



Petrofund Corp.

Application for a Well Licence
Armisie Field (West Edmonton Area)

July 28, 2005

ALBERTA ENERGY AND UTILITIES BOARD

Decision 2005-085: Petrofund Corp., Application for a Well Licence, Armisic Field

July 28, 2005

Published by

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ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**PETROFUND CORP.
APPLICATION FOR A WELL LICENCE
ARMISIE FIELD**

**Decision 2005-085
Application No. 1365474
(formerly Application No. 1346789)**

1 DECISION

Having carefully considered all of the evidence, the Alberta Energy and Utilities Board (EUB/Board) finds that the proposed well can be drilled, completed, and operated safely. The Board hereby approves Application No. 1365474 (formerly Application No. 1346789) and will issue the appropriate well licence in due course.

2 INTRODUCTION

2.1 Application

Pursuant to Section 2.020 of the *Oil and Gas Conservation Regulations*, Petrofund Corp. (Petrofund) applied to the EUB for a licence to drill an oil well from a surface location in Legal Subdivision (LSD) 7, Section 4, Township 52, Range 25, West of the 4th Meridian (7-4 well). The bottomhole location for the well would be in LSD 9-33-51-25W4M. The purpose of the well would be to obtain production from the Blairmore Formation. The maximum hydrogen sulphide (H₂S) content in the associated gas would be 11 moles per kilomole (1.1 per cent H₂S). The maximum drilling release rate would be 0.0916 cubic metres per second (m³/s). The corresponding emergency planning zone (EPZ) would be 500 m. The proposed 7-4 well would be located on an existing well site within the corporate limits of the City of Edmonton.

2.2 Interventions

The EUB received submissions from several parties, including the Riverside Heights Group (RHG), the City of Edmonton, the West Edmonton Landowners Group (WELG), and Saraswati P. Singh. The attached map shows the approximate location of the proposed well in relation to the lands owned by each party.

The RHG, a group of adjacent landowners and residents, filed its submission on April 8, 2005, and subsequently withdrew it on April 29, 2004, prior to the hearing. The members of the RHG include the Hazletts, D. Rowand, the D'Alquens, K. Okrainetz, B. Karesa, H. Flewwelling, L. Poulette, and D. Motz. Ms. Anne Hazlett appeared at the hearing and presented a brief statement.

The WELG, another group of adjacent landowners and residents, filed its submission on April 8, 2005. The WELG had filed a submission on August 23, 2004. Subsequent to that a number of WELG members withdrew from WELG and became part of the RHG. At the time of the hearing, the members of WELG included B. Sulyma, the Sabulkas, A. Owczarek, J. Traxler, the McFadyens, the Gotaases, and the Novaks. The Gotaases and Mr. Sulyma appeared at the hearing to represent the WELG.

Dr. Singh, a nonresident adjacent landowner, filed a submission on April 8, 2005.

The City of Edmonton (City) submitted a letter to the Board dated March 31, 2005, outlining its position on the application. Paula Ainslie and Bob Black, employees of the City, appeared at the hearing to speak to any questions raised at the proceeding.

2.3 Hearing

The Board scheduled a public hearing to be held in Edmonton, Alberta, May 3-4, 2005, before Board Member T. M. McGee (Presiding Member) and Acting Board Members K. G. Sharp, P.Eng., and D. K. Boyler, P.Eng. A site visit was conducted on May 2 and May 3, 2005, prior to opening the hearing. Those who appeared at the hearing are listed in [Appendix 1](#). The Board closed the hearing on May 4, 2005, and as there were no undertakings, the final evidence was deemed to be May 4, 2005.

3 BACKGROUND

3.1 Appropriate Dispute Resolution

In conjunction with proceeding to establish a hearing date on this matter, the EUB encouraged the parties to engage in appropriate dispute resolution (ADR) in order to continue discussing issues of interest. The parties met several times between July and November 2004, but were not successful in reaching an agreement.

4 ISSUES

The Board considers the issues respecting the application to be

- need for the well
- emergency response planning
- field development plan
- operational matters

5 NEED FOR THE WELL

5.1 Views of the Applicant

Petrofund submitted that the intended purpose of the proposed 7-4 well was to obtain crude oil production from the Blairmore Group and to prove the existence of oil reserves underlying the bottomhole target in the east half of Section 33. Petrofund contended that the proposed 7-4 well would effectively and efficiently drain the reserves it believed were present and would provide additional data to help delineate the pool. Petrofund said it would use the data from the 7-4 well to further assess what future development may be required, along with the appropriate location of future wells.

Petrofund described the reservoir as consisting of the Ellerslie (channel and overbank) and Ostracod (regional and channel) sands. It identified some of the current wells in the subject pool as producing from either or both of these sands. Petrofund interpreted the subject reservoir sands to be located in an estuarine depositional environment. Petrofund explained that such an environment would consist of shoals or sand bars, which would provide ideal trapping conditions for hydrocarbons. Petrofund stated that it interpreted there was an oil/water contact in the subject pool and that it intended to drill the proposed well above this interface.

Based on its geological and production data analysis, Petrofund said that the targeted pool had a larger areal extent than initially estimated. It explained that this view was supported by the long producing life of the wells in the area and the fact that the pool continued to produce with very little decline over the years. Petrofund was of the opinion that additional drilling was required to adequately drain the pool and maximize recovery.

Petrofund stated that under the existing production scenario, operations were predicted to continue until at least 2015. It stated that based on its production decline analysis, the pool would continue to produce for a much longer time if no additional wells were drilled. Petrofund explained that drilling additional wells could potentially shorten the productive life of the pool. It further stated that by drilling horizontal wells, which normally drained reserves at rates two to four times faster than a typical vertical well in the same pool, the producing life of the pool could be further shortened. However, in order to be able to better estimate the time it would take to drain the pool's reserves, Petrofund stated that it was necessary to drill the proposed 7-4 well to confirm its theory on the size of the pool and use the data to re-evaluate the reserves. Petrofund suggested that up to seven additional wells beyond this proposed well may be necessary to achieve efficient production of the existing reserves. However, it also stated that its development plan depended on additional well data and could change as the wells were drilled and evaluated.

In response to questioning, Petrofund also indicated that it believed that a net benefit would accrue to the Province of Alberta through the identification and recovery of additional oil reserves and associated royalties.

5.2 Views of the Interveners

Dr. Singh recognized and accepted that Petrofund had the right to access the minerals within the subsurface. However, he stated that he believed it was a privilege for Petrofund to be able to exploit those minerals and that with the privilege came certain obligations. Dr. Singh said Petrofund had a responsibility to ensure that the interests of the community were recognized and protected.

The other interveners did not provide specific technical evidence to dispute Petrofund's geological interpretation or the need for the proposed well.

5.3 Views of the Board

The Board notes that Petrofund has demonstrated that it has acquired the appropriate mineral rights and recognizes that Petrofund has the right to access those minerals. The Board is of the view that the extensive production history of the subject pool clearly demonstrates that the reserves have not been depleted to the extent that would be expected for a reservoir that has been produced for such an extended time. In the Board's view, this supports the suggestion that the

pool may be larger than previously thought and that there is a need for the pool to be further delineated. Therefore, the Board believes that Petrofund's proposed well represents an acceptable and reasonable development scenario that is designed to obtain incremental data in order to better define the extent of the reserves in the Armisic Field and could accelerate production from the pool.

Having considered the foregoing, the Board is satisfied that a need exists to drill the proposed well. While it has agreed that a need exists for the well, the Board must now consider this need in light of the Board's duty to consider the public interest in its decision making. The Board has a duty to consider the interests of all Albertans, not just the interests of those applicants and interveners appearing at an EUB hearing. The Board must weigh local impacts on such things as safety and the environment of the proposed development against provincial and regional benefits and the ability to mitigate these impacts.

6 EMERGENCY RESPONSE PLANNING

6.1 Views of the Applicant

Petrofund submitted that its emergency response plan (ERP) developed for the proposed 7-4 well met and in some cases exceeded the EUB requirements outlined in *Guide 71: Emergency Preparedness and Response Requirements for the Upstream Petroleum Industry*. Petrofund stated that the expanded EPZ used in the ERP was adopted from the onset of planning. The expanded EPZ includes the members of the RHG living on Riverside Heights Drive and the residents located just opposite the corner of 23rd Avenue and 184th Street. The residents on 17th Avenue were originally included in the expanded EPZ because of the concerns they expressed about egress through the proposed EPZ. Petrofund submitted that the continued inclusion of the 17th Avenue residents was reviewed during its ongoing review of the ERP. It was concluded that egress was not a safety issue for those parties and that they did not need to be included in an expanded EPZ. Petrofund further stated that if the residents were included in an expanded EPZ, they would be required under EUB regulations to evacuate their homes during a Level-2 emergency, when in all likelihood they would not be exposed to a hazard due to their remote location from the well site. Petrofund contended that mandatory evacuation was not appropriate in this situation, when other less intrusive public safety options were available and were just as effective. Petrofund stated that in the revised ERP, 17th Avenue residents would be notified during a Level-1 emergency, as would all other residents within the expanded EPZ, and they would be offered the same opportunity to evacuate as the residents within the expanded EPZ in Riverside Heights. During the drilling program for the proposed 7-4 well, while the sour zone was open, Petrofund stated that it would have a mobile air quality unit monitoring in the area to supplement the fixed air monitoring capability that would already be in place.

Petrofund maintained that, primarily at the request of the City of Edmonton and the Capital Regional Health Authority (Capital Health), the ERP was revised to enhance Petrofund's capability to quickly and effectively respond to a potential sour gas release at the 7-4 well site and also to reflect the learnings of the City and Capital Health from the recent December 2004 sour gas release in the Acheson Field, in the vicinity of the proposed location. Petrofund stated that the involvement of the City and Capital Health in the development of the revised plan was much more extensive than what Petrofund had experienced in the past and that the process had considerably improved the plan that Petrofund had in place for the proposed 7-4 well.

Petrofund outlined several major changes that were made in the revised ERP:

- The direct participation of the City and Capital Health were included at the earliest stages of a potential emergency in planning and assisting in matters related to public safety during and following an incident.
- Government notification procedures were updated to reflect that all appropriate government agencies would be contacted directly to ensure that rapid, direct, and unfiltered information was provided, rather than relying on the government fan-out system.
- Availability of 24-hour response resources from the City's emergency services providers, including fire department, police, EMS, and social services, was confirmed and the activation process for these resources was refined.
- The extent of the expanded EPZ was refined to eliminate the automatic closure of 184th Street in the event an incident escalated to a Level-2 emergency, unless air-quality monitoring indicated the presence of H₂S in excess of EUB guidelines. Petrofund stated that it had taken three steps within the revised ERP to ensure the safety of the 17th Avenue residents:
 - 1) early notification process at a Level-1 emergency to ensure that residents were made aware of a potential incident and offered the chance to evacuate if they felt it was necessary;
 - 2) access to 184th Street would not be restricted unless air monitoring results indicated a potential concern; 17th Avenue residents would have access to their residences; and
 - 3) discussion with the City confirmed that off-road vehicles were available to be used to move residents from 17th Avenue across the open field to the north, if the normal egress route was restricted when air monitoring results dictated the closure of roads.
- Integration of the function of the Regional Emergency Operations Centre in the EUB St. Albert Field Centre was combined with the City's Municipal Emergency Operations Centre to make overall direction of the emergency more effective.
- Integration of public and media communication functions using facilities available at the City's Municipal Emergency Operations Centre was adopted to provide clear and consistent messages to the public during a potential emergency and to provide accessible sources of information for the media.
- Identification of all persons with medical sensitivities was expanded to the Emergency Awareness Zone (EAZ), about 1 kilometre (km) from the 7-4 well site. Petrofund stated that this process was integrated into the revised ERP at the request of Capital Health. Petrofund acknowledged that the processes for identifying persons with medical sensitivities and notification of these individuals during an emergency was currently under development with Capital Health and would be included in the final draft of the revised ERP.
- In the revised ERP, procedures were modified to reflect that Petrofund would team up with the City and Capital Health to address any public safety concerns and coordinate communications with the public and media.
- Due to the urban setting of the proposed well, Petrofund developed the position of Public Safety Advisor (PSA). The PSA would be the primary liaison between the local residents and Petrofund. The PSA would keep residents informed of progress in drilling the well,

particularly while conducting sour operations, and would assume immediate responsibility for protection of the health and safety of the local public in the event of an emergency.

Petrofund stated that it was committed to running an ERP exercise to determine whether there was anything in the ERP requiring updating. Petrofund further stated that it would prepare an exercise report, make revisions to the ERP, and submit the final draft to the EUB for review. Petrofund also indicated that it was currently in discussions with personnel at the temporary concrete batch plant located within the EPZ to develop appropriate notification and evacuation procedures. These procedures would be included in the final draft of the ERP.

