CHEDDERVILLE FIELD
CANADIAN 88 ENERGY CORP.**

**Decision D 96-14
Application No. 960782**

1 INTRODUCTION

1.1 Application and Interventions

Canadian 88 Energy Corp. (Cdn 88) 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 9 of Section 20, Township 37, Range 7, West of the 5th Meridian. The purpose of the well, CDN 88 ENERGY CHEDDERVILLE 9-20-37-7 (9-20 well) is to obtain production from the Leduc Formation.

C. Golding and A. Hanson filed a general objection to the drilling of the well with the Board. They expressed concerns about the safety and health of their family in the midst of oil and gas operations, sensitivities to airborne pollutants, and proposed flaring.

Dr. M. Kostuch intervened only for the purpose of cross-examination and final argument.

1.2 Hearing

A public hearing was convened on 21 November 1996 in Rocky Mountain House, Alberta with Dr. B.F. Bietz, P.Biol., J.D. Dilay, P.Eng., and B.T. McManus, Q.C. sitting. Those who appeared at the hearing and abbreviations used in the report are listed in the following table.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives
(Abbreviations Used in Report)

Witnesses

Canadian 88 Energy Corp. (Cdn 88)
S. Carscallen, Q.C.

B. Sheppard
G. Dowling, C.R.S.P.
of United Safety
S. Gell, P.Eng.
F. Ceh, C.E.T.
K. Nachtigall
J. Moore
M. Zelensky, P.Eng.
of Bovar Environmental

THOSE WHO APPEARED AT THE HEARING (cont'd)

Principals and Representatives
(Abbreviations Used in Report)Witnesses

C. Golding, S. Golding and A. Hanson (Golding/Hanson)
M.S. Hall

Dr. M. Kostuch

Alberta Energy and Utilities Board staff

L. D. Wilson

T. Morrison

D. DeGagne

B. Farion

A. Milne

2 ISSUES

The Board considers the issues respecting the application to be:

- the need for and location of the well,
- the impact of the well, particularly emissions, and
- public safety and emergency response planning.

3 CONSIDERATION OF THE APPLICATION**3.1 Views of the Applicant**

Cdn 88 submitted that it held a valid petroleum and natural gas lease giving them the rights to the oil and gas in the spacing unit. The applicant added that it had received an extension to the primary term of the lease to 11 December 1996. Cdn 88 stated that it was anxious to explore its mineral rights in a timely fashion.

Cdn 88 indicated that the purpose of the 9-20 well was to develop the attic gas reserves of the Chedderville Leduc A pool which had produced some 62 of the 146 Billion cubic feet of initial recoverable gas reserves. Cdn 88 said that a recent 3D seismic program suggested that a thicker reef was present at the proposed location than at the immediate offset wells drilled in section 20 a number of years before. Cdn 88 believed that most of the current wells in the pool prematurely produced excessive water and that sufficient recoverable reserves were still present to justify the drilling of the 9-20 well.

Cdn 88 indicated that it had received approval for a surface lease on Crown land for the proposed well. During questioning, Cdn 88 stated that the surface lease had been relocated from the site shown in its application to the Board. Cdn 88 stated that the original site was rejected by a public lands officer of Alberta Environmental Protection because it would have been on a sandy hill. Cdn 88 confirmed that, although the site change had occurred in September, it had not provided

details to either the Board or the interveners nor had it amended its application for a well licence.

Cdn 88 stated that the drilling of its well would take approximately 55 days with at least seven days spent drilling the well through the sour Leduc Formation. After drilling was complete, Cdn 88 anticipated conducting a well test which would involve flaring the well's gas production. It then planned to tie the well into Gulf Canada's (Gulf) gathering system to the Gulf Strachan gas plant at a tie-in point at Lsd 1-30-37-7W5M. Respecting the intervener's concerns about mechanical failures in the gathering system, Cdn 88 witnesses advised they were unaware of whether or not Gulf had experienced any problems.

