ALBERTA ENERGY AND UTILITIES BOARD
Calgary Alberta

THUNDER ENERGY INC.
APPLICATIONS TO MODIFY AN EXISTING SWEET GAS PROCESSING FACILITY TO A SOUR GAS PROCESSING FACILITY AND INCREASE THE HYDROGEN SULPHIDE CONCENTRATION OF EXISTING PIPELINES **Examiner Report 98-2**
KELSEY AREA **Applications No. 1007719 and 1013399**

1 INTRODUCTION

1.1 Applications

Thunder Energy Inc. (Thunder) submitted Application No. 1007719, pursuant to section 26, subsection (1)(b) of the Oil and Gas Conservation Act, on 2 May 1997, to modify an existing sweet gas processing facility located in Legal Subdivision 11 of Section 16, Township 44, Range 18, West of the 4th Meridian (Lsd 11-16-44-18 W4M) (the Kelsey plant) to a sour gas processing facility. The facility would be designed to process a maximum of 283 thousand cubic metres per day ($10^3m^3/d$) of gas with a sulphur inlet less than one tonne/day (t/d) and recover 268 x $10^3m^3/d$ of sales gas and 14.7 m^3/d of liquified petroleum gases, with sulphur emissions of 0.99 t/d. Thunder informed the Alberta Energy and Utilities Board (EUB or the Board) that it met all industry and public notification requirements. The EUB was satisfied that the application was complete and granted Approval No. 1997-1225 for the processing facility to Thunder on 24 June 1997. Thunder started operation of the sour gas processing facility in early January 1998.

Thunder also submitted Application No. 1013399, pursuant to Part 4 of the Pipeline Act, on 12 November 1997 to increase the hydrogen sulphide (H_2S) content to a maximum of eight moles per kilomole (0.8 per cent H_2S) of natural gas of three existing sweet natural gas pipelines which extend from Lsd 16-34-43-18 W4M to Lsd 6-10-44-18 W4M, from Lsd 10-2-44-18 W4M to Lsd 10-3-44-18 W4M, and from Lsd 6-10-44-18 W4M to Lsd 11-16-44-18 W4M.

1.2 Interventions

Signalta Resources Limited (Signalta) submitted an intervention on 27 August 1997, under section 43 of the Energy Resources Conservation Act (the Act), to amend or rescind Approval No. 1997-1225. On 14 November 1997, Signalta further requested that the approval be suspended and a hearing be held to consider Application No. 1007719. Signalta withdrew its request for suspension of the approval, the Board scheduled a public hearing and directed that the approval remain in effect pending the outcome of the hearing.

Signalta and Canadian Natural Resources Limited (CNRL) subsequently filed a joint intervention on 5 January 1998 respecting Application No. 1007719. Signalta and CNRL, which operate sour gas facilities located in Lsd 13-14-42-16 W4M (the Forestburg plant) and Lsd 13-14-44-17 W4M (the Holmberg plant), respectively, contended that appropriate industry

notification was not conducted by Thunder and that adequate consideration was not given to the feasibility of using existing sour gas processing facilities.

Submissions opposing the application were received from Mr. L. Bowie, a resident in the northeast quarter of Section 14-44-18 W4M, and the Confederation of Regions Political Party; however, these parties did not attend the hearing. Mr. V. Anez, who lives in Calgary, also filed an intervention but subsequently indicated that his concerns had been resolved and withdrew his submission. An intervention was filed by Mr. T. Bowie, a resident in the northeast quarter of Section 16-44-18 W4M, expressing his concerns regarding noise, odours, and emissions from the Kelsey plant. Mr. D. Anderson, Mr. R. Anderson, and Mr. R. Enright, residents in the northeast quarter of Section 17-44-18 W4M, the southeast quarter of Section 20-44-18 W4M, and the northwest quarter of Section 14-44-18 W4M, respectively, and the Alberta Surface Rights Federation (the Federation) did not file submissions prior to the hearing but appeared at the hearing.

The attached figure shows the approximate locations of the applied-for facility, other existing facilities in the area, and the residences of the local parties who intervened and/or attended the hearing.

1.3 Hearing

The applications were considered concurrently at a public hearing in Camrose, Alberta on 20 and 21 January 1998 before Board-appointed examiners C. A. Langlo, P.Geol., G. A. Habib, and T. J. Pesta, P.Eng. Those who appeared at the hearing and the abbreviations used in this report are listed on the following table.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Thunder Energy Inc. (Thunder) L. A. Cusano	D. A. Dafoe S. R. Gell, P.Eng. T. Meek, P.Eng. J. G. Farquharson, C.E.T of Patching Associates Acoustical Engineering Ltd. D. M. Leahey, Ph.D of Jacques Whitford Environment Limited J. J. O'Rourke, P.Eng. of O'Rourke Engineering Ltd.