Petrofund maintained that the objectives of its public consultation program were broadened to collect information to ensure that the ERP met the needs of all stakeholders, to ensure that all stakeholders understood Petrofund's plans for the proposed project, to ensure that Petrofund appropriately understood the community feedback and identified potential concerns and objections, and to meet or surpass EUB requirements for public consultation in EUB *Guide 56: Energy Development Applications and Schedules* and *Guide 71*. Petrofund further stated that the public consultation program permitted Petrofund to address concerns and objections and aided it in developing amendments to the proposals that took into account stakeholder feedback where feasible, while still meeting Petrofund's needs. Petrofund stated that the public consultation programs for the drilling and completion ERP for the proposed 7-4 well and for the current area production ERP for existing sour production facilities were conducted with the same residents at the same time. Further, Petrofund stated that the residents did not appear to make a distinction between the two ERPs during the combined public consultation programs.

6.2 Views of the Interveners

The City submitted that it was supportive of Petrofund's ERP and was satisfied with the use of the unified command system as detailed in Petrofund's ERP. The City believed that the unified command system was the only way to command and control any possible situations that may arise from this operation. The City stated that it had an all-hazards Municipal Emergency Plan (MEP) that focused on command and control within city limits and was both a support and a contingency plan. The City acknowledged that it was obligated under the *Disaster Services Act* to manage all emergencies within the city limits; under the City's emergency preparedness terminology, the Petrofund ERP was a contingency plan that would need to be integrated into the City's MEP for seamless command and control. The City's emergency preparedness representative stated that the planning process to develop the Petrofund plan was the most rigorous process the City had been through. The City indicated that although it had personnel with H₂S training, it could not deal with a sour gas event but would establish a perimeter and could assist Petrofund with evacuation. The City maintained that any incident that occurred or escalated outside of the EPZ was the City's responsibility. When the concern was brought forward by the WELG pertaining to egress using 23rd Avenue being possibly restricted or inaccessible, the City responded that it did not share that concern. The City representative indicated that although he was unaware of the specific location of the all terrain vehicles (ATVs), as referenced by Petrofund, he stated that the ATVs would be made available to Petrofund for use in the event of an emergency. The City has requested that Petrofund conduct an exercise prior to drilling in order to validate the ERP. The City had indicated that any exercise should be within about two months of the spud date.

Dr. Gotaas, speaking on behalf of the WELG, expressed concerns regarding Petrofund's consultation with members of WELG for the purposes of developing the ERP and maintained that the ERP did not meet the EUB's minimum requirements. He indicated that Petrofund had not fully addressed his concerns and that he had requested that Petrofund provide an ERP that WELG members could understand and know that they would be safe with single access. If not, Dr. Gotaas requested that Petrofund advise what it was prepared to do to rectify the situation. Dr. Gotaas expressed concerns with respect to the monitoring of H₂S and having an effective ERP in place. In referring to the public consultation program and his expectations for appropriate consultation, Dr. Gotaas stated that he would like to see more information about how the ERPs were developed for their particular geographic location, incorporating individuals who have special needs, as well as identifying past operational problems and how things might be approached differently.

Mr. Sulyma, another representative of the WELG, expressed concerns about the public consultation conducted by Petrofund. Both he and Dr. Gotaas stated that Petrofund did not provide the WELG members with copies of the ERP in spite of several requests to do so. Mr. Sulyma stated that he was not consulted with respect to the ERP, but confirmed that he met with a Petrofund representative with respect to collecting information about his particular health sensitivities. Mr. Sulyma stated that his personal health and safety were at risk, as he was unable to detect H₂S odours. Mr. Sulyma expressed the view that proper consultation would have included Petrofund communicating its intent to develop an ERP and to inquire about any concerns residents may have about the ERP being able to address his health issues. According to Mr. Sulyma, ERP implementation hinged on identification of a leak. Based on a previous operational incident, Mr. Sulyma indicated that he had outstanding concerns with Petrofund's ability to effectively monitor leaks and initiate the ERP.

Both WELG representatives contended that egress from the area and the ability for emergency response personnel to locate residences were of primary concern. The WELG maintained that emergency response personnel would be unable to easily find the residences on 17th Avenue due to road closures and detours resulting from the nearby Anthony Henday freeway construction project. Mr. Sulyma stated that he had experienced past problems with ambulances and emergency response personnel not being able to locate his residence in a timely manner. Given that 23rd Avenue was the only exit route for WELG residents, the WELG was concerned about their ability to egress from the area should that road be blocked due to snow, an accident, or a hazardous material spill. The WELG recommended that an alternate access route be developed west of 184th Street on 17th Avenue, so as to avoid approaching the 23rd Avenue and 184th Street intersection.

The WELG maintained that there were numerous EPZs in the area, particularly intersecting 23rd Avenue, and the cumulative affects of all of these overlapping EPZs added some degree of risk that needed to be considered.

Dr. Singh confirmed that at this time he was not a resident, but was an owner of land in the area. He indicated that he had considered building a house on his land in the vicinity of the proposed well and stated that if he were to build a home and live in the area, he would have concerns similar to those of the WELG. He indicated that the current ERP addressed some of his concerns around safety and monitoring.

6.3 Views of the Board

The Board acknowledges Petrofund's evidence that the submitted ERP is considered to be a work in progress, with final revisions and updates to be submitted to the EUB for final review. The Board expects that the final updates and revisions to the plan will accurately reflect the procedures and site-specific information required by responders in order to implement an effective response in the event of a release of sour gas.

The Board is of the view that the fundamental objectives of emergency response planning are preparedness and response, ensuring ready access to the information necessary for affected parties to respond appropriately to an emergency involving a significant failure and release of H₂S. An ERP provides the foundational protocols to ensure that effective public protection actions are taken in the event of such an incident. The Board is cognizant that for an ERP to be effective for this area, it must address many issues, including some not normally faced by an applicant, such as the close proximity to a major urban centre. The Board recognizes that communication and close cooperation between Petrofund and the City and Capital Health are essential to the provision of effective public protection measures for the area.

The Board holds an applicant responsible for ensuring that an ERP is developed that appropriately addresses the roles and responsibilities of all responders. There must be coordination and a clear understanding of agreed-upon roles and responsibilities among the applicant and all local government agencies. Further, the Board requires that the applicant consult with these local agencies during the initial stages of developing its ERP in order to confirm the availability of resources needed to ensure the effectiveness of the plan and the various parties' acceptance of their respective roles and responsibilities. The Board recognizes that multiple EPZs in an area must be addressed when developing overall emergency response planning strategies, as coordination of activities is essential to ensuring public safety. The Board appreciates the significant efforts between Petrofund, the City, and Capital Health in developing an ERP that uses a collaborative command and control approach to public safety response. The Board is satisfied that area risk considerations have been appropriately addressed in coordinating overall emergency response planning for the area. The Board also found the evidence presented by the representatives of the City at the hearing particularly helpful in understanding the City's role in the ERP. After considering the evidence, the Board finds that Petrofund has met or surpassed the EUB's requirements and expectations with respect to the development of its ERP.