Cdn 88 stated that, since the gas from the 9-20 well would have to be dehydrated and condensate free before entering Gulf's system, it would therefore be installing liquid separation and glycol dehydration facilities at the 9-20 well site. It planned to flow the well through a separator to remove free water and condensate. Condensate would flow directly to the Strachan plant in a separate pipeline. Produced water would be stored in a tank on site and then hauled away regularly for disposal. Cdn 88 indicated that hydrogen sulphide (H_2S) gas and hydrocarbons from the dehydrator and water tanks would be incinerated. It believed that the incinerator would provide the most efficient combustion of both waste gas and H_2S . Cdn 88 committed to using a flame-out detector on the incinerator which would be tied into the Gulf monitoring facility at Strachan. Cdn 88 acknowledged that at least some of the facilities or operations envisioned would require additional applications to the Board and that it intended to proceed with those separately.

With regard to emissions from the well, Cdn 88 said that the closed system which would direct vapours and wastes to the incinerator should prevent fugitive odours or emissions. It stated that a sensitive H_2S detection system would be installed which would indicate leaks quickly. Cdn 88 stated that, whenever flaring was required, it expected SO_2 , small volumes of H_2S and water vapour, carbon dioxide, and unburned volatile organic compounds to be emitted. Cdn 88 acknowledged that early flaring during the clean-up and well test might also emit oxides of nitrogen and hydrochloric acid which is used to stimulate the reservoir. Other than for use during the original well test, Cdn 88 believed the flare stack would be used infrequently, in emergency situations or during maintenance.

Cdn 88 stated that it expected the Leduc Formation to contain an average of 6.42 per cent H_2S . However, it acknowledged that concentrations as high as 6.91 per cent were possible, and conceded it may be more appropriate to use the higher concentration in calculating the emergency planning zone (EPZ). Cdn 88 recalculated the original EPZ of 2.84 kilometres (km) which is based on a maximum release rate of 1.37 cubic meters per second (m^3/sec) using a revised release rate of 1.47 m^3/sec to create an EPZ of 2.98 km. Cdn 88 stated that Ms. Golding's home was located 3.04 km from the well, outside the planning radius; however it had included her in its emergency response plan (ERP).

Cdn 88 discussed the contents of its ERP and its plan to provide for and communicate with residents in the unlikely event of a sour release. Cdn 88 stated that it had upgraded and revised many features of the plan to further enhance the safety of the public, although it had not yet included those items in the submitted ERP document. For example, Cdn 88 stated that its revised intent was to contact all residents in the ERP at a Level 1 emergency, rather than just sensitive

residents, and to use an air monitoring unit at a Level 1 versus a Level 2. In addition, Cdn 88 submitted that residents living south and south-west of the EPZ might be evacuated, if the need arose, using a nearby trail rather than by traversing the EPZ. However, in response to questioning, Cdn 88 was unable to confirm if the trail was currently usable or passable. Cdn 88 also suggested evacuation by helicopter was possible if the event was serious enough to warrant it. It discussed its call-down sequence, equipment available on-site, and how people evacuating would be escorted through the area.

In discussing the preparation of the ERP, Cdn 88 indicated that initial contacts with residents and delivery of information packages occurred on 12 September 1996. At the same time that resident contacts were made, Cdn 88 surveyed the area to ensure that the map used for notification was correct. Although Cdn 88 maintained that it was a matter of routine procedure to invite comments or concerns from residents, it could not confirm whether or not the company representative who performed the visits specifically solicited that information. Cdn 88 believed that it had heard no opposition during those early discussions of its plans to drill the 9-20 well, but admitted it had not at that point contacted Ms. Golding's household.

Cdn 88 acknowledged some oversights and inaccuracies remained in the ERP. Cdn 88 admitted that it had failed to identify and provide for users of a large public recreational facility known as Terratima. As a result of information provided by the interveners, it recognized that Terratima existed in Section 24-37-8W5M, just beyond the western edge of the EPZ. However, with the primary entry and exit to Terratima being directly through the planning zone, Cdn 88 conceded that its ERP should provide for the public who might be in the area. Cdn 88 stated that it was also unaware of a home, and its occasional residents Mr. and Mrs. Diewold, on the north-east of Section 19-37-7W5M. Although this home was not identified on the map nor specifically provided for in the ERP, Cdn 88 believed that its rovers, which would roam the EPZ during the drilling phase or during an emergency, would eventually have located the Diewold residence. Cdn 88 also claimed it had listed Mr. Turner, the land occupant where the well is actually located, in the ERP. However, it acknowledged that none of the Board's or participant's copies of the plan included Mr. Turner. Cdn 88 also conceded that typographical errors existed in the well location on the cover of the landowner information package and within the first few pages of both the landowner and residents' packages. Despite the errors, it did not believe that any of the recipients of the packages were confused about the location of the well. Cdn 88 described the ERP as an ever-evolving document subject to amendment at anytime.

