



Shell Canada Limited

Application to Expand the Scotford Upgrader
Strathcona County, Fort Saskatchewan

August 29, 2006

ALBERTA ENERGY AND UTILITIES BOARD

Decision 2006-085: Shell Canada Limited, Application to Expand the Scotford Upgrader,
Strathcona County, Fort Saskatchewan

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640 – 5 Avenue SW
Calgary, Alberta
T2P 3G4

Telephone: (403) 297-8311
E-mail: eub.info_services@eub.gov.ab.ca
Fax: (403) 297-7040
Web site: www.eub.ca

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ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**SHELL CANADA LIMITED
APPLICATION TO EXPAND THE
SCOTFORD UPGRADER
STRATHCONA COUNTY, FORT SASKATCHEWAN**

**Decision 2006-085
Application No. 1398448**

1 DECISION

Having considered all of the evidence, the Alberta Energy and Utilities Board (EUB/Board) finds the project to be in the public interest. Accordingly, the Board is prepared, with the approval of the Lieutenant Governor, to approve Application No. 1398448, subject to the commitments made by Shell Canada Limited (Shell) listed in [Appendix 2](#) and subject to the approval conditions listed in [Appendix 3](#).

2 INTRODUCTION

2.1 Application

On April 28, 2005, Shell filed Application No. 1398448 with the EUB and Alberta Environment (AENV) for approval to expand its Scotford upgrader to an average nominal capacity of 16.8 million cubic metres (m³) per year from its current nominal capacity of approximately 9 million m³ per year. The project would be located adjacent to, and integrated with, Shell's existing Scotford upgrader located in Strathcona County near Fort Saskatchewan, Alberta.

2.2 Interventions

In response to the Notice of Hearing, an intervention was filed by the Industrial Heartland Residents (IHR), consisting of Dennis Chichak, Maureen Chichak, Jim Radke, Kathy Radke, and Russel Radke. Both the Chichak and Radke families reside within 5 kilometres (km) of Shell's proposed upgrader expansion. IHR's intervention cited concerns regarding health and safety issues, environmental effects, technical and operational issues, emergency response issues, land-use impacts, and cumulative effects. At the hearing the interveners qualified that they were not objecting to the Board granting an approval but specified that there must be conditions attached to the approval as outlined in their submission.

North West Upgrading Inc. (North West) and Synenco Energy Inc. (Synenco) also filed interventions. However, these parties took no position with respect to the application.

In addition, Ms. A. Brown filed a letter with the Board expressing her concerns with respect to the application but indicated that she would not be able to attend the hearing.

2.3 Hearing

On June 26 and 27, 2006, a hearing was held before a panel of the Board consisting of R. G. Lock, P.Eng. (Presiding Member) and Acting Board Members W. G. Remmer, P.Eng., and

W. A. Warren, P.Eng., at the Dow Centennial Centre in Fort Saskatchewan, Alberta. The panel conducted a site visit of the local study area on June 26, 2006.

The panel considers that the record was completed on June 27, 2006.

Those who appeared at the hearing are listed in [Appendix 1](#).

3 BACKGROUND

Application No. 1398448 was registered by the EUB on April 28, 2005. Following a subsequent filing by Shell to correct administrative deficiencies in its application, a joint Notice of Application was issued by the Board and AENV on May 20, 2005. The notice was advertised in the *Edmonton Journal*, the *Edmonton Sun*, and the *Fort Saskatchewan Record*.

Following an initial review of the application, supplemental questions from the Board and AENV were issued on September 13, 2005, and were responded to by Shell on December 5, 2005.

On February 24, 2006, Shell filed additional information with the EUB and AENV. On March 17, 2006, AENV declared that the documents submitted by Shell addressed the information requirements set out in Section 49 of the *Environmental Protection and Enhancement Act (EPEA)* and the final Terms of Reference issued on February 28, 2005. AENV declared that Shell's environmental impact assessment (EIA) report was complete pursuant to Section 53 of the *EPEA*.

On April 19, 2006, the Board issued a Notice of Hearing for June 26, 2006. The notice was advertised in the *Edmonton Journal*, the *Edmonton Sun*, the *Fort Saskatchewan Record*, and the *Sherwood Park News*.

4 ISSUES

The Board finds that it must make determinations with respect to the following issues that arose during the course of the proceeding:

- sulphur recovery
- air emissions inventory
- air monitoring
- emergency response planning
- noise, traffic, and other resident concerns
- technical considerations

5 SULPHUR RECOVERY

5.1 Views of IHR

IHR recommended that the Board require Shell to install sulphur recovery facilities that would be capable of achieving a minimum 99.8 per cent sulphur recovery for the entire upgrader complex, which it argued was in accordance with EUB *Interim Directive (ID) 2001-03: Sulphur Recovery Guidelines for the Province of Alberta*.