The Board continues to encourage applicants to work closely with local government agencies in developing and coordinating approaches to emergency response that incorporate innovative concepts and protocols, accounting for unique situations and exceeding the minimum requirements in EUB *Guide 71*.

The Board acknowledges the uniqueness of Petrofund's ERP and concurs with both Petrofund and the City that an exercise of the ERP must take place in order to validate the procedures described in the ERP and the ability of key responders to implement their respective roles. The Board expects EUB staff to be afforded the opportunity to attend and observe the exercise.

The Board acknowledges the concerns expressed by WELG members with respect to the issue of egress through the expanded EPZ. The Board notes that Petrofund has committed to providing notification and evacuation assistance to the 17th Avenue residents, even though the residents are not required to egress through the expanded EPZ in order to exit the area. Further, the Board

notes that these commitments are specifically outlined in the ERP. The Board also notes that the City has not expressed any concerns about the ability of 17th Avenue residents to safely exit the area in the event of an emergency, including events for which the City is responsible and that do not involve oil and gas facilities.

The Board notes that Petrofund conducted its public consultation programs (as set out in *Guides 56 and 71*) for both the current production ERP for the existing sour facilities and the drilling and completions ERP for the proposed well simultaneously with the same residents. The Board further notes that Petrofund was aware that residents did not seem to make a distinction between the two ERPs. In accordance with the public involvement requirements in *Guide 71*, an applicant must provide sufficient information to allow the parties to understand the proposed or existing operation, the impact an emergency may have on them, the procedures in place to respond to an emergency, and public protection measures. It is the Board's expectation that an applicant will ensure that its public consultation program affords residents enough information to be able to distinguish between two separate ERPs: one for existing operations and one for proposed operations.

7 FIELD DEVELOPMENT PLAN

7.1 Views of the Applicant

Petrofund stated that its objective was to proceed with future development in an orderly manner that would maximize and accelerate the development and production of oil and gas reserves in the Armisic Field, while at the same time minimizing impacts on area residents and landowners. It said that the drilling and testing of each consecutive well would aid in the determination of the most appropriate bottomhole locations in order to maximize recovery of the reserves. Petrofund explained that the conceptual development plan could change as wells were drilled and evaluated and the results of previously drilled wells were considered.

Petrofund stated that it would meet with area residents and landowners once the drilling results from the 7-4 well became known. Using the feedback and data from the drilling of the 7-4 well, Petrofund stated that it would try to present as many applications as it could to the community and the Board at one time. Petrofund provided assurance that all feedback from area residents and landowners would be taken into consideration prior to making decisions with respect to future development and surface locations. Petrofund confirmed that it would not be practical to apply for all future wells now, as there would be several decision points along the way. Although its proposed plan was outdated, Petrofund stated it could drill the first well in the third quarter of 2005 and the last well in the first quarter of 2007.

According to its historical and forecast production information, Petrofund predicted that it would take until the end of 2015 to produce about 500 000 barrels of oil, the amount the EUB currently estimates could be recovered. However, Petrofund stated that it estimated 25 million barrels of oil in place in the pool it was targeting. With that amount of oil, at a recovery factor of 22 per cent, Petrofund estimated that there were about 5.5 million barrels of oil for Petrofund to produce. If 8 wells were capable of producing about 100 barrels per day, Petrofund calculated that it would take until at least the end of 2015 to recover all the oil. Using new well data from the 7-4 well, Petrofund suggested that the EUB would probably undertake a review of its own estimates of the reserves, at which time the estimated reserves for the pool would likely increase.

Petrofund explained that once it drilled, tested, and produced the proposed 7-4 well, it would have a better idea of its probable exit date from the Armisie Field. Petrofund said it appreciated that area residents and landowners would prefer to see it exit as soon as possible. Petrofund believed that drilling the proposed 7-4 well along with another seven possible wells would greatly hasten the development and drainage of the Armisie Field. It stated that it did not currently have enough information to make the kinds of detailed assessments and commitments that area landowners and residents were seeking.

Petrofund did not accept that an exit deadline was warranted or required. Petrofund believed that it should be allowed to run its Armisie facilities so long as it continued to operate safely and in compliance with EUB regulations.

Petrofund asserted that its development and operation of the Armisie Field could co-exist with existing and future residential development in a manner that minimized impacts and would be safe and environmentally responsible.

Petrofund stated it had voluntarily established a program to fund its future reclamation and abandonment costs. For every barrel of oil equivalent produced, Petrofund said it contributed 15 cents into an asset retirement fund, which it stated stood at \$7.1 million as of December 31, 2004. According to Petrofund, the fund would only be used to finance its extraordinary reclamation and abandonment projects, such as the decommissioning of a large processing facility. Petrofund asserted that it had yet to take any monies out of the fund, as its regular annual site reclamation and abandonment costs were paid directly out of the company's cash flow. According to Petrofund, it spent \$4.6 million from cash flow on abandonment and reclamation projects in 2004, \$4.7 million in 2003, and \$2.2 million in 2002. Petrofund stated that it had budgeted \$4 to 5 million on reclamation and abandonment projects in 2005.

Petrofund maintained that its ability to fulfill its reclamation and abandonment obligation was regulated by the EUB's Licensee Liability Rating (LLR) Program. Petrofund explained that LLR was the ratio of total deemed assets to total deemed liabilities for all its well, battery, and pipeline licences issued by the EUB. According to Petrofund, if a licensee had an LLR rate less than a one-to-one ratio of assets to liabilities, the licensee was required to submit a security deposit to the EUB for the shortfall. Petrofund stated that its LLR, as of April 2, 2005, stood at 4.91; it explained that this meant that for every dollar of liabilities Petrofund incurred, it had about \$4.91 of assets. Based on this information, Petrofund concluded that it was in full compliance with the EUB's LLR Program and argued that it had the financial capability to fulfill its future reclamation and abandonment obligations.

Petrofund argued that since it was in compliance with the EUB's LLR Program, it was not necessary to have a segregated trust manage its asset retirement fund. Petrofund acknowledged that the asset retirement fund was completely voluntary, such that Petrofund could spend the money any way it saw fit.

7.2 Views of the Interveners

The WELG expressed a general concern with respect to Petrofund's lack of notification to area residents on various issues, including its field development plan. The WELG stated that it was concerned about an existing well at the 7-4 site, the applied-for 7-4 well, and all of Petrofund's existing, present, and future operations in the Armisie Field. The WELG stated that it also had

concerns regarding proliferation of facilities in the Armisic Field. It explained that there had been a lack of information for area residents with respect to Petrofund's long term plans and future development for the Armisic Field. The WELG stated that it wanted Petrofund to disclose its intentions for the Armisic Field and that the WELG was still willing to try to reach resolution with Petrofund.

Dr. Singh explained that about 11 to 13 years ago, he purchased a portion of land in LSD 3-4-52-25W4M, immediately adjacent and south of the existing 7-4 well site. Dr. Singh acknowledged that when he purchased the land, he was aware of the existing 7-4 well to the north of his land, as well as the existing 3-4 facilities on his land. He stated he was also aware of the risk that the facilities could be there in the future and that their presence could influence his future development plans, particularly if he ever chose to sell the land. However, Dr. Singh explained that he expected the pool to be exhausted much more quickly than it had been. He also thought the City would prevent continued oil and gas exploration and production in the area, since the city would eventually encroach on the existing facilities. He stated that he had no current development permit or land-use proposal.

Dr. Singh said he felt that with its plans for further development of the Armisic Field, Petrofund was abusing its right to the subsurface resource at the expense of the surface landowners. He indicated that Petrofund should drill the proposed well and exhaust the reserves in a reasonable amount of time in order to address the concerns of area residents. He stated that a timeline would aid in the protection of the interests of both Petrofund and society at large. Dr. Singh explained that it was vital for him to know how long it would take Petrofund to complete its operations in the Armisic Field so that he could decide how long it would remain worthwhile for him to hold his land to obtain maximum value before he sold. He maintained he had been unable to get any answers with respect to questions surrounding Petrofund's timeline for the area.

Dr. Singh suggested that Petrofund's asset retirement fund should be held in a segregated trust fund to ensure that it would be available if Petrofund should ever need it for extraordinary abandonment and reclamation work in the Armisic Field. Dr. Singh said that although he did not doubt Petrofund's present capability to meet its abandonment and reclamation responsibilities, he was concerned about Petrofund's ability to meet its obligations in the future. Dr. Singh noted that putting the asset retirement fund in a separate trust would do a great deal to resolve some of his concerns with regard to the security of the fund.

Dr. Singh stated that he had a basic understanding of the EUB's orphan well fund and the LLR program and he acknowledged that Petrofund was presently in compliance with the requirements of the LLR Program. He agreed with the EUB's principle that individual operators such as Petrofund should follow the abandonment and reclamation regulations and meet their obligations under those regulations rather than rely on the government to take care of these responsibilities for them. However, Dr. Singh was concerned that if Petrofund defaulted on its obligations, the government may not meet his expectation to reclaim the Armisic Field in a timely manner and in such a way that is satisfactory to him as a landowner.

The City stated that it was not opposed to Petrofund's well application. It explained that it was satisfied that Petrofund would make an attempt to expedite extraction of the resource in the Armisic Field. However, the City noted that it wanted the EUB and the applicant to be aware that Petrofund's timeline was somewhat of concern. It stated that it would be ideal if the pool were

exhausted before suburban development of the area occurred, but admitted that it would be difficult for the City to predict that time frame. The City conditionally agreed to support Petrofund's application if Petrofund endeavoured to hasten the process of withdrawing the resource and minimize the time frame for extraction in anticipation that the Armisic Field might be ready for urban development within 10 years. The City confirmed that it had not intended to impose a 10-year time limit on Petrofund's extraction of the resource by imposing this condition. It confirmed that while there was pressure for development as a result of the nearby Anthony Henday Drive extension, there were presently no development plans for the area around the Armisic Field. The City stated that additional urban development in the area within 10 years was possible but unlikely.

The City's written submission contained a number of "conditions" that it recommended the Board incorporate into any approval it may issue. During the oral portion of the hearing, the City's witnesses confirmed that the City did not intend to recommend that its "conditions" be imposed by the Board as conditions of the well licence (as the Board uses the term conditions); rather the City indicated that it would be acceptable if the Board recognized or supported the requirements that were outlined in the City's written submission.

7.3 Views of the Board

The Board sympathizes with Dr. Singh's position that at the time he purchased his lands he did not anticipate that the Armisic Field would still be on production some 13 years later. However, Dr. Singh acknowledged that he took a risk when he purchased the lands and that he had since received offers to purchase his lands. The Board also notes Dr. Singh's comment that Petrofund should be allowed to drill the 7-4 well so that more certainty around the exit date can be established.

The Board appreciates the interveners' concerns with regard to maintaining a separate, segregated trust to manage Petrofund's asset retirement fund. However, the Board recognizes that Petrofund's asset retirement fund is monies held voluntarily by Petrofund, which the EUB does not have authority to regulate. The purpose of the Board's orphan well fund is to protect Albertans from situations where energy companies default on their obligations. It is the Board's responsibility to ensure that Petrofund and other licensees fulfill all EUB regulatory requirements, including those obligations arising out of the EUB's LLR Program. The Board realizes that Petrofund's deemed asset-to-liability ratio is above the LLR threshold below which licensees are required to provide security deposits. Given Petrofund's compliance with the EUB's LLR requirements and Petrofund's practice of paying abandonment and reclamation work from its cash flow, the Board does not see a need to require Petrofund to hold its asset retirement fund under a segregated trust arrangement.

The Board notes the City's evidence respecting the anticipated time frame for development in the Armisic Field area. Having regard for the development horizon expected by the City, the Board recognizes that the potential for a shortened productive life of the facilities as presented in Petrofund's conceptual development plan will remove or at least minimize the possibility of conflict between the need to produce the reserves and the need to develop the land.

The Board notes the City's submissions respecting "conditions" it would like to see the EUB consider if the well licence were issued. When approving a well licence application, the Board may impose one or more conditions that require the licensee to do or not do certain things. In

that sense, a condition is an absolute obligation of the licensee, which if unfulfilled will in almost all cases lead the Board to take enforcement action. The Board may also recognize other obligations of the licensee, for instance, commitments the licensee may have made in agreements with landowners, without making the performance of those obligations a condition of the Board's approval. A failure of the licensee to fulfill a commitment may not result in enforcement action by the Board, but it may trigger a process that leads to the Board reviewing its decision to grant the licence. In this instance the Board does not see a need to condition the well licence to a specific timeline for completion of operations.

The Board is satisfied that the field development plan presented by the applicant represents an acceptable and reasonable development scenario designed to maximize the resource and minimize the impact on future developments, as well as provide local residents with an indication of future activity by the applicant.

8 OPERATIONAL MATTERS

8.1 Views of the Applicant

According to Petrofund, the existing 7-4 well was located about 12 kilometres (km) away from Edmonton's city limits when it was drilled in 1951. Petrofund stated that drilling in the Armisic Field continued through to the 1990s and that it purchased its Armisic facilities in the summer of 2001. It stated that it assessed and corrected the problems that existed, including improving the landscaping by planting trees around its existing battery located in LSD 6-4-52-25W4M (the 6-4 battery), which was promised but not fulfilled by the company that previously owned the battery. Petrofund outlined numerous practices that it adhered to each day at its facilities, including proactive communication and consultation, no flaring, more frequent maintenance of equipment, low-profile pumps where appropriate, daily inspections, and secure fencing for its wells and facilities. It also cited trucking and well servicing during daytime hours, sound reduction by using electric equipment as opposed to gas-powered engines, minimization of lease equipment in order to reduce the visual impact and the surface footprint, and special landscaping to reduce the visual impact.

Petrofund stated that it had been a member of the West Edmonton Operators Group (WEOG) since it purchased the Armisic Field in 2001. It explained that meetings were attended by companies operating in the west Edmonton area, as well as by EUB representatives. It further explained that the WEOG had developed increasingly stringent operating practices for the area. The group expected all operators in the area to follow these practices and Petrofund, as a member, adhered to and added to them.

Petrofund stated that it participated in the East Parkland Liaison Committee, a synergy group consisting of landowners, residents, oil companies, the EUB, representatives from Capital Health and Parkland County, and other interested parties. It explained that the group met once every three months to discuss oil and gas activities in the area and acted as a forum for questions and answers between different stakeholders. As an active member, Petrofund stated that it provided an update of its activities in the area at every meeting. At the April 12, 2005, meeting, Petrofund presented an update of its consultations with the City and Capital Health with respect to the proposed 7-4 well. At the meeting, Petrofund noted the following concerns of the various stakeholders: odours at its existing 6-4 battery, unacceptably noisy pump jacks at various pad

sites, and general concerns with respect to emissions in the area. In order to alleviate these concerns, Petrofund undertook various operational measures. It stated that it began conserving all solution gas, as gas had previously been flared or incinerated; it reduced the size of pumping units in order to provide a smaller visual profile; it installed higher horsepower motors in the driving units of pump jacks in order to reduce noise; and it installed two submersible pumps.

In addition to the measures listed above, Petrofund stated that a full-time company operator had been hired to look after the Armisie Field. Petrofund acknowledged that residents in the area had expressed continued concern with respect to air monitoring of existing facilities in the Armisie Field. Petrofund stated that it planned to enclose all wellheads with a small enclosure and to install an H₂S detector inside. Petrofund maintained that this would restrict air flow near the wellhead so if there were a leak, the restricted air flow would allow for early identification of the leak prior to it becoming an off-site odour. In addition, Petrofund further stated that the status of the pump jacks, as well as the position of the emergency shutdown valves at each wellhead, would be electronically monitored, so that Petrofund could respond appropriately to any changes to normal operating conditions at the well sites. All monitors and indicators would be alarmed to provide a call to Petrofund's operations personnel in the event of a situation that deviated from normal operations. Although operators kept a log of their attendance at each site, Petrofund explained that it was investigating the installation of electric monitoring devices in response to area residents' concerns with respect to operator attendance at its sites.

Petrofund stated that it had an environment, health, and safety (EH&S) group led by a knowledgeable and experienced manager, along with a coordinator who visited Petrofund's various operations in order to support and assist field staff in dealing with EH&S matters. It explained that its EH&S policy clearly stated Petrofund's commitment to protecting the environment, as well as the health and safety of the general public, its employees, and contractors.

Petrofund made a commitment to the Armisie Field residents that once any of its wells had reached the end of their production life, the well would be abandoned downhole and the upper portion of the well would be cut and capped below the surface. Petrofund also stated that it was committed to removing all pipelines and surface facilities upon abandonment in the Armisie Field so as not to hinder future urban development in the area. Petrofund stated that it had undertaken to put its plan in writing and to advise the area residents of steps it would take to meet its commitments to remove all equipment.

Petrofund recognized that it was a neighbour to the nearby residents and it stated that it sought a good-neighbour relationship with them. Petrofund explained that it would have preferred to drill the proposed well from an existing location at 3-4-52-25W4M. However, in an attempt to accommodate concerns of area residents, it changed its plan and applied to drill the proposed well from 7-4, as that was the farthest point from all area residents (the RHG and WELG members). It also committed to install a submersible pump at 7-4 and to discuss landscaping options at the well site with area residents. Petrofund described its interest in forming a working relationship with a group of interested landowners and residents with whom it could meet on a regular basis to keep all parties informed of activities and to keep Petrofund aware of their issues and concerns. Petrofund stated that it was committed to identifying area residents' concerns and determining whether there were reasonable solutions to the issues that could be implemented.

8.2 Views of the Interveners

The WELG stated that it was concerned about operational matters not only at the existing and proposed 7-4 site, but also within the Armisic Field in general and particularly at the existing well site in LSD 13-33-51-25W4M, with two producing wells with bottomholes in 11-33-51-25W4M and 6-33-51-25W4M and a suspended well with a bottomhole in 14-33-51-25W4M (the 13-33 facilities or the 13-33 site). The 13-33 facilities were located closest to the WELG members' homes.

Dr. Gotaas confirmed that he owned and resided on the land adjacent to the 13-33 facilities and at one time owned a portion of land in LSD 13. He acknowledged that the 13-33 facilities had been operating for several years before he purchased the land. He mentioned complaints relating to security issues and unauthorized use of the 13-33 site that dated back about 8 years. He acknowledged that he had not experienced these problems since Petrofund moved the gate to the 13-33 site farther up the access road, closer to 184th Street. Dr. Gotaas also complained of two other incidents. One involved a gas release at the 13-33 site, which resulted in an off-lease odour complaint and a subsequent EUB investigation. The other incident related to Petrofund having a rig on site without what Dr. Gotaas described as proper notification to the community. Dr. Gotaas noted that Petrofund had since apologized for the incidents. Dr. Gotaas further acknowledged that trees were planted around Petrofund's existing 6-4 battery site. He stated that he would also like to see state-of-the-art H₂S monitoring and submersible technology at Petrofund's sites.

Dr. Singh explained that he had at one time operated a goat farm on his land. He asserted that there was a high mortality rate in his herd, which he attributed to the oil and gas facilities in the Armisic Field. He said that he suffered a total loss of about \$80 000 to \$90 000 worth of livestock. Dr. Singh attributed his loss to the goats' proximity to the well on his land and the pollution created as a result of the well. Dr. Singh explained that at that time, he did not contact the EUB with his concerns but that he would in the future. He explained that he would like to hold further discussions with Petrofund and would be very interested in sitting down to discuss being part of a good-neighbour policy.

The City stated that it was in the process of reviewing its guidelines for oil and gas activity within its city limits and that it expected to have terms of reference in place by June 2005. In preparing its submission to the EUB, the City's Planning and Development Department said that it was in contact with a number of stakeholders, other city departments, utilities agencies, Capital Health, and some of the affected residents in the Armisic Field. The City stated that its submission was an attempt to provide conditional support to Petrofund's application. Although the City was aware of the existing Armisic Field facilities and had heard about the WEOG, it explained that it did not have much, if any, involvement in developing the standards by which the WEOG members operated. The City also acknowledged that it may have been aware of a 1983 Board inquiry into oil and gas development in the West Edmonton Area, but had not pursued any of the recommendations arising from that report.

8.3 Views of the Board

The Board notes that while the proposed 7-4 well is the subject of the hearing, the interveners' concerns go beyond that proposed well and include operational matters in the entire Armisic Field. The Board recognizes that the existing 7-4 well was drilled by a predecessor company to

Petrofund and has been on production since 1951. The Board is aware that there has been drilling activity in the Armisic Field as late as the mid-1990s, which may have been about the time that Dr. Gotaas and Dr. Singh purchased their lands. The Board notes that the interveners—the WELG, and Dr. Singh—were aware of the existing 7-4 well and Petrofund's Armisic operations when they purchased their respective lands. Indeed, a portion of Dr. Gotaas's lands were leased to Petrofund for its 13-33 facilities before he sold the land.

The Board recognizes that Petrofund and its predecessor had some past operational incidents in the Armisic Field and that Petrofund has attempted to resolve some of the interveners' concerns as they pertain to those incidents. Although the 13-33 facilities are not entirely relevant to the proposed 7-4 well, the Board is satisfied that Petrofund has taken appropriate actions to address a number of the issues surrounding the 13-33 facilities. The Board is further satisfied that the continued operation in its current setting is not a significant burden if proper care and attention are exercised by the operator. Therefore, the Board is of the opinion that pre-existing operational concerns in the Armisic Field are not an impediment to the future development and drilling of the proposed 7-4 well and that mitigative measures exist to minimize further impacts.

The Board has taken note of Petrofund's commitments to the Armisic Field area landowners and residents to properly abandon all facilities and reclaim the Armisic Field sites in accordance with all government (EUB and Alberta Environment) standards. The Board has also taken note of Petrofund's commitment to put a written plan into place to inform area landowners of the steps it intends to take to properly abandon the wells in the area, remove all surface facilities, and remove all pipelines upon Petrofund's or its successor's exit from the Armisic Field. The Board expects that Petrofund will honour its commitment to document its agreement with the Armisic Field area landowners and residents and to append it to the surface leases in the area in order to ensure that Petrofund's successors (if any) have notice of Petrofund's commitments.

The Board encourages the parties to develop a way to work together to address any future operational issues that may occur at the existing or the proposed 7-4 well and within the Armisic Field in general in a timely manner. The Board feels that there should be an opportunity for neighbours to discuss stakeholder issues. The Board regards Petrofund and the Armisic Field area residents as neighbours that need to work together on concerns regarding the proposed well and the existing facilities in the area throughout their operating life. The Board believes the working group program suggested by Petrofund should help to deal with those concerns if both sides can communicate openly. Additionally, the Board suggests that the parties work with the City to develop a plan on how to implement the recommendations resulting from the 1983 Board inquiry into oil and gas development in west Edmonton.

9 CONCLUSIONS

In the preceding sections, the Board has considered the evidence concerning possible local impacts of the proposed well and related facilities and has found that it is satisfied that the impacts can be mitigated by various actions by the applicant, both in the short term and longer term. The Board also believes that the additional well will provide data that will allow appropriate decisions to be made about the long-term production from the Armisic Field, which on the provincial level will accrue benefits to the Crown and at regional levels to the City through additional royalties and taxes. At the local level, the additional well could lead to an earlier departure of oil and gas facilities from the area or at least provide additional data to

determine an appropriate exit date. Weighing these benefits along with the need for the well against the impacts leads the Board to be satisfied that a well could be drilled, completed, and operated safely at the 7-4 location.

Dated in Calgary, Alberta, on July 28, 2005.

ALBERTA ENERGY AND UTILITIES BOARD

T. M. McGee
Presiding Member

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

D. K. Boyler, P.Eng.
Acting Board Member

APPENDIX 1 HEARING PARTICIPANTS

Principals and Representatives
 (Abbreviations used in report)

Witnesses

 Petrofund Corp.
 K. F. Miller

 N. F. Cronin
 R. P. Lermeyer
 L. B. Strong
 W. G. Tidmarsh
 D. J. Van Tetering, P.Eng.
 T. M. Gibson,
 of Gecko Management Consultants Corp.
 J. Hemstock, P.Eng.,
 of Gecko Management Consultants Corp.
 G. Morrison,
 of RGM Consulting Inc.

 West Edmonton Landowners Group (WELG)
 J. W. Bodnar

 B. Gotaas
 D. Gotaas
 R. Sulyma

The City of Edmonton (City)

 P. Ainslie
 B. Black

River Heights Group (RHG)

A. Hazlett

 S. P. Singh
 M. L. Engelking

S. P. Singh

Alberta Energy and Utilities Board staff

 G. Perkins, Board Counsel
 A. Cosijn
 D. McCluskey
 E. Simpson, Geol.I.T.
 J. Pane
 T. Bushell

APPENDIX 2 SUMMARY OF COMMITMENTS AND CONDITIONS

The Board notes throughout the decision report that Petrofund has undertaken to conduct certain activities in connection with its operations that are not strictly required by the EUB's regulations or guidelines. These undertakings are described as commitments and are summarized below. 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 the applicant, having made the commitments, to fully carry out the undertaking or advise the EUB if, for whatever reasons, it cannot fulfill a commitment. The EUB would then assess whether the circumstances regarding the failed commitment warrant a review of the original approval. The Board also notes that the affected parties also have the right to request a review of the original approval if commitments made by the applicant remain unfulfilled.

COMMITMENTS BY PETROFUND

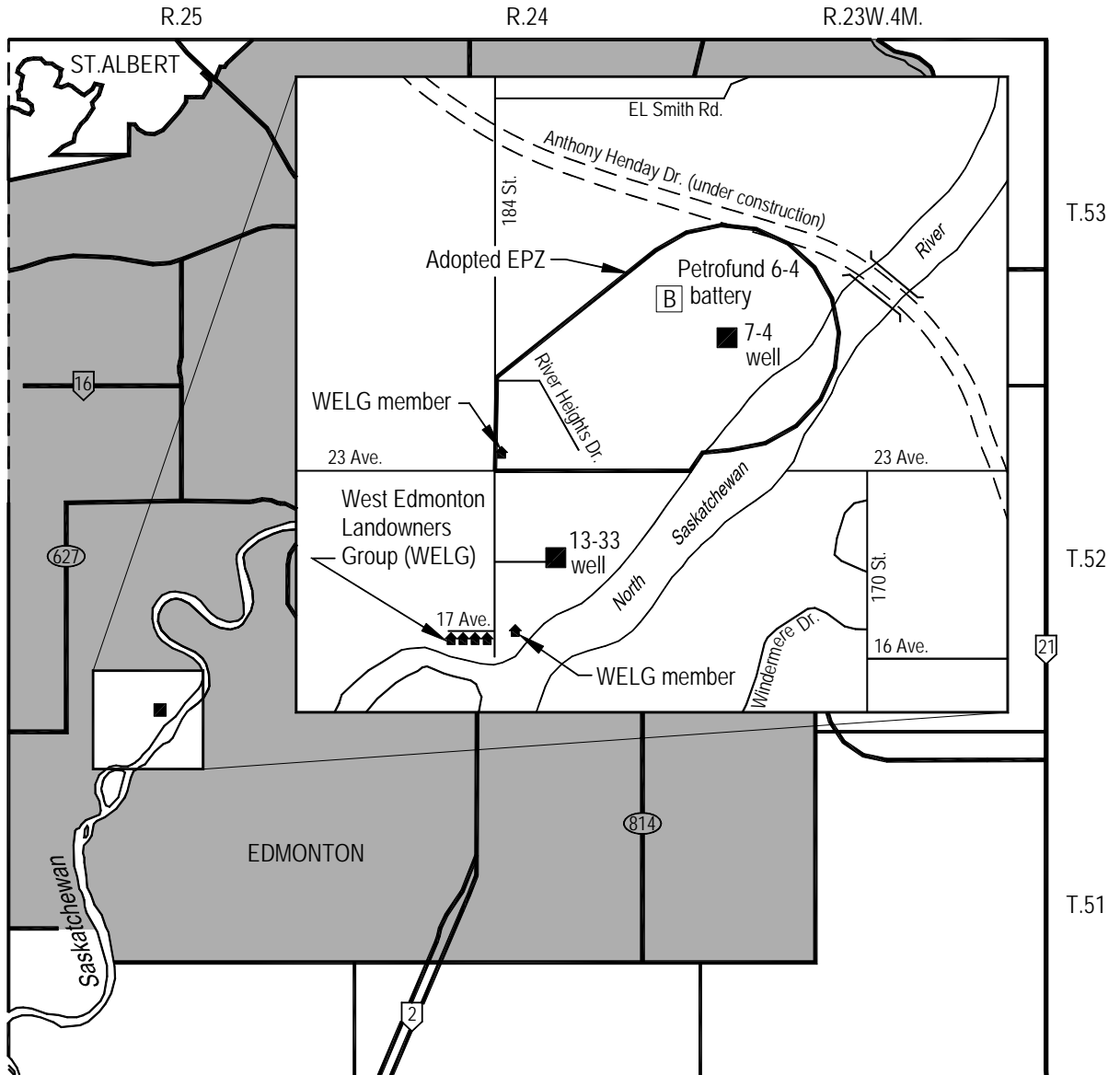
- Petrofund commits to meet with area residents and landowners and to share the 7-4 drilling results once they become known. Petrofund further commits that all feedback from area residents and landowners will be taken into consideration prior to making decisions with respect to future development and surface locations.
- Petrofund commits to present as many future applications as possible to the community and the Board at one time.
- Petrofund commits to enclosing all existing and future wellheads in the Armisic Field and to install automated H₂S detectors at any and each existing and future wellhead in the Armisic Field.
- Petrofund commits to investigate installing an electronic operator attendance monitoring system at all its Armisic Field facilities.
- Petrofund commits to downhole abandonment of all Armisic Field wells at the end of their production life.
- Petrofund commits to removing all Armisic Field pipelines and surface facilities upon abandonment and further commits to putting this plan into writing and appending same to the surface leases for each existing facility, well, and pipeline and any future facilities, wells, or pipelines.
- Petrofund commits to installing a submersible pump at the proposed 7-4 well site and to discuss landscaping at the well site with area residents.
- Petrofund commits to meeting with area residents and landowners on a regular ongoing basis to keep them informed of Petrofund's activities in the area so that Petrofund is aware of their concerns.

CONDITIONS

The conditions imposed on the licence are summarized below. Conditions generally are requirements in addition to or otherwise expanding upon existing regulations and guidelines. An applicant must comply with conditions or it is in breach of its approval and subject to enforcement action by the EUB. Enforcement of an approval includes enforcement of the

conditions attached to that licence. Sanctions imposed for the breach of such conditions may include the suspension of the approval, resulting in the shut-in of a facility. In this case, the Board notes that Petrofund has undertaken to conduct certain activities in connection with its operations that are not strictly required by EUB regulations or guidelines. The Board has decided to condition the licence as follows, which includes some of the commitments made by Petrofund.

- Petrofund must develop an ERP exercise in conjunction with the City of Edmonton and the Capital Health Authority. Petrofund must conduct, at a minimum, one full-scale exercise of its ERP not earlier than 90 days prior to the spud date of the well. Petrofund must also notify the EUB of the date on which it will conduct the exercise and must allow the EUB to observe the exercise. The exercise must demonstrate to the EUB's satisfaction that the ERP procedures are working as intended for immediate implementation of the ERP.



Legend

- ▲ Residence

Armisie Field Map