Cdn 88 stated that it accepted that the special circumstances of the occupants of the Golding/Hanson household might require special solutions. It recognized that the family had a handicapped child and it was informed about sensitivities of other members. However, without direct evidence of the seriousness of the conditions in the home, it was reluctant to make extensive commitments to the family. Cdn 88 was prepared to include them in the ERP, do some drive-by monitoring during drilling, provide brochures on sheltering, plough the access road to the home during the drilling and operating phase of the well, and notify them in the event of a Level 1 emergency response. In addition, Cdn 88 stated that it would either hire or assign someone to assist the family in evacuation, cover the cost of alternative accommodations if evacuated, perform monitoring to ensure the home was safe to return to, and maintain a sufficient quantity of oxygen therapy equipment at the well site for Ms. Golding and her son and bring it to the home for use during an emergency. Cdn 88 was not prepared to provide oxygen canisters at the home

because it was concerned about safety and its own liability in providing such items. Although it stated that it appreciated her concerns, Cdn 88 did not believe there was sufficient justification to warrant relocating Ms. Golding and her son during the drilling phase. In fact, it believed that to do so would send the wrong message to the community about personal safety during this routine operation. Cdn 88 stated that, since the chances of an emergency event occurring were remote, and since the actual probability of serious irreversible health effects was negligible, if there were an event, it believed its commitments were appropriate for the situation.

Cdn 88 believed itself to be an experienced and responsible operator and could not speak to the events that the Golding/Hansons alleged they had experienced in the past with other operators. Cdn 88 indicated that it had agreed to commitments that it viewed as reasonable and appropriate.

3.2 Views of the Interveners

Ms. Golding and Mr. Hanson did not directly dispute the need for or location of the 9-20 well. However, they believed that the commitments and assistance offered by Cdn 88 fell short of what their family required to feel safe and would not prevent reoccurrences of impacts they felt had affected them in the past from other area operator activities.

Ms. Golding said that she moved to the Rocky Mountain House area from Provost in 1991. Although she lived in the area prior to purchasing her home with Mr. Hanson, she claimed to have been unaware of sour oil and gas activity in the area. The Golding/Hansons maintained that they have spent a considerable amount of money remodelling and modifying their home, with many items designed to support a quality lifestyle for her handicapped and wheelchair-bound adult son. They submitted pictures to demonstrate the room configurations, large picture windows for ease in viewing wildlife and mentioned other special features such as a wheelchair-accessible fire pit, a small elevator and an intercom system. Ms. Golding maintained that she would rather be in her home, safe and secure, than almost anywhere else.

Ms. Golding discussed the serious medical conditions of her 23 year old son, Shane, who required her full-time care. She indicated that Shane suffered from asthma, chronic bronchitis, and a condition which affected his trachea. She submitted a letter from a physician which suggested that Shane was likely very sensitive to H₂S or SO₂, considerably more so than someone without a medical condition. Ms. Golding stressed that she keeps Shane inside during very cold weather and away from many common airborne pollutants such as cigarettes and aerosol sprays as he displayed a significant intolerance to these and other substances. Due to Shane's breathing difficulties, Ms. Golding said that it was usual for her to have a supply of oxygen and that she was disappointed that Cdn 88 took a legal position to justify not providing additional equipment in their home. She stated that she would sign a waiver of liability or accept financial assistance from Cdn 88 in order to independently purchase a sufficient oxygen supply for all the members of the family.

Ms. Golding and Mr. Hanson stated that they believed they have suffered sour-gas poisoning on at least five separate occasions between 1994 and 1996. They reported experiencing rotten-egg odour and described symptoms such as burning and tearing eyes, gasping for breath, sore throats, and headaches, among other effects. On one occasion, the Golding/Hansons claim to have summoned help using a contact number provided by another area operator, but they maintain help

did not arrive until an hour and a half after the event. The Golding/Hansons stated they were told that a leak occurred from a nearby well, caused by some type of technical problem or mechanical failure. As a result of these experiences, they stated that they have little or no faith in any company's claims regarding efforts to provide for them in emergency situations. They believed that commitments made to them by other companies have been broken and, therefore they were reluctant to accept any assurances from Cdn 88 that they would be adequately provided for if an emergency event occurred. Ms. Golding indicated that numerous staff turnovers with company personnel further hinder a company's ability to provide reliable assistance to the family. The Golding/Hansons also submitted that the leaks and other events referred to have affected the saleability of their property.

During the course of examining the applicant, the Golding/Hansons pointed out what they believed to be a number of errors and omissions in the ERP. The Golding/Hansons stated that they were very concerned about Cdn 88 failing to locate the Diewold family residence on the north-east of Section 19-37-7 on the map, or to name the family in the plan itself. They did not believe that Cdn 88 would locate, or even know to look for this family during an emergency when it did not provide for them in the plan. In addition, they stated that they had little confidence in the ERP when such a well known facility as Terratima could be overlooked in preparing the plan.

Ms. Golding and Mr. Hanson submitted a petition against the drilling of sour oil and gas wells in the area, including the proposed 9-20 well. The Golding/Hansons said that they circulated the petition to the people who were sent notice of the public hearing and that 22 individuals, including themselves, signed the document. The Golding/Hansons asked the Board to deny the application and to designate a special area around their home as one where drilling could not occur.

Ms. Golding stated that, if despite her concerns, the Board were to approve the application, she believed that Cdn 88 should be required to do the following to provide for her family's safety:

- relocate her and her son during the drilling of the sour zone
- reimburse her for relocation costs and alternative accommodation
- maintain the access road by clearing snow during the operating life of the well
- supply and maintain an adequate quantity of oxygen therapy equipment for all of the family members at the home or, at a minimum, provide reimbursement for the cost of doing so
- designate someone specifically to provide assistance to evacuate if an emergency is declared at any time during the life of the well
- consult with her during the production phase of the 9-20 well, and
- provide for her in the related facility ERP.

3.3 Views of the Board

The Board heard considerable evidence to support the need for the 9-20 well and notes that the interveners have not taken specific issue with, or challenged the right of, Cdn 88 to exploit its mineral rights. The panel accepts that the well is in an optimal location according to geological and seismic data and that no alternative location has been proposed by the interveners. The Board therefore concludes that there is a need for the well and that the location of the well appears reasonable in order to recover the gas from the pool in Section 20-37-7W5M.

The Board heard no direct evidence that disputed the surface location selected for the well, only a general objection to any new well in the vicinity of the Golding/Hanson home.

With regard to the impact of the 9-20 well, the Board is satisfied that the proposed addition of this well to the existing sour oil and gas facilities of the area is not an excessive intrusion or anomaly. The Board notes that a significant number of wells, pipelines and sour production facilities already exist in the area and that properly operated facilities will not create unacceptable risks to the Golding/Hansons and other residents of the area. The Board heard that emissions expected from the well would be kept within acceptable limits and that Cdn 88 was committed to maintaining the efficiency of the incinerator. The Board believes that, although Cdn 88 has no prior experience with incinerators, the equipment proposed can be effective for the intended purpose at the 9-20 well. The Board also believes that the minimal flaring anticipated should not pose any serious health risk to the Golding/Hanson household, or to others.

The Board heard considerable evidence regarding the health concerns of Shane Golding, his sensitivities to airborne pollutants, and the practical impediments to a short notice evacuation for Shane and his mother. The Board has considered the issue of relocating Ms. Golding and her son during the drilling of the sour Leduc Formation. The Board appreciates that an evacuation may be very difficult for Ms. Golding, her family and particularly her son as he is non-ambulatory and may resist efforts to assist him. The Board understands that Ms. Golding's anxieties, which are based on previous experiences where assistance received from other operators was, in her view, insufficient or ineffective.

The Board understands Cdn 88's position that it does not wish to unduly alarm other residents by responding with special or excessive concessions, as it believes to do so may send a conflicting message to the community regarding its overall safety. However, the Board believes that Shane Golding's situation and needs are exceptional, and would require special efforts to be made to provide for his safety. Given the added difficulty in evacuating Ms. Golding and her son, the possibility of cold weather and the possible effects on his pre-existing respiratory conditions, the Board believes that Cdn 88 must be prepared, if requested by the Golding/Hansons, to relocate the family to Rocky Mountain House while drilling the sour Leduc zone. The Board recognizes that it is unlikely an emergency event will occur during the drilling of the 9-20 well and does not intend that this direction be taken as a new standard. However, the Board believes that Shane's exceptional health concerns, as represented, merit special consideration. Generally speaking, the Board endorses and expects that emergency response planning should accommodate special needs individuals, on a specific case by case basis, to a reasonable extent possible.

The Board notes the petition submitted by Ms. Golding. None of the petitioners, other than Ms. Golding and Mr. Hanson appeared at the hearing to make specific representations about their objections to the drilling of the 9-20 well. As a result, it is unclear to the Board as to the weight that should be given to such a document. The Board does note, however, that the petition does seem to be directly at odds with Cdn 88's view of the level of community concern.

Notwithstanding that the Board is satisfied as to the proposed well surface location, it is concerned that while the actual location of the well and well site were revised at some time subsequent to the original application being filed with the Board, Cdn 88 did not amend the application, the survey plans, or the ERP, nor did it distribute those changes to the interveners. In

effect, the Board considers that it had for consideration at the hearing a licence application for a specified location which was no longer to be drilled. While the Board recognizes that such amendments to a well licence application are routine under many circumstances, it is disconcerting to find that the location of the well has been significantly altered, without any amendment being made to the Board, during a public hearing.

With regards to the EPZ, the Board believes that the maximum H₂S release rate of 1.47 m³/sec must be used in calculating the EPZ, and not the average rate. The EPZ should be recognized as having a radius 2.98 km from well centre. The panel acknowledges that information submitted by the applicant suggests that the Golding/Hanson home is located 3.04 km from the well, some 60 metres outside of the EPZ. The Board is satisfied that the main components of the ERP, assuming appropriate training of staff, would generally provide for the safety of the public, including the Golding/Hansons, as intended. Specifically, the panel concluded that the emergency criteria, responsibilities assigned to the various personnel listed, the communication lines, air monitoring, provisions for evacuation, isolation and ignition, and involvement of government personnel met acceptable guidelines for the preparation of ERPs.

However, the Board is very concerned that the site specific data gathered and included in the general plan contained numerous errors or inaccuracies. The Board believes it to be a significant oversight not to have recorded the Diewold home and contacted its owners or occupants. According to information provided by the interveners, this omitted home is located approximately a mile west of the well centre and is well within the planning radius. In addition, the public recreational facility known as Terratima was not provided for in the plan, although the main access route is through the EPZ. The panel also notes a similar oversight in not providing for several residences located immediately west of the planning radius with access only through the EPZ. The Board recognizes that, in a general sense, it could be interpreted that these residents have been included in the plan in that escorts for people traversing the EPZ are planned; however, Cdn 88 acknowledged that these potentially affected people had not been visited or notified of the proposed well.

The Board is also not entirely convinced that resident and landowner packages, delivered to affected parties with typographical errors in some of the well location references, might not have confused some of the recipients. It is also important that changes to the plan, as identified by Cdn 88 at the hearing, be routinely communicated to the area residents.

With regards to the provision of oxygen, while the Board can appreciate Cdn 88's concerns regarding liability, it does appear that Ms. Golding has significant experience with its use. Furthermore, the maintenance of oxygen equipment at the lease site would appear to be inadequate, in this case, to deal with Ms. Golding's concerns. Therefore, the Board is prepared to require Cdn 88, should the licence be granted, to either provide oxygen therapy equipment to the Golding/Hansons directly or to provide sufficient financial assistance to the family in order that they can obtain the necessary equipment.

With regards to the other specific commitments made by Cdn 88 to the Golding/Hansons at the hearing (eg. air monitoring during drilling, ploughing of roads, assistance during evacuation,

provision of information on sheltering, etc.) the Board believes that these are reasonable in these circumstance, and if a licence is granted, expect them to be met.

While each of the above noted omissions or errors alone might not constitute a critical failure in the well licensing process, or the process for reviewing ERPs, the Board believes they cumulatively could lower or erode public confidence in the processes and promote unease about the specific project. The Board relies on applicants to provide accurate and complete information to the community, individuals with concerns, and finally, to the Board itself so that it may examine the proposal effectively. The Board believes that Cdn 88's application, as submitted, fails to meet that standard.

4 DECISION

After careful consideration of all of the evidence the Board denies Application No. 960782 for a well licence. This decision is made without prejudice to any subsequent applications.

DATED at Calgary, Alberta, on 23 December 1996.



Dr. B. F. Bietz, P. Biol.



J.D. Dilay, P.Eng.



B.T. McManus, Q.C.