IHR argued that the number of pollutants approaching and exceeding air quality guidelines indicated that the airshed was currently overloaded and that the new upgrading train should be capable of achieving 99.9 per cent sulphur recovery. IHR noted that according to reports from ExxonMobil Research and Engineering Co., sulphur recovery efficiencies of 99.9 per cent and higher were achievable.

5.2 Views of Shell

Shell stated that its sulphur recovery units would be designed and operated so as to exceed the sulphur recovery requirements of *ID 2001-03*.

Shell stated that its sulphur recovery unit for the expansion upgrader would include a Shell Claus off-gas treatment unit and that the sulphur recovery unit would be capable of achieving 99.8 per cent sulphur recovery. Furthermore, Shell stated that as part of its expansion proposal it would modify its current upgrader sulphur recovery train to use a Euro Claus catalyst, which would result in a sulphur recovery of 99.2 per cent. As a result, Shell stated that the overall sulphur recovery for its expanded upgrader facility would be 99.4 per cent. This recovery level would result in sulphur dioxide (SO₂) emissions dropping from 28.07 tonnes/day (t/d) to 24.55 t/d, with a doubling of throughput at the upgrader complex. Notwithstanding the design capabilities of its sulphur recovery units, Shell requested that the EUB approval set sulphur recovery conditions consistent with *ID 2001-03*.

Shell stated that it would request a maximum emissions limit of 28 t/d of SO₂ from AENV. Notwithstanding the design capabilities of its sulphur recovery units, Shell stated that the upper limit of 28 t/d of SO₂ was required for operational flexibility to accommodate emissions caused by short-term maintenance and process upsets.

Shell committed to operate at an emissions rate of 24.55 t/d of SO₂ 90 per cent of the time or greater.

5.3 Views of the Board

The sulphur recovery guidelines in *ID 2001-03*, Table 1, represent the minimum level of sulphur recovery that the EUB would expect from a facility; depending on the circumstances, the EUB may set higher levels of sulphur recovery. The sulphur recovery requirements for an upgrader are determined on the basis of the sulphur content of the acid gas feed to the sulphur recovery units inclusive of acid gas that is flared. Based on the information provided by Shell, the Board notes that the minimum calendar quarter-year average sulphur recovery for the expanded facility must not be less than 98.5 per cent. The Board also notes, however, that should the acid gas sulphur

content exceed 2000 t/d as a calendar quarter-year average, the applicable minimum sulphur recovery requirement is 99.5 per cent.

The Board acknowledges Shell's commitment to install and operate facilities that exceed the minimum sulphur recovery levels prescribed in *ID 2001-03*. The Board is encouraged by the benchmark of environmental performance that Shell has established with respect to sulphur recovery for its Scotford upgrader, particularly in light of the current and projected level of industrial development in Strathcona County and the Alberta Industrial Heartland.

The Board notes that Shell conducted its environmental impact assessment at an SO₂ emissions rate of 24.55 t/d and that Shell committed to limit its emissions of SO₂ to 24.55 t/d 90 per cent of the time or greater and to 28 t/d 10 per cent of the time or less. As a result, the Board recommends that AENV condition Shell's approval to restrict emission of SO₂ to 24.55 t/d 90 per cent of the time or greater and to 28 t/d 10 per cent of the time or less.

The Board notes that Shell is required to report on its sulphur recovery performance in its monthly operations report to the EUB. This information is available to the public through the EUB's publication *ST39: Alberta Oil Sands Plant Statistics Monthly Supplement*.

6 AIR EMISSIONS INVENTORY

6.1 Views of IHR

IHR stated that numerous omissions were found in Shell's baseline assessment of existing air emissions. It argued that pollutant sources and significant quantities of air pollutants were not identified in the baseline assessment, nor were their impacts assessed. Furthermore, IHR stated that Shell failed to account for emissions currently permitted in approvals of existing facilities. IHR argued that collectively these deficiencies resulted in a failure to correctly characterize the baseline conditions and that as a result Shell significantly underestimated the health risks of its expansion proposal.

IHR stated that Shell failed to include and assess in its application the following emissions reported from existing facilities in 2004:

Compound	Tonnes/Year (t/y)
sulphur dioxide (SO ₂)	176
ammonia (NH ₃)	4040
carbon monoxide (CO)	40
nitrogen oxides (NO _x)	122
volatile organic compounds (VOC)	2377
particulate matter of 2.5 micron diameter (PM _{2.5})	24
other compounds	1036

IHR also noted that a further 19 947 t/y of emissions, currently permitted in approvals of existing facilities, were also not included in Shell's assessment.

While IHR acknowledged that emissions of NH₃ and certain VOCs were identified by Shell, IHR claimed that these emissions were not included as inputs to Shell's dispersion models and thus their impacts were not assessed.

IHR acknowledged that it had made certain errors in its accounting of Shell's baseline air emissions inventory. However, IHR still claimed that Shell's emissions inventory was materially deficient.

6.2 Views of Shell

Shell stated that its baseline air emissions inventory was prepared in a manner consistent with AENV's 2003 air quality model guidelines. Shell stated that its emissions inventory provided a representative view of significant sources and associated emissions for its project and for the other facilities in the region.

With respect to the emissions of SO₂, NO_x, CO, and PM_{2.5}, Shell argued that its emissions inventory accounted for 98.8 to 99.5 per cent of these compounds and that this was well within the accuracy of emissions estimates.

With respect to the emissions of "other compounds," Shell noted that 101 t/y were released to water and not to air and that a further 756 t/y were not expected to be emitted in any meaningful amount from the upgrader.

With respect to emissions of NH₃, Shell stated that it had identified ammonia as a chemical of potential concern and assessed the potential health risks associated with its release into the ambient air. Shell's human health risk assessment characterized NH₃ in the baseline conditions (including regional levels of ammonia) by adding measured air concentrations to modelled base case air emissions in order to determine the total baseline risk estimate. Shell argued that its approach would overestimate any potential health impacts from the release of NH₃ into the atmosphere. Shell also noted that NH₃ would not be emitted from the upgrader in any meaningful amount.

With respect to the emissions of VOCs, Shell stated that it had accounted for 1644 t/y in its assessment, that a further 463 t/y reflected VOCs that Shell argued were relatively benign at levels found in the atmosphere and did not have any direct human health implications, and that a further 271 t/y were incorrectly included by IHR in its inventory of missing emissions.

Shell argued that it had examined VOCs produced by the Scotford complex in quantities that might pose a measurable difference to either ecological or human health. Certain species of the VOC family were selected, reviewed, and run through the dispersion model that performed part of the human health risk assessment. Shell's VOC emissions inventory was derived from other facilities' ambient air monitoring data and data gathered by the Fort Air Partnership (FAP), Environment Canada, and Alberta Health and Wellness (AHW).

With respect to the 19 947 t/y of emissions currently permitted in approvals of existing facilities, Shell noted that air quality assessments typically assumed that the applicant's facility was emitting at a maximum rate and that other facilities in the region were emitting at rates more representative of historical operations, not at their maximum permitted rates. Shell commented that its approach was consistent with past practices in developing air emissions inventories and

was supported by AENV's 2003 air quality model guidelines. As a result, Shell argued that the 19 947 t/y of emissions were not required to be included in its assessment.

6.3 Views of the Board

The Board notes that AENV is the agency responsible for determining the adequacy of Shell's baseline emissions inventory. The Board also notes that AENV participated in the review of Shell's application and concluded that the documents submitted by Shell addressed the information requirements set out in Section 49 of the *EPEA* and the final Terms of Reference. Furthermore, AENV declared that Shell's EIA report was complete pursuant to Section 53 of the *EPEA*.

Accordingly, the Board accepts that Shell has prepared its baseline air emissions inventory in accordance with provincial health, environmental, and other regulatory standards and guidelines, and as a result the Board does not accept IHR's allegations that significant quantities of air pollutants were not identified in Shell's baseline assessment.

7 AIR MONITORING

7.1 Views of IHR

IHR noted that the Chichaks and the Radkes lived in close proximity to Shell's Scotford complex and that they had concerns about the air emissions that they were being exposed to, the adequacy of the existing air monitoring stations, the compounds being monitored, and the frequency of monitoring. IHR argued that it was Shell's responsibility to monitor for the compounds emitted by its facilities and to ensure that the monitors were in the appropriate location to ensure protection of the Chichaks' and the Radkes' health.

IHR stated that there were no identifiable or foreseeable barriers preventing Shell from undertaking the incremental monitoring that IHR requested in its submission. While IHR acknowledged the existence of FAP and the role it played in the region, IHR did not believe that this precluded Shell from acting on its own to address IHR's concerns.

IHR recommended that Shell be required to install and maintain a continuous SO₂ monitor, capable of measuring minute-by-minute concentrations, at the Chichaks' residence to obtain at least three years of continuous data. IHR did not support Shell's proposal to install a static SO₂ monitoring device. IHR stated that static monitoring was a monitoring method that averaged concentrations over a month-long period. IHR argued that for health concerns, specifically for asthma control, the short-term changes in concentration were of most concern and that short-term concentration fluctuations were best measured by a continuous monitor.

IHR also recommended additional monitor programs to assess a suite of hydrocarbon emissions which IHR argued could be emitted from the upgrader.

7.2 Views of Shell

Shell noted that the Strathcona County region was one of the most heavily monitored regions in Canada, with 30 passive air monitoring stations and nine continuous air monitoring stations.

Shell stated that the monitoring network would be augmented through the addition of a further 10 new passive monitoring stations and one additional continuous monitoring station. Furthermore, FAP, in collaboration with Shell Canada, BA Energy Heartland Upgrader, and Shell Chemical Canada Limited, was supporting a plan to install continuous monitoring equipment for VOCs at the Scotford station. The analyzer would focus on benzene, toluene, ethylbenzene, and xylenes (BTEX).

Shell noted that a VOC sampling program had recently been conducted at the Scotford station with FAP and Environment Canada. Shell stated that it would work collaboratively through FAP to determine an appropriate response subject to the nature of the findings.

Shell noted that ozone was being monitored in the region and that additional steps to evaluate ozone formation were being taken. Shell stated that last summer under a program called Project Prairie 2005, Environment Canada collected data on ozone precursors, ozone chemistry, and ozone levels with the use of mobile units and instrumented aircraft. Results from the study were currently being analyzed.

Shell stated that FAP's PM_{2.5} monitoring stations in Lamont and Fort Saskatchewan were not intended to monitor emissions from Shell's facility but were intended to assess the conditions of the airshed on a regional basis.

Shell noted that the Scotford continuous monitoring station would be relocated in accordance with AENV's air monitoring directive. It testified that this station was being sited in conjunction with the remainder of the stations in the region to provide a more representative regional assessment of air quality as opposed to an assessment strictly of Scotford's air quality impacts.

Shell stated that the location of its monitoring station was determined in accordance with the air monitoring directive, the location being dependent on factors such as receptor location, emissions, dispersion modelling, existing monitoring data, and wind data. Shell noted that AENV and AHW were accountable for ensuring appropriate monitoring and measurement of emissions. Shell asserted that ultimately it was AENV's responsibility to determine the type and number of monitors, as well as the chemicals to be measured, to ensure protection of human health. Shell noted that the location of the existing Scotford monitoring station was approved by AENV in December 2001.

Shell acknowledged the concerns expressed by the Chichaks and the Radkes with respect to air quality where they lived. However, Shell stated that it was unaware of any extensive regional air network that deployed continuous monitoring stations at individual residences. Shell argued that for the most part monitoring was regionally focused and tried to answer questions, as best it could, on regional airshed conditions and community health in larger residential areas.

Shell argued that the current system of continuous monitors did not indicate that SO₂ was an issue for residents living near its facility. However, in order to address resident concerns and to identify trends that might indicate the need for further monitoring, Shell committed to install a passive SO₂ monitoring station at the Chichak residence.

Shell argued that with respect to the monitoring recommendations put forward by IHR, the FAP technical working group (TWG) was the most appropriate mechanism through which IHR's concerns could best be addressed.

7.3 Views of the Board

The Board notes that AENV is the agency responsible for determining the air monitoring requirements in the region, including the number of monitoring stations, their location, their type, and the compounds to be monitored.

The Board accepts that FAP, which is a multistakeholder committee, is the appropriate vehicle through which the air monitoring requirements in the region can best be managed and to which interested parties should bring monitoring recommendations for consideration.

The Board notes the concerns expressed by IHR that the current air monitoring network is directed towards an assessment of regional air quality and that it may not provide sufficient readings at residences such as the Chichaks' and the Radkes'. As a result, the Board recommends that AENV and FAP review the concerns expressed by IHR and that AENV determine the most appropriate means for addressing IHR's concerns, including the requirement that Shell install additional continuous monitoring if AENV believes it to be appropriate. The Board acknowledges Shell's commitment to facilitate the presentation of IHR's concerns to FAP.

The Board acknowledges Shell's commitment to install a passive SO₂ monitor at the Chichaks' residence as a means of addressing resident concerns and identifying trends that might indicate the need for further monitoring.

8 EMERGENCY RESPONSE PLANNING

8.1 Views of IHR

The Chichaks expressed concern over the blockage of the CP rail track at Rural Route 214 and Township Road 560A. They claimed that the track had been blocked for long periods of time and were concerned about the ability of emergency vehicles to get through if required. The Chichaks noted that Shell had failed to have the tracks cleared in a timely matter in three successive attempts. While they acknowledged that ultimately the track clearing test was successful, the Chichaks felt that there was still a way to go before they had confidence that in the event of an emergency the tracks would be cleared quickly.

The Chichaks expressed concern over the difficulty in accessing information on plant incidents through the Northeast Region Community Awareness and Emergency Response group (NRCAER) phone line. They indicated that it was a lengthy process requiring a number of steps to be followed. They questioned the complexity of the system in the event that a time-sensitive emergency arose.

The Chichaks expressed concern about not being promptly notified of incidents at the plant. They did not believe that the emergency response protocols that Shell had in place were satisfactory and observed that these protocols had deteriorated over the years.

Like the Chichaks, the Radkes also expressed concern over the apparent failure of Shell's emergency response protocol to notify them of incidents. They noted that their residence was incorrectly recorded on Shell's primary communications map. Furthermore, given their outdoor lifestyle, they argued that they might not be near a phone when notification of an incident was

issued. They questioned why the onus was on them to learn of incidents at the upgrader through the NRCAER line, rather than it being Shell's responsibility to ensure that they were contacted directly.

8.2 Views of Shell

Respecting the potential for a train to block egress during an emergency, Shell noted that the railways operated under Transport Canada regulations and in particular the Canadian Railway Operating Rules. These regulations stated that in the event of an emergency, any blocking rail traffic is expected to clear the level crossings as quickly as possible. Shell stated that it had worked with CP and Strathcona County Emergency Services over the last several months to conduct drills and test that capability. Shell indicated that four separate tests were conducted, the last one being May 25 of this year. Shell noted that only in the May 25 test were the tracks cleared in a reasonable time.

Shell stated that it would continue to work with Strathcona County Emergency Services, CN, and CP on an annual basis to demonstrate that the tracks could be cleared in a reasonable time. Shell indicated that, as it had done in the past, it would communicate information to its neighbours on any upcoming test and invite them to participate. Shell stated that on completion it would communicate the results of those tests to residents.

Shell stated that it had developed a 3.8 km emergency planning zone (EPZ) based on a worst-case scenario involving its sulphur recovery facilities. However, as a practical matter, Shell has adopted a 5 km impact zone for its emergency planning scenarios.

Shell stated that it was a member of the NRCAER, a group of industry and municipal agencies involved in multistakeholder emergency responses. It included the Strathcona County Emergency Services, which acted as Shell's agent to deal with off-site impacts. It also included other industries that could be called upon in a major emergency to render mutual aid.

Shell stated that for alert or low-level incidents (also referred to as Tier 1/Level 1 incidents), Shell's procedure was to update the NRCAER call-in line with the nature of the incident. It stated that regular messages were posted on the NRCAER call-in line as the nature of the incident progressed towards resolution.

Shell stated that notification for Tier 2/Level 2 or higher incidents would start with an advisory posted on the call-in line. If there was a potential for off-site impacts, a message would be posted to the call-out system and individual residences would be notified by phone. The system was designed to attempt to redial several times if contact was not made. The system would also try alternative phone numbers. Shell stated that in the event that a resident could not be contacted, Strathcona County Emergency Services was responsible for going door to door as a follow-up procedure.

Shell acknowledged that the Radkes' land description was incorrectly recorded on its primary communication map. However, Shell stated that for emergency response and the call-out system, the county used a geographic information system (GIS) map, which was based on actual civic addresses and not land descriptions. As a result, Strathcona County Emergency Services would respond to the correct physical location. Shell stated that this had been confirmed with the deputy chief of operations.

Shell noted the concerns expressed by IHR with respect to the apparent difficulties with communication and contact procedures in the event of an emergency. Shell stated that residents should contact the plant directly if they had concerns, and it committed to meet with IHR to better understand and address its concerns on emergency planning issues.

8.3 Views of the Board

The Board acknowledges the efforts of Shell to work with the residents, Strathcona County Emergency Services, CN, and CP to ensure that track clearing is conducted in a timely manner. The Board notes Shell's ultimate success in track clearing. However, given the number of failures to date, the Board is not satisfied that the protocols are as reliable as they should be. The Board notes that track clearing is not completely in Shell's control and that success is critically dependent on the actions of other agencies. Nevertheless, as a condition of approval, the Board requires Shell to coordinate another track clearing exercise within six months of the approval date and to report on the performance of the exercise to the EUB and other stakeholders.

The Board notes Shell's commitment to continue to work with Strathcona County Emergency Services, CN, and CP on an annual basis to demonstrate that the tracks can be cleared in a reasonable time. The Board also acknowledges Shell's commitment to involve its neighbours in the track clearing exercises and to communicate the results of the exercises to residents.

The Board notes residents' concerns about Shell's emergency communication and notification protocols and acknowledges Shell's commitment to continue to work with the Chichaks and the Radkes to address their concerns.

9 NOISE, TRAFFIC, AND OTHER RESIDENT CONCERNS

9.1 Views of IHR

Noise

The Radkes noted that noise and vibration from nearby industrial facilities were making it difficult for them to enjoy their daily lives and that they expected the noise to increase with the expansion, as well as with the growth of other industries in the region. The Chichaks echoed the Radkes' concerns regarding the noise associated with the surrounding facilities, including the Scotford complex.

Traffic

The Radkes expressed concern over the volume of traffic in the area. They claimed that vehicles were bypassing RR214 and driving past their house. This made accessing the road from their driveway difficult, as well as making it difficult to access the main highway. The Radkes noted that because of the traffic they no longer felt it safe to walk along the road in front of their house. The Chichaks voiced similar concerns with respect to traffic in the area.

Other Concerns

The Chichaks expressed a number of concerns relating to the impact that the Shell Scotford complex (upgrader, refinery, and chemical plant) had on their quality of life. Citing newspaper articles, correspondence from Shell, and relating first-hand experiences, the Chichaks described

incidences relating to uncontrolled vapour releases, flaring, worker safety and industrial accidents, in addition to their concerns about traffic and noise.

The Chichaks indicated that they were being overwhelmed by the amount of information they were receiving due to the level of development in the region. They felt that industry meetings to address their concerns were not being scheduled at convenient times to meet their lifestyles. They also questioned whether industry took into consideration the comments that they provided.

The Chichaks expressed a desire to leave the area but did not feel that the Voluntary Purchase Program (VPP) was adequate to meet their needs, although they did not rule out altogether the prospect of participating in the VPP.

The Radkes expressed concerns over the contamination of their drinking water and the additional risks to their health and that of their livestock and pets. The Radkes noted that 25 to 30 of their cattle died over the past year and many of their calves too. The Radkes claimed that their cattle were suffering from fluorosis, and stated that wildlife in the region was suffering from fluorosis as well. However, the Radkes did not attribute these concerns to any industry or project in particular.

9.2 Views of Shell

Noise

Shell stated that its operating facility would include low-decibel (absolute) equipment designed to mitigate day-to-day operational noise. With respect to construction activity, Shell stated that wherever practical, noisy activities would be restricted to daytime hours. Shell would not deliberately schedule noisy activities for the evening hours, but if unavoidable, Shell stated that it would inform local residents in advance.

Shell acknowledged the concerns expressed by IHR with respect to noise. Shell committed to meet with IHR to better understand its noise concerns and to find ways that they could be mitigated.

Traffic

Shell stated that it had set out a broad framework in its application for how it intended to manage construction traffic. The framework included scheduling material and equipment deliveries in off-peak hours, scheduling staggered worker shift changes, installing traffic lights at the intersection of RR 214 and Highway 15, and operating a bus service for construction workers. The specifics associated with the plan would become more detailed as Shell developed its project execution plan. Shell reaffirmed that it would institute mandatory bussing for its construction workers to minimize the direct vehicle traffic.

Shell acknowledged the concerns expressed by IHR with respect to construction traffic. Shell stated that it was fully prepared to meet and consult with IHR on construction traffic issues and how they could be mitigated.

Other Concerns

Shell encouraged its neighbours to call it directly when they had a complaint. The call would be received by security, which would then direct it to the shift coordinator of the chemicals plant,

the refinery, or the upgrader. The shift coordinator would investigate the source of the complaint, whether it was related to noise, odour, or other concerns, and record the complainant's number. Shell committed to get back to the complainant with appropriate information.

Shell stated that the VPP arose out of an issues resolution panel that brought residents, industry, and the county together. Shell believed that the VPP provided for a fair and equitable resolution to land-use conflicts in the region, but acknowledged the specific concerns that the Chichaks had with the VPP. However, Shell noted that the VPP application process included provisions for consideration of an applicant's extenuating circumstances. Shell stated that it believed this provided the program with the flexibility to deal with the unique circumstances raised by the Chichaks, and it committed to assist the Chichaks in bringing forward their unique circumstances for consideration by the VPP.

9.3 Views of the Board

The Board acknowledges resident concerns over noise, traffic, and the general deterioration of their quality of life due to industrial development in the region. The Board notes Shell's efforts to mitigate the impacts of its proposed upgrader and its willingness to continue to explore other opportunities to address the concerns expressed by the Chichaks and the Radkes.

The Board expects Shell to investigate and follow through with upgrades to its communication protocols as required, recognizing the importance of face-to-face communications as expressed by the Chichaks and the Radkes at the hearing.

The Board notes that the VPP represents an important mechanism for dealing with resident concerns and acknowledges that as a new initiative it may take some time to "fine tune" the process. The Board is encouraged by Shell's view that the program has the flexibility to deal with the unique and extenuating circumstances raised by the Chichaks and notes Shell's commitment to assist the Chichaks in bringing forward their concerns for consideration by the VPP. The Board strongly encourages Shell and the residents to fully investigate the VPP and its application or extension to the unique circumstances and interests in the land held by the residents who appeared and discussed their concerns at the hearing.

Respecting the allegations of cattle mortalities, the incidents of fluorosis, and the contamination of drinking water, the Board is not in a position to render an opinion on these matters in the absence of any supporting evidence.

10 TECHNICAL CONSIDERATIONS

In its submission IHR made a number of recommendations relating to process design and operational changes that it believed should be conditions of Shell's approval and that it believed would better control emissions, improve air quality, and reduce the likelihood of impacts on residents living near the upgrader.

Shell stated that it was prepared to consider elements of IHR's recommendations relating to Shell's leak detection and repair (LDAR) program, the monitoring of emissions from Shell's cooling tower circuit, and stack top temperature reductions. However, Shell noted that IHR's technical consultant was trained as an industrial hygienist and not as an engineer. Furthermore,

Shell noted that IHR's technical consultant had not participated in the design of sulphur recovery units, incinerators, or flare systems. As a result Shell advised the Board that IHR's technical recommendations should be treated with extreme caution.

The Board acknowledges that IHR's technical consultant possesses a general knowledge of the petroleum industry. However, the Board finds that this level of knowledge is insufficient to substantiate IHR's allegations of potential hazards as they relate to the impacts of technologies associated with upgrading bitumen, and in particular with respect to the technologies employed at Shell's Scotford upgrader.

The Board finds that many of IHR's technical recommendations and findings are beyond IHR's expertise. The Board notes in particular that IHR cited inappropriate authorities, misunderstood the application of the EUB's sulphur recovery guidelines, and misunderstood the process by which bitumen was handled at the upgrader. However, the Board notes that Shell has agreed to consider elements of IHR's recommendations as they relate to Shell's leak detection and repair program, the monitoring of emissions from Shell's cooling tower circuit, and stack top temperature reductions.

The Board concludes that Shell has responded appropriately to IHR's technical recommendations and to its allegations of potential hazards as they relate to the impacts of technologies associated with upgrading bitumen.

Dated in Calgary, Alberta, on August 29, 2006.

ALBERTA ENERGY AND UTILITIES BOARD

[Original signed by]

R. G. Lock, P.Eng.
Presiding Member

[Original signed by]

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

[Original signed by]

W. A. Warren, P.Eng.
Acting Board Member

APPENDIX 1 HEARING PARTICIPANTS

Principals

(Abbreviations used in report)

Witnesses

Shell Canada Limited (Shell)

S. Denstedt

R. V. Rodier

S. Bhardwaj

J. Broadhurst

E. Brost, P.Eng.

M. Davies

R. Eccles, P.Biol.

K. Firmin, P.Eng.

G. Hegmann, P.Eng.

F. Hodges

M. Ingen-Housz

B. Koppe, P.Biol.

S. Penton, P.Eng.

M. Phillips

D. Spriensma

P. St. George, P.Eng.

O. Sy

G. Vlasschaert, P.Eng.

Industrial Heartland Residents (IHR)

R. Secord

D. Chichak

M. Chichak

K. Radke

V. Goodwin

North West Upgrading Inc. (North West)

L. Heidinger

Synenco Energy Inc. (Synenco)

L. Heidinger

Alberta Energy and Utilities Board staff

J. P. Mousseau, Board Counsel

R. R. Germain, P.Eng.

K. Eastlick, P.Eng.

J. Pane

APPENDIX 2 COMMITMENTS BY SHELL CANADA LIMITED

The Board notes that Shell has committed to conduct certain activities in connection with its operations that are not strictly required by the EUB's regulations or guidelines. It is the Board's view that when a company makes commitments of this nature, it has satisfied itself that these activities will benefit both the project and the public, and the Board takes these commitments into account when arriving at its decision.

The Board expects Shell to carry out the commitments or to advise the Board if, for whatever reasons, it cannot fulfill a commitment. The Board would then assess whether the circumstances regarding the failed commitment warrant a review of the original approval. The Board notes that the affected parties also have the right to request a review of the original approval if commitments made by Shell remain unfulfilled.

The Board expects that Shell will document its progress on its commitments and that Shell will file this information with the Board on request.

1 The following commitments were made by Shell during the hearing:

1.1 Sulphur Recovery

Shell committed to operate at an emissions rate of 24.55 t/d of SO₂ 90 per cent of the time or greater and at 28 t/d of SO₂ 10 per cent of the time or less.

1.2 Emergency Response Planning

Shell stated that it would continue to work with the Chichaks and the Radkes to address their concerns with its emergency response protocols.

Shell stated that it would continue to work with Strathcona County Emergency Services, CN, and CP on an annual basis to demonstrate that the tracks can be cleared in a reasonable time. Shell indicated that, as it had done in the past, it would communicate information to its neighbours on any upcoming test and invite them to participate. Shell stated that on completion it would communicate the results of those tests to residents.

1.3 Noise

Shell stated that it was fully prepared to meet and consult with the Chichaks and the Radkes on noise issues and how they could be mitigated.

1.4 Construction Traffic

Shell stated that it was fully prepared to meet and consult with the Chichaks and the Radkes on construction traffic issues and how they could be mitigated.

1.5 Voluntary Land Purchase Program

Shell stated that it would assist the Chichaks in bringing forward their unique circumstances for consideration by the VPP.

2 The following commitments are taken from Hearing Exhibit 12, submission 45697, Shell, June 16, 2006:

2.1 Stack Top Temperature

Maintain stack top temperature at 538°C on the new unit until operation has stabilized and then conduct testing to confirm performance at lower temperatures. Shell will then provide Dennis and Maureen Chichak with these test results and have someone explain them in person.

Develop and implement procedures to raise stack top temperature if SO₂ exceedances are occurring and, since this is conceivable during severe atmospheric conditions, Shell will also look into identifying a criterion to define adverse conditions.

2.2 Flaring

Design its flare system with state-of-the-art proven technology appropriate for the scale of its facility.

Ensure that its flare system is properly operated and that vents to flares are minimal.

Provide Ms. Goodwin with Consultant (CanMet) information.

2.3 Leak Detection and Repair Program

Investigate and understand the NOVA Chemicals program. This is consistent with Shell's commitment to continuous improvement (ISO 14001).

With AENV agreement, implement changes where practical and appropriate for its facility.

Agree to use 5000 ppm as a leak detection threshold in its LDAR program.

Look into providing a progress report or update for residents regarding the effectiveness of the LDAR program.

2.4 Cooling Tower Emissions

In addition to the on-line program already in place, investigate and implement, if practical, a routine cooling water sampling program and analyze the water for VOCs.

Conduct a technology assessment review to evaluate the feasibility of installing a continuous VOC analyzer on the cooling water system and share the results with interested residents.

2.5 Equipment Exhaust Stack Emissions

Be prepared to look into monitoring emissions from diesel engines and what might be practical and reasonable to consider in mitigating such emissions.

Require its contractors to maintain their equipment in good operating condition.

2.6 Ultra Low NOx Burners

Require heater vendors to provide best NOx performance guarantees, which will result in site average emission controls better than the guidelines established by the Canadian Council of Ministers of the Environment and in NOx emissions lower than the values used in the EIA.

2.7 Air Monitoring

Cover Ms. Goodwin's costs of presentation, preparation, and travel for the FAP TWG presentation.

If the presentation to the FAP TWG does not go ahead, facilitate forwarding this recommendation ["this recommendation" refers to recommendations 10 through 17 inclusive in IHR's July 5, 2006, submission, Exhibit 17, objection 14286], along with all other FAP-related recommendations, to FAP for its consideration.

Locate a static SO₂ station at the Chichak residence to provide monthly average concentrations.

APPENDIX 3 APPROVAL CONDITIONS

This section is provided for the convenience of readers. In the event of any difference between the conditions in this section and those in the main body of the decision, the wording in the main body of the decision shall prevail.

- 1) Shell will coordinate another track clearing exercise within six months of the approval date and will report on the performance of the exercise to the EUB and other stakeholders.
- 2) Shell will comply with the minimum calendar quarter-year sulphur recovery guidelines set out in *ID 2001-03*, Table 1, on the basis of the calendar quarter-year average sulphur content of the combined acid gas feed to the sulphur recovery processes installed at its Scotford complex inclusive of the sulphur content of acid gas that is flared.