THOSE WHO APPEARED AT THE HEARING (cont'd)

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Canadian Natural Resources Limited (CNRL) and Signalta Resources Limited (Signalta)[1] W. T. Corbett	T. Hamilton of CNRL H. M. Sorensen, P.Eng. of Signalta G. R. Warner, P.Eng. of Signalta
Alberta Surface Rights Federation (Federation) C. Mitzner T. Nahirniak	C. Mitzner
D. Anderson	D. Anderson
R. Anderson	R. Anderson
T. Bowie O. Johnson of Alberta Surface Rights Federation	T. Bowie
R. Enright	R. Enright
Alberta Energy and Utilities Board staff K. Eastlick L. Grossin S. Kelemen D. Larder	

1.4 Preliminary Matters

At the opening of the hearing, Thunder requested a ruling on whether the examiners were prepared to review Thunder's argument that Signalta's request for a hearing under section 43 of the Act was not filed within the allowed time limit and should therefore be dismissed. The examiners held that the Board had already made its decision in this regard by granting a hearing and that the examiners did not have the jurisdiction to review the Board's decision. Therefore, the examiners determined that the hearing would proceed without further consideration of this matter.

[1] CNRL and Signalta presented a joint witness panel and joint evidence at the hearing.

2 ISSUES

The examiners note that none of the interveners expressed opposition to approval of Application No. 1013399 respecting the pipelines. Therefore, this application was not considered at the hearing and will not be discussed further in this report. The examiners will recommend that Application No. 1013399 be dealt with without further notice.

The examiners believe the issues are:

- the need for sour gas processing,
- the need for the applied-for facility, and
- the impacts of the proposed facility.

3 NEED FOR SOUR GAS PROCESSING

3.1 Views of the Applicant

Thunder submitted that it first became active in the Kelsey area in 1996 through a series of acquisitions including the Kelsey plant and a sweet gas processing facility located in Lsd 6-13-44-18 W4M (the 6-13 plant). The Kelsey and 6-13 plants are interconnected by an existing gas gathering system. During the acquisition process, Thunder identified shut-in sour gas reserves in sweet gas wells and sour solution gas reserves which would require processing. It currently holds an interest in the mineral rights in approximately 108 sections of land in the Kelsey area and intends to actively drill to develop these rights. The applicant concluded that it requires sour gas processing to accommodate its current and future production.

3.2 Views of the Interveners

Signalta, CNRL, and other interveners present at the hearing did not dispute that sour gas processing is required for existing sour gas reserves and potential future sour reserves in the Kelsey area.

3.3 Views of the Examiners

The examiners are satisfied that there is a need to process sour gas from the Kelsey area. Further, the examiners are satisfied that Thunder has a right to produce its wells and that such production will require sour gas processing.

4 NEED FOR THE APPLIED-FOR FACILITY

4.1 Views of the Applicant

Thunder stated that the modification of the Kelsey plant is supported by a well thought out development plan for sweet and sour gas reserves in the Kelsey area. Thunder indicated that it initially investigated other processing options, including processing sour gas at the Holmberg and Forestburg plants. In evaluating these options, Thunder considered the diversity of its processing requirements including sweet and sour gas, high and low pressure gas, the need for guaranteed processing capacity, and the need to optimize the use of its existing facilities.

Thunder acknowledged that the Holmberg plant, which is located approximately 13 kilometres (km) from the Kelsey plant, is pipeline-connected to Thunder's gas gathering system; however, the applicant believed, through initial discussions with CNRL in December 1996, that guaranteed capacity was not available. The applicant confirmed that CNRL subsequently offered processing capacity at its plant on a reasonable-efforts basis in December 1997. Thunder also submitted that 20 km of CNRL's gas gathering system would have to be relicensed from 0.8 to 2 per cent H_2S to accommodate its higher H_2S content solution gas. The applicant therefore concluded that the Holmberg plant was not a viable option to process its sour gas.

Thunder submitted that the Forestburg plant, which is located approximately 35 km from the Kelsey plant, was also considered as an option. Thunder stated that Signalta initially offered to process 85 x 10^3m^3/d to 113 x 10^3m^3/d at a delivery pressure of 4482 kilopascals (kPa), whereas Thunder required 282 x 10^3m^3/d of commingled sweet and sour gas processing capacity at 1034 kPa. Thunder viewed the offered capacity to be insufficient for its needs and considered the delivery pressure to be significantly higher than its gas gathering system could supply. Further, Thunder submitted that additional pipelines would be required to connect the Thunder and Signalta gas gathering systems to process sour gas at the Forestburg plant and concluded that the Forestburg plant was not a viable option.

Thunder did not believe that the subsequent offer of Signalta and CNRL would meet its requirements. Signalta/CNRL offered processing capacity of 225 x 10^3m^3/d in total of which 98 x 10^3m^3/d would be on a firm basis. Thunder submitted that this latest offer would not satisfy its need for flexibility in its current and future production plans. The applicant contended that the remaining 127 x 10^3m^3/d offered on a reasonable-efforts basis did not guarantee sufficient capacity over the firm service volumes offered previously. Thunder also noted that Signalta had recently acquired land in the area and believed that it would give priority to processing its own additional production.

Thunder concluded that modifying the Kelsey plant to process sour gas and commingling sweet and sour gas through its existing gas gathering system was the best option. The applicant argued that this scenario would allow flexibility in future development of sweet and sour reserves, and optimization of the existing Kelsey plant, the extensive gas gathering system, and the 6-13 plant. Thunder submitted that extending the life of the Kelsey and 6-13 plants, and maintaining lower operating pressures in the existing gas gathering lines would optimize its ultimate recovery of gas reserves in the area.

Thunder stated that its development plan for the Kelsey area involved producing reserves with a short life index, including the Kelsey Lower Mannville B oil pool and associated sour solution gas, and building a long term reserve base of both sweet and sour gas. Thunder stated that sweet reserves would be produced first followed by sour reserves, with production rates limited to prevent water coning and to maximize hydrocarbon recovery. Thunder acknowledged that the amount of sour gas which it could produce would be restricted by the sulphur inlet rate of one t/d at the Kelsey plant; however, this was not considered a significant restriction in view of its long term production strategy.

Thunder submitted that processing sour gas at the Kelsey plant would result in favourable overall project economics. The proposed scenario would have a total project net present value of $11.5 million at a 10 per cent discount rate assuming a required capital investment of $1.5 million and an incremental operating cost of $0.10/thousand cubic feet (mcf). In contrast, Thunder's assessment of Signalta/CNRL's scenario would only yield a net present value of $7.8 million while requiring a capital investment of $2.7 million with an added processing fee of $0.40/mcf. Thunder concluded that comparative economics were in favour of its proposal over the Signalta/CNRL option and represented an efficient use of investment capital. However, Thunder did not believe that the relative economics should be a priority in determining which processing scenario should proceed as there are other factors to be considered, including the impact on utilization level of its existing Kelsey plant, gas gathering system, and the 6-13 plant. Thunder maintained that under the Signalta/CNRL option the economic viability of its existing facilities would be compromised as lower gas flow to its facilities would result in significantly higher per unit operating cost.

Furthermore, Thunder argued that retaining its development plan, while processing its sour gas at the Forestburg and Holmberg plants and maintaining its sweet gas processing at the Kelsey plant, would require unnecessary duplication of facilities. Thunder concluded that most of its existing gas gathering system, approximately 32.5 km of new pipelines, would need to be twinned, with additional pipelines required as future development occurs. Thunder also estimated that processing sour gas at the Holmberg and Forestburg plants would require three to five additional compressors on the gas gathering system. In contrast, Thunder's proposal would require approximately 4.6 km of new pipelines and no additional compression. The applicant added that under the Signalta/CNRL proposal a typical well in the area would be virtually uneconomic to drill in the future, given the combined cost of pipeline twinning and processing fees.

Thunder argued that the Kelsey plant is an existing sweet gas plant with a gas gathering system and compression already in place. It noted that the modification of the Kelsey plant would involve only the addition of an amine skid to an existing facility on an existing lease. The proposed modification would not involve additional land use, therefore, there would be no potential for local, environmental, and social impact concerns. Thunder added that its application was in complete compliance with the EUB's requirements. On this basis, the applicant contended that the modification to the Kelsey plant meets the criteria of economic, orderly, and efficient development.

4.2 Views of the Interveners

Signalta/CNRL characterized the Kelsey area as relatively mature in terms of development, with an overall annual production decline rate in the range of 20 per cent. It submitted that excess sour gas processing capacity is currently available and would increasingly be available in the future, through the Holmberg and Forestburg plants, as well as through other sour gas processing facilities located in Lsd 1-14-41-15 W4M, Lsd 1-17-42-13 W4M, and Lsd 3-32-45-21 W4M. Signalta/CNRL noted that all of these facilities are interconnected and that the operators have worked together on a voluntary basis to optimize the facilities by off-loading gas volumes when necessary.

Signalta/CNRL contended that Thunder did not thoroughly investigate all options prior to applying for the modification to the Kelsey plant. The intervener believed that a viable option would be to process sour gas and sour solution gas from the west Kelsey area at the Holmberg plant and to process sour gas from the south Kelsey area at the Forestburg plant. Signalta/CNRL stated that based on its experience, the most appropriate manner to produce the sour gas reserves would be to place the wells on production as soon as possible, while minimizing the drawdown to limit water coning and to maximize gas recovery. The intervