

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**PETRO-CANADA OIL AND GAS
APPLICATION TO INSTALL COMPRESSORS
AT THE WILSON CREEK GAS PLANT AND
AT LSD 3-19-43-4 W5M, WILSON CREEK FIELD**

**Decision 99-27
Application 1029022**

1 APPLICATION AND HEARING

Petro-Canada Oil and Gas (Petro-Canada) applied to the Alberta Energy and Utilities Board (EUB/Board) for approval to add two new compressors at the existing Wilson Creek sour gas processing facility (the plant) located at Legal Subdivision (LSD) 1 of Section 29, Township 43, Range 4, West of the 5th Meridian and to construct and operate a new sour gas compressor station located at LSD 3-19-43-4 W5M (3-19 compressor). The application was made pursuant to Section 26 (1)(b) of the Oil and Gas Conservation Act and Sections 7.001, 9.020, and 15.050 of the Oil and Gas Conservation Regulations. An area map showing the locations of the proposed facilities is provided at the end of the report.

The application and interventions were considered at a hearing at the Last West Hall, Rimbey, Alberta, commencing on 7 April 1999, before Board Members B. F. Bietz, P.Biol., G. J. Miller, and Acting Board Member B. Schnitzler, P.Eng. The hearing was adjourned on 9 April 1999 and resumed on 15 June 1999.

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

Petro-Canada Oil and Gas (Petro-Canada)

S. R. Miller

W. T. Corbett, Q.C.

G. W. Briggs, Assoc. T.T.

G. R. Johnson, P.Eng.

D. Kohlman, B.Sc.

J. A. Lore, B.Sc., P.Ag., FAIC

K. K. F. Ng, P.Eng.

D. J. South, R.E.T.,

of Patching Associates

Acoustical Engineering Ltd.

D. M. Leahey, Ph.D.,

of Jacques Whitford

Environment Limited

L. Vetsch

L. Vetsch

F. and C. Whatmore

M. Bronaugh

J. A. Plambeck, Ph.D.

THOSE WHO APPEARED AT THE HEARING (cont'd)

Principals and Representatives (Abbreviations Used in Report)	Witnesses
G. and N. Graves	G. Graves
G. Rhine P. W. Hanneman M. Kostuch, D.V.M.	W. Johnston
J. Chalack, B. and P. Tarnasky (Mr. Chalack) J. Chalack	J. Chalack
T. and B. Reimer	B. Reimer
L. and G. Meriam	L. Meriam
Alberta Energy and Utilities Board staff D. Larder, Board Counsel P. R. Forbes, C.E.T. B. K. Eastlick, P.Eng. A. Beken, P.Eng., P.Geol.	

2 PROCEDURAL MATTERS

At the reopening of the hearing on 15 June 1999, Petro-Canada and the interveners requested an adjournment of the hearing pending ongoing discussions among the parties. The Board agreed with the request and the hearing reconvened on 16 June 1999. The Board heard evidence at that time from some of the interveners that the negotiations had been successful in meeting their concerns, but Mr. Graves and Mr. Meriam requested a further adjournment to allow the interveners and Petro-Canada an opportunity to continue their earlier discussions, especially with respect to the issues surrounding the need, location, and safety of the proposed compressors. They stated that the issues around the compressors had not been satisfactorily addressed for some interveners, Mrs. Reimer in particular. Mr. Graves and Mr. Meriam stated that they were not prepared to deal with these issues on 16 June 1999, in part because their focus had been on the plant's operations, especially sulphur recovery. They also requested a further adjournment because of other commitments. Mr. Graves noted that he had earlier advised the Board of his timing constraints.

The remaining interveners either had no comment on the adjournment request or did not object to it. Those who did not oppose the adjournment advised the Board that they were satisfied that their discussions with the applicant had resolved their concerns. They stated that even if the adjournment were granted, they would not be presenting any further evidence regarding any of

the remaining issues before the Board.

Petro-Canada objected to the adjournment request, arguing that the hearing had already been adjourned upon request by the interveners and stating that it would continue to engage in ongoing discussions after the close of the hearing.

The Board, after carefully considering the arguments of the interveners and Petro-Canada, denied the adjournment request. In denying the request, the Board believed that ample time had been afforded to the interveners to properly prepare for and address the issues raised at the hearing. The Board noted that the application filed by Petro-Canada was for the installation of three compressors. The nature of the application had been known to the interveners since January 1999, if not earlier. The application was originally scheduled for hearing on 17 February 1999 and adjourned to 7 April 1999. The hearing was held from 7 to 9 April 1999 and further adjourned to 15 June 1999. The Board was of the view that the interveners had had sufficient time to prepare and consider any relevant issues regarding the compressors.

At the hearing, the Board extended an opportunity to Mr. Graves and Mr. Meriam to provide final arguments in writing after the close of the hearing. Final written arguments were received from Mrs. Reimer on 16 June 1999, from Mr. Graves on 28 June 1999, and from Mr. Meriam on 4 July 1999. Petro-Canada's final written reply arguments were received on 8 and 12 July 1999.

3 ISSUES

The Board believes the issues concerning the applications to be

- need and location of the compressors
- plant life
- emissions
- sulphur recovery
- noise

4 NEED AND LOCATION OF THE COMPRESSORS

4.1 Views of the Applicant

Petro-Canada stated that the existing Wilson Creek plant was presently processing gas from the Wilson Creek, Minnehik-Buck Lake, and Westerosé fields and that the compressor installations at the plant were required to accommodate increased gas volumes resulting from two recent horizontal infill wells drilled in the Pekisko "A" Pool, located within the Wilson Creek field. Petro-Canada indicated that it intended to produce a maximum of 1299×10^3 cubic metres per day (m^3/d) of raw gas to the Wilson Creek plant and recover $922 \times 10^3 \text{ m}^3/\text{d}$ of sales gas and $109 \text{ m}^3/\text{d}$ of condensate ($\text{C}_5 +$).

Petro-Canada said that its production forecast for the area was based on a relatively simplistic model that took into account historical data but was dominated by recent projections of the near-term performance of the horizontal wells. It stated that the compressor additions were needed in

the near term to load the $629 \times 10^3 \text{ m}^3/\text{d}$ sour gas capacity of the plant and the $300 \times 10^3 \text{ m}^3/\text{d}$ capacity of the bypass system. It noted that the forecast also identified the need for additional compression in year 2005.

Petro-Canada noted that the forecast was arbitrarily truncated in the year 2015, even though predicted throughput was still $71 \times 10^3 \text{ m}^3/\text{d}$. It agreed that the forecast also did not account for the potential future tie-in of additional wells in the area or future processing of third-party gas.

The compressors to be installed at the plant would consist of a 372 kilowatt (kW) natural gas driven sales gas compressor and a 186 kW electric off-load compressor. Petro-Canada stated that the additional 372 kW sales gas booster compressor was required to accommodate pressure variation in the Nova Gas Transmission Ltd. (Nova) sales pipeline. It indicated that the 186 kW electric off-load compressor and associated dehydrator would allow it to off-load $302 \times 10^3 \text{ m}^3/\text{d}$ of gas into a PanCanadian Petroleum Limited (PanCanadian) pipeline system for processing at the Homeglen-Rimbey sulphur recovery gas plant. This would avoid any need to expand the Wilson Creek plant to process the new gas.

Both the proposed sales gas booster compressor and the off-load compressor would be located at the existing plant site. Petro-Canada stated that, as a result, it would be able to use existing infrastructure and facilities and could minimize the need for additional surface disturbances over the life of the Wilson Creek field. Additionally, Petro-Canada stated that it is more efficient to increase the pressure at the upstream end than the downstream end of a pipeline.

Petro-Canada indicated that it was not proposing any change to its currently approved maximum hydrogen sulphide (H_2S) inlet rate of $5.6 \times 10^3 \text{ m}^3/\text{d}$ (i.e., 7.6 tonnes per day (t/d) of sulphur inlet equivalent) or its maximum sulphur dioxide (SO_2) emission rate of 15.2 t/d.

The proposed 3-19 compressor would consist of an 895 kW natural gas driven compressor, a separator, and a slug catcher. Petro-Canada stated that the need for the additional field compression at the 3-19 site was not related to additional reserves or new volumes but was merely the normal progression of a depleting field. Petro-Canada observed that at some point, as determined by the reservoir performance and economics, compression would be justified to offset declining reservoir pressure.

The proposed 3-19 compressor would allow Petro-Canada to compress the gas from the two horizontal wells drilled from the 3-19 well site and all other connecting gas located south of that site. Petro-Canada noted that six other wells in the southern portion of the Wilson Creek field also require compression to the plant and are already connected to the 3-19 site. Therefore, Petro-Canada believed that the 3-19 compressor site would accommodate gas compression for all of its southwest gas wells.

The 3-19 compressor would have a capacity of $613 \times 10^3 \text{ m}^3/\text{d}$ of raw gas, with a maximum of 4.16 t/d of sulphur inlet. Under normal operating conditions, there would be no sulphur emissions from the 3-19 compressor. However, there would be some flaring under emergency or maintenance scenarios.

Petro-Canada stated that the 3-19 site was approximately 3 kilometres (km) southwest of the plant. It believed that the 3-19 site was the most logical and efficient location for the field compressor because it would be on treed Crown land at an existing surface lease, minimizing the need for any additional surface disturbance during installation.

Petro-Canada stated that there are safety systems within all the compressor installations intended to shut the equipment down for conditions related to flow, temperature, pressure, vibration, and other malfunctions. In addition, the plant is also protected by emergency shutdown and pressure-relieving systems. Therefore, the chance of a major fire, explosion, or uncontrolled release of sour gas was extremely low. Petro-Canada stated that if fire, high H₂S levels, or explosive levels of gas were detected, the compressor would automatically shut down, the inlet and outlet to the compressor would be isolated, and the compressor would be depressurized to the flare. Petro-Canada indicated that it operates over 100 compressors at 50 different facilities in 17 different areas in Alberta and British Columbia. These compressors range from approximately 15 to 30 000 kW in size and are maintained at approximately 95 to 95.5 per cent reliability.

In response to questions about the safety of the 30-year-old pipeline system used for delivery of processed gas to the Nova pipeline system, Petro-Canada observed that the system handled only sweet gas. As a result, it was much less subject to corrosion than lines handling sour gas. Furthermore, the sales gas compressor would not change the current operating pressures for the system.

In response to intervener concerns about a recent Nova pipeline rupture, Petro-Canada noted that the Nova pipeline was approximately 40 to 42 inches in diameter, whereas it was only operating a 6-inch pipeline system. Therefore, any rupture would be considerably less hazardous than the Nova failure. Petro-Canada also noted that, in the extremely unlikely occurrence of such an incident, it would immediately implement its emergency response plan (ERP). Petro-Canada stated that its ERP was a comprehensive multirisk plan that considered all aspects of plant operations. Petro-Canada characterized its ERP as state of the art and said that it complied completely with established rules set by industry and government. In any emergency, the company stated that it would first assess the situation and then take the necessary next measures to alert and monitor.

4.2 Views of the Interveners

Mr. Vetsch stated that he had initially supported Petro-Canada's application for the addition of the three compressors. He indicated that he was in favour of the application, as it would reduce the need for future expansion of the plant and reduce emissions and truck traffic. He agreed that the sales gas compressor may be needed to correct for peaks on the Nova pipeline. However, he stated that the more he heard about the off-load compressor, the more he questioned if it was really needed and for how long, given the rates at which the Wilson Creek field was declining. He also questioned why the off-load compressor had to be located at the plant.

Mr. Whatmore stated that he believed that Petro-Canada's need for the compressors and its urgency to have them installed were in order to obtain as much of the gas out of the reservoir as possible before competitors could extract it – that is, that the company's need for the

compressors was based on the risk of losing access to the resource for itself rather than on general recovery of the resource. Mr. Whatmore believed that Petro-Canada's decision regarding the compressors should have taken into account many more factors, which in turn would have resulted in better planning.

Mr. Graves questioned why the proposed compressors at the plant could not be located some 8 to 16 km (5 to 10 miles) from the proposed location. He believed that while the site may make economic and operational sense from Petro-Canada's perspective, his needs and those of other members of the public should also be considered. Mr. Graves did not believe that the compressors were inherently safe and expressed his concern about a compressor explosion at the plant. He foresaw not only the compressor exploding, but the plant as well. He concluded that at least the off-load compressor should be located as far from the plant as possible.

Mr. Graves further indicated that if there were a pipeline failure on his land similar to the recent Nova pipeline failure, the results would be catastrophic for his operations. He did not believe that pipelines could operate without unacceptable risk to the adjacent landowners. Mr. Graves also questioned the effectiveness of Petro-Canada's ERP to effectively notify area residences in the event of an emergency.

Mr. Rhine was concerned about the 30-year-old sales gas line and the potential effect the new sales gas compressor would have on its integrity. He was also concerned about the risks associated with compressor failures.

Mrs. Reimer stated that she did not believe the off-load compressor was needed and questioned the safety of locating it at the plant. She believed that if it had to be installed, it should be located elsewhere. Mrs. Reimer stated that her family had already endured six or seven pipelines, two gas wells, two gas plants, and several seismic operations on or near their land and the imposition of additional plant compressors was unreasonable and would cause undue stress on their lives.

Mr. Meriam believed Petro-Canada's reason for locating the proposed sales gas and off-load compressors at the plant was based solely on bottom-line revenues. He believed, given the potential impacts of the compressors on the area residents, that the compressors should not be located at the plant. Additionally, he was concerned with the ability of Petro-Canada employees to effectively implement the ERP in case of an emergency.

4.3 Views of the Board

The Board accepts that there is a need for facilities to handle increased gas volumes from the existing Pekisko "A" Pool. Given the additional gas volumes that currently exist southwest of the plant, compression located in this area would also allow Petro-Canada to more effectively move other connected gas located south of the 3-19 site to the plant.

The Board notes that the site chosen by Petro-Canada for the field compressor is located at an existing well site on treed Crown land. The Board believes that minimizing impacts associated with oil and gas activities by utilizing existing facilities is, in most cases, in the public interest.

In addition, an existing pipeline would allow Petro-Canada to tie in the six other wells in the southern portion of the Wilson Creek field to the 3-19 site. This would further reduce facility proliferation and requirements for additional pipeline facilities in the area to deliver the gas to the plant. Therefore, the Board believes that the existing 3-19 site is an acceptable location.

The Board believes that the 372 kW sales gas booster compressor is needed since it would maintain Nova sales pipeline gas pressures and therefore would help ensure the effective operation of the plant. With regard to the off-load compressor, provided that other concerns can be addressed, the Board believes that there is a potentially significant public benefit derived from companies using existing, underutilized facilities. Therefore, the Board accepts that the 186 kW electric off-load compressor is needed to allow 302 10³ m³/d of gas to be off-loaded into the PanCanadian pipeline system for processing at the Homeglen-Rimbey sulphur recovery gas plant.

With regard to safety issues arising from the location of the compressors, the Board believes that locating the compressors at the plant would utilize existing infrastructure and facilities. This is normally preferable from a safety perspective, as it incorporates existing plant safety systems. The Board believes that the proposed compressors can be operated safely at the plant location by utilizing existing plant safety systems and by equipping the compressor installations with appropriate monitoring, shutdown, isolation and depressurizing systems.

It is the Board's view that the pipeline can also be operated safely and it expects Petro-Canada to adhere to all the standards necessary to do so. An ERP is a Board requirement because it ensures public safety in the case of an incident. The Board reviews all ERPs to ensure that they comply with the EUB's requirements.

5 PLANT LIFE

5.1 Views of the Applicant

Petro-Canada stated that the raw gas supplies connected to the plant are within the plant's approved supply area. Petro-Canada indicated that additional drilling in the plant supply area had not added new supplies but rather enabled more rapid depletion of the existing reservoir. Petro-Canada said that it would be fair to suggest that the reserves as understood today are higher than they were several years ago.

Petro-Canada stated that it believed that the requirements for grandfathered plants to upgrade or install sulphur recovery, as set out in *Informational Letter (IL) 88-13: Sulphur Recovery Guidelines*, would apply if newly discovered reserves sufficient to support a new plant with an 8- to 10-year life index were connected. It said that it had not connected new pools or reserves, but rather had continued to develop the pool originally connected to the plant.

Petro-Canada pointed out that prior to the hearing it had committed to area residents that it would install an acid gas incinerator at the Wilson Creek plant to ensure more complete combustion of the acid gas. It stated that, notwithstanding its position taken at the hearing that there is no need for sulphur recovery, it committed to also install a sulphur recovery unit.

5.2 Views of the Interveners

Mr. Graves stated that residents were originally told that the life expectancy of the plant was 20 years and he observed that after 30 years the plant was still in operation. Mr. Graves noted that new wells have been connected to the plant and questioned the reasonableness of continuing the plant's grandfathered status with respect to sulphur recovery.

Mrs. Reimer stated that after 30 years, incineration and sulphur recovery are far overdue and needed.

5.3 Views of the Board

The Board believes that, while *IL 88-13* provides some general guidelines to determine whether older plants should be required to improve their sulphur recovery, each application must be considered on its own merits. Matters to be considered by the Board in this regard include the extent of incremental sour gas supplies from both newly discovered and previously connected reserves and their impact on remaining plant life and cumulative emissions.

The Board believes that sour gas reserves development has significantly extended the life of the Wilson Creek plant. It believes that the forecast of at least 15 years of remaining life is significant, particularly given the current approval to flare acid gas containing up to 7.6 t/d of sulphur. In consideration of these factors, the Board believes that it would be appropriate for the plant to install sulphur recovery. Consequently, the Board accepts that Petro-Canada's commitment to install sulphur recovery within 12 to 16 months is appropriate.

6 EMISSIONS

6.1 Views of the Applicant

Petro-Canada stated that it had taken a number of steps to reduce emissions. The company noted that low nitrogen oxide (NO_x) emission natural gas engines would drive two of the three proposed compressors and that the third would be driven by an electric motor. It said that the proposed sales gas compressor would also dramatically reduce flaring associated with high pressure in the Nova system.

Petro-Canada observed that the produced-water tank at the plant is vented to the low-pressure flare. It stated that vapours from the condensate tank, currently vented to the atmosphere, would now be connected to the proposed incinerator. Petro-Canada stated that incinerator features would include monitoring for flameout and high and low stack temperatures. In addition, Petro-Canada stated that there would be a continuous pilot for the burner and an ultraviolet flame sensor. It said that failure of the incinerator would result in the acid gas being diverted to the high-pressure flare and that the alarm operator call-out system would be activated.

Petro-Canada stated that hydrocarbon condensate and produced water are trucked out of the plant. It said that odour controls for loading and transportation of condensate and water included

the use of trucks equipped with scrubbers.

In response to an issue raised by the interveners at the hearing, Petro-Canada stated it believed that sulphur trioxide (SO₃) formation in flares or incinerators was not of significance. It noted that sulphates are formed almost exclusively in the atmosphere as a result of slow reaction with the hydroxyl ion, i.e., about one per cent in an hour. Petro-Canada said that the failure of the interveners to find any reaction rates in the literature for the SO₃ catalytic reaction was not surprising, insofar as the reaction appears to be insignificant. Petro-Canada stated that acid rain issues have been extensively studied over many years and that sulphate formation from stack emission would not be an issue for lands in the vicinity of the plant.

Petro-Canada noted that for several years it had carried out a monitoring program around the plant for ambient SO₂ levels and sulphation rates. During this period, the plant had consistently met emission standards established by Alberta Environment. In part due to this high level of performance, Petro-Canada had terminated its local sulphur-monitoring programs and instead had become an active participant in the West Central Airshed monitoring program. Petro-Canada stated that if the West Central Airshed monitoring program determined that an operator was causing adverse effects, as a participant in this program it would be required to incorporate an effective management program to resolve the adverse effects.

6.2 Views of the Intervenors

Mr. Vetsch noted that Petro-Canada had indicated in its discussions with area residents that it was prepared to provide an ambient air quality monitoring trailer for three months. He stated that a movable ambient air quality monitoring trailer should be maintained in the area throughout the year.

Mr. Whatmore questioned Petro-Canada's statements on ambient air quality predictions. He noted that evaluations of Petro-Canada data using the SCREEN3 model suggested that SO₂ concentrations could exceed 500 µg/m³ in a one-hour period, in comparison to the Alberta Ambient Air Quality Guideline of 450 µg/m³.

Mr. Graves requested that the Board require Petro-Canada to implement year-round emissions monitoring with up-to-date equipment. He noted that in a 1991 letter to the former plant owner he had complained of increased flaring and odours subsequent to a previous expansion of the plant. Mr. Graves stated that the plant operators never responded to his letter.

Mr. Chalack noted that Petro-Canada had approval from Alberta Environment to emit sulphur but that there is no provision for other toxic compounds that may also be emitted from the flare and the plant. He stated that Petro-Canada does not have the approval of adjacent landowners for deposition of these compounds on their lands. He noted that accepted definitions of private property included the air space to an elevation of 152 m (500 feet). Mr. Chalack said that if the emitted compounds are not licensed and if the compounds put adjacent landowners in jeopardy, then the emissions might constitute criminal negligence. He questioned whether the Board should approve the application unless Petro-Canada can ensure the safety and quality of life of the people in the community in this regard.

Mr. Meriam stated that a condition of his agreement to the application would be reinstatement of

the ambient air quality static monitors (candles), so that current information could be compared to historical data. He said the monitoring program requested would also include a fixed air monitor to be operated on a 365-day basis at the Reimer residence.

The interveners' expert, Dr. Plambeck, explained that reaction chemistry could enable formation of SO_3 , as well as SO_2 , as part of the flare or incinerator combustion process. He noted that the high temperature and excess oxygen conditions in an incinerator would favour SO_3 formation. He stated, however, that he had not been able to find information on the kinetics for the reactions that would result in formation of SO_3 . He said that if SO_3 were formed in this manner, the compounds would quickly react with atmospheric water to form acids that would behave as short-range pollutants.

6.3 Views of the Board

The Board expects operators to install and maintain systems to control continuous sources of emission that may result in off-site impacts, including health and safety effects and odours. The Board notes that Petro-Canada's testimony, application, and support information indicate that tank vent streams at the plant and the 3-19 compressor site, as well as the plant glycol regenerator vent, will be routed to a flare or incinerator. The Board believes that this should result in acceptable levels of emissions from the plant.

Based on the process information in the application support materials provided by Petro-Canada, the Board anticipates that the installation of sulphur recovery may alter how the vent streams are handled. It is the Board's expectation that all vents that could be odourous both at the plant and the 3-19 compressor station will be routed to a flare or incinerator. The Board further expects that flares will be equipped with suitable pilots and automatic ignitors that will minimize the emission of unburned gases.

The Board notes that the commitment of Petro-Canada to install a sulphur recovery unit would address many of the concerns raised by the public about sulphur emissions. The Board expects that Petro-Canada will design the sulphur recovery unit incinerator to comply with Alberta Environment's requirements for ambient air quality and total sulphation in the vicinity of the plant.

The Board notes that Alberta Environment has established monitoring requirements for gas plants located within the West Central Airshed. No evidence was presented to suggest that the Wilson Creek facility is being operated in a manner inconsistent with those requirements. The Board does expect Petro-Canada to follow through on commitments that it made to local residents to carry out monitoring in excess of the regulatory requirements.

7 SULPHUR RECOVERY

7.1 Views of the Applicant

Petro-Canada stated that, based on existing environmental standards, it did not believe that sulphur recovery was warranted at the Wilson Creek plant. It said that the compressor additions

would not increase sulphur inlet to the plant and that the bypass compressor would enable processing a portion of the gas at the Homeglen-Rimbey plant, which has sulphur recovery. Petro-Canada noted that the addition of the field compressor would allow it to extract natural gas which would otherwise be left behind in the reservoir. It said that the remaining plant life would be shortened if the proposed compressor additions were installed.

Petro-Canada indicated that although the plant is currently approved for 7.6 t/d sulphur inlet, it expected that actual inlet sulphur would remain in the 3.8 to 4.2 t/d range. It stated that it would be willing to discuss with the EUB a reduction in approved sulphur inlet to more closely reflect anticipated throughputs.

Petro-Canada initially stated that it would install an acid gas incinerator to improve combustion efficiency relative to the flare stack currently in use at the plant. It said that it had investigated the issue of the impact of sulphur emissions from the plant and had not found any objective evidence to suggest that there had been any direct or adverse impact. Petro-Canada observed that the plant is located within the West Central Airshed and that the 1997 annual report of the West Central Airshed indicates that concentrations of SO₂ and non-methane hydrocarbons resulting from all regional industrial activities, including flaring, are too small to cause harmful effects on the environment. Petro-Canada said that as there was no evidence of any adverse effects of sulphur emissions from the plant, the cost of installing sulphur recovery could not be justified.

Petro-Canada stated that it had made ongoing efforts to resolve local concerns regarding the sulphur recovery issue in the period between the first and second parts of the hearing. It said that both its consultation and the interventions of the landowners indicated that sulphur recovery was clearly a major issue to the residents. On that basis, Petro-Canada stated that it had offered to install facilities capable of recovering 85 per cent of the sulphur in the raw gas processed at the plant.

Petro-Canada stated that it would further investigate the option of acid gas injection. It said that its preliminary investigation indicated that an investment of \$5 million to \$7 million would be required and therefore that acid gas injection would be more costly than installing a sulphur recovery unit. Another factor working against the acid gas disposal option is that it had not identified a suitable geological zone near the plant for acid gas disposal other than the producing Pekisko horizon, which is not fully depleted.

7.2 Views of the Interveners

The interveners raised a number of concerns regarding sulphur recovery in their questioning of the Petro-Canada panel during the 7-9 April 1999 session of the hearing. Subsequently they reported that further negotiations between the interveners and Petro-Canada had occurred with respect to sulphur recovery.

At the reopening of the hearing, Mr. Vetsch indicated that while he appreciated the Petro-Canada commitment to install sulphur recovery, he noted that his land is within 2.4 km of the plant and he requested that the sulphur plant incinerator stack be designed in a manner that

would provide

for greater dispersion than that proposed by Petro-Canada. Mr. Vetsch also questioned why the petroleum industry is allowed to emit pollutants that deposit on his land.

Mr. Whatmore indicated that his overriding concern was sulphur emissions from the plant. He stated that the proposals and commitments of Petro-Canada had gone a long way to resolve his concerns.

Mr. Graves requested that the Board degrandfather the plant with respect to sulphur recovery and that within one year the plant be required to meet standards acceptable to neighbouring landowners.

Mr. Rhine stated that sulphur recovery would benefit the area and it would be the preference of the neighbours of the plant to see a sulphur recovery unit installed.

Mr. Chalack stated that incinerators represent 25-year-old technology and that sulphur recovery was probably a 40-year-old technology, neither of which had been considered for the plant. He noted that recent steps and commitments taken by Petro-Canada were in the right direction.

Mrs. Reimer said that, after 30 years, sulphur recovery as proposed by Petro-Canada is far overdue and that she noted even the incinerator previously proposed would have been an improvement. She said, however, that she was hesitant to agree immediately to the technology proposed by Petro-Canada and that she was looking for newer technology and quicker action on the issue.

Mr. Meriam indicated that he expected Petro-Canada to proceed with sulphur recovery and the related tail gas incinerator within a 12-month period. He also stated that a concurrent 2-month review of acid gas injection should be completed by Petro-Canada and reviewed with the interveners. If acid gas injection is not viable, the review should not delay installation of sulphur recovery facilities.

7.3 Views of the Board

The Board notes Petro-Canada's commitment to recover sulphur at the plant and thereby reduce sulphur emissions by 85 per cent within 12 to 16 months. As noted earlier, the Board believes that the decision to implement sulphur recovery in the near term at the plant is appropriate given the forecast remaining plant life. The Board expects that Petro-Canada will proceed with its plans and with related EUB and Alberta Environment applications in a timely fashion. The Board expects that any installed sulphur recovery would meet requirements for new plants as set out in *IL 88-13*. The Board is also prepared to consider an application to reduce the approved maximum daily sulphur inlet from 7.6 t/d to a level more representative of expected sulphur inlet.

The Board considered Petro-Canada's testimony with respect to acid gas injection, as well as intervenor statements on the advantages of this low emissions technology. The Board notes that for acid gas injection to be viable, a suitable injection zone must be available relatively near the plant. The Board accepts Petro-Canada's testimony that implementation of acid gas injection

would not likely be feasible in the Wilson Creek area, as suitable reservoirs are not yet depleted. Therefore, the Board is not prepared to order that the company carry out any further work on this issue.

8 NOISE

8.1 Views of the Applicant

As a result of its public consultation process, Petro-Canada stated that it was aware that noise from the proposed compressors represented an issue to the local community. As a result, it had spent a considerable amount of time addressing noise to ensure that it would comply with the EUB's *Noise Control Directive, Interim Directive (ID) 94-4*.

In order to reduce the noise impact of the 3-19 compressor, Petro-Canada stated that it had decided to use a hospital-grade silencer and perforated liner material on the inside of the compressor building walls to reduce sound levels. In addition, the compressor would be located in an area surrounded by trees, further minimizing the impact to residents. Petro-Canada indicated that it had conducted sound-monitoring surveys at two locations relative to the 3-19 compressor. The first location was at the James Stout residence, south of the proposed 3-19 compressor, and the second was at the 3-19 well site. Based upon the manufacturer's sound level for the proposed 3-19 compressor and using data from the sound-monitoring survey, a noise impact assessment was completed. It indicated that when in operation, the compressor would be in compliance with the permissible sound level of the noise directive.

Petro-Canada stated that it had reviewed the overall sound levels produced at the facility in order to address noise issues associated with the two proposed compressors to be installed at the plant. Comprehensive sound-monitoring surveys were completed at six locations in the plant's vicinity in accordance with the EUB noise directive during the period 6-7 August 1998. This was done to document the existing sound levels. Based on a number of recommendations arising from those studies, Petro-Canada initiated a comprehensive program to reduce existing sound levels, including the installation of sound baffles and efficient low-speed fans. These fans represented leading-edge technology that Petro-Canada believed was the first of its kind to be used in an industrial application in Alberta.

Petro-Canada stated that it had conducted a second comprehensive sound-monitoring survey at the plant during the period 28-29 March 1999 in order to evaluate the effectiveness of these sound attenuation programs. It concluded that there had been a substantial reduction, over 16 decibels, in the overall sound level at the nearest residence (the Clark residence) north of the plant. It stated that a 16-decibel reduction was equivalent to the removal of 95 per cent of the sound energy at the residence.

In addition to the first sound survey, diagnostic noise measurements were taken at the plant in order to assess the impacts of adding the two new compressors. A sound propagation model was developed, and using manufacturer sound pressure levels, Petro-Canada determined that, based on the details of the proposed compressors and their arrangement within the plant, a minor increase in sound level would occur. The 372 kW gas-fired sales gas compressor would only be

used intermittently in order to meet peak Nova pipeline pressures, while the off-load compressor would be driven by a 186 kW electric motor.

Petro-Canada concluded that if the application for compression is approved, it would confirm that the EUB noise control guidelines were met by conducting a sound survey after all the units had been installed and that it would take further corrective action if the sound survey indicated such a necessity.

8.2 Views of the Interveners

Mr. Vetsch indicated that he had asked for hospital-grade mufflers or Alberta hospital-grade noise suppression at the 3-19 compressor site, comparable to the Encal Energy Ltd. compressor located at LSD 6-18-43-4 W5M. He indicated that Petro-Canada had agreed to do that.

Mr. Graves was concerned with the increased noise from the plant because of the compressor installations. He believed that, as an adjacent nonresident landowner, the plant infringed on his rights and the existing EUB noise guidelines did not adequately protect his rights. Mr. Graves stated that he had purchased his land because of a need for privacy and quality of life.

Mr. Graves insisted that if the Board approved the application, appropriate up-to-date testing apparatus must be put into place to monitor noise and that Petro-Canada must set up consultation with landowners to accomplish this. He stated that the compressors should only be installed if sound barriers consisting of berms, trees, and the quietest available mufflers and whatever else is possible are used to minimize the noise currently coming from the plant.

Mrs. Reimer stated that she was also concerned with the noise associated with the proposed compressors. She indicated that she had no concerns regarding either the proposed 3-19 compressor or sales gas compressor, because they would not be located proximal to her home. However, she believed that the off-load compressor at the plant would create extra noise, and she did not want any more noise or other industrial intrusion into her life or the life of her family.

Mr. Meriam produced a document written in 1995 by a consultant to Amerada Hess that indicated the plant was not in compliance at that time with the EUB noise guidelines. Mr. Meriam believed that when Petro-Canada took over the plant, noncompliant noise levels continued to exist and that the company had taken no action to resolve the matter until recently.

Mr. Meriam was further concerned with the current noise levels, particularly during flaring events, and questioned whether the plant was in compliance with EUB sound level requirements. He also believed that there were discrepancies between the sound surveys already done and asked whether Petro-Canada should be required to carry out another survey. He also did not believe that the EUB's current 40-decibel nighttime requirement was adequate.

8.3 Views of the Board

The Board encourages proponents to use appropriate technologies to minimize the effects of

noise pollution. The Board notes that the 3-19 field compressor would be driven by a lean burn, low-emission, sweet gas engine and operated with a hospital-grade muffler with sound proofing

of building walls. Given the steps taken by Petro-Canada to attenuate sound levels at the facility, the Board accepts that the 3-19 compressor will meet current EUB requirements.

With regard to the impact of the new compressors at the Wilson Creek plant site, the Board is prepared to accept Petro-Canada's modelling results suggesting that the new facilities will result in only a low level of incremental sound. The Board is also prepared to accept Petro-Canada's most recent sound level assessment, which indicates that the Wilson Creek plant presently complies with EUB requirements.

The Board acknowledges the efforts of Petro-Canada to reduce the existing noise levels. The Board also notes the efforts by Petro-Canada to conduct sound-monitoring surveys and to work with the public in an attempt to resolve landowner disputes.

The Board is, however, very concerned that the noise levels had been sufficiently high prior to the hearing that Petro-Canada was able to reduce existing sound levels by 16 decibels. The ability to reduce sound levels by this much strongly suggests that the Wilson Creek plant was significantly out of compliance with EUB requirements. Furthermore, the Board notes that Petro-Canada did not deny that it was or should have been aware of the 1995 sound surveys carried out for the plant's previous owners. The Board would have expected the company, once it became aware that the facility may not be in compliance, to have taken all necessary measures to ensure that compliance was achieved in a timely fashion.

The Board believes that its noise directive is quite clear and Petro-Canada must meet this directive. The Board notes the suggestions made by the interveners (e.g., for sound barriers, trees, improved mufflers, etc.) and would expect Petro-Canada to consider all of these options if needed to reduce sound levels to acceptable levels. At the same time, the Board also notes that the EUB's permissible sound levels were developed with broad public input and are reviewed and updated on a regular basis. Therefore, the Board is satisfied that they continue to represent acceptable criteria. The Board notes Petro-Canada's commitment that it will confirm that the noise control guidelines are met by conducting a sound survey after all units have been installed. The Board believes that this would be a reasonable approach.

With regard to concerns expressed about noise during occasions of extreme flaring, the Board believes that such flaring events are normally associated with emergency conditions. These are typically unplanned events requiring immediate release to prevent loss of life or property and are thus exempt from normal requirements, guidelines, and directives. However, extreme flaring events occurring more than four times per year are not acceptable. Should extreme emergency flaring at the Wilson Creek plant occur at a frequency greater than four times per year, the operator will be required to substantiate the causes of the events, as well as to outline proposed corrective actions to the satisfaction of the Board. The Board would review this information and determine the appropriate course of action.

9 DECISION

Having carefully considered all of the evidence, the Board is prepared to issue approvals for the three compressors, subject to the following conditions:

1. Petro-Canada will proceed with its commitment to local landowners to install and commission a sulphur recovery unit within 16 months of the date of this decision report. The sulphur recovery capability of the facility will meet guidelines defined in *IL 88-13* for new sour gas plants based on either the current or an acceptable revised maximum daily inlet sulphur rate.
2. Continuous-vent gas streams, including glycol regenerator, produced-water tank, and hydrocarbon condensate tank vents, at both the 3-19 compressor site and the Wilson Creek plant site will be burned in a flare or incinerator.
3. Flare stacks at the 3-19 compressor site will be equipped with a suitable pilot and automatic igniter.
4. The Wilson Creek plant flare system will be equipped with a suitable pilot, as well as an automatic igniter and/or flame failure detection system.
5. Petro-Canada will implement local ambient air quality monitoring and sound level monitoring consistent with its commitments to local landowners and regulatory requirements.

DATED at Calgary, Alberta, on 1 November 1999.

[Original signed by]

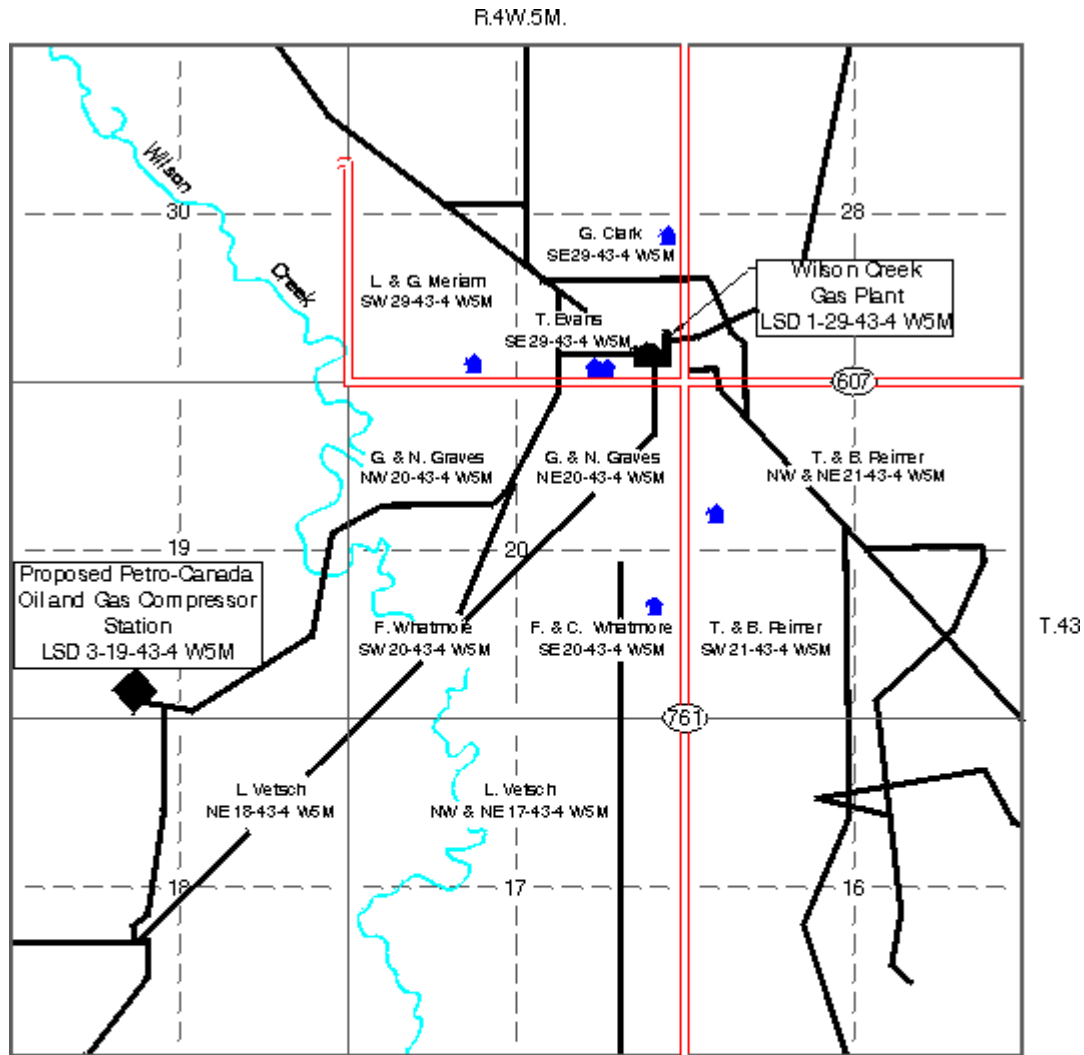
B. F. Bietz, P.Biol.
Presiding Member

[Original signed by]




G. J. Miller
Board Member

[Original signed by]

B. Schnitzler, P.Eng.
Acting Board Member



Legend

-  Existing pipeline corridor
-  Residences
-  Secondary roads

Wilson Creek/Rimbey Area
 Application No. 1029022
 Petro-Canada Oil and Gas

Decision 99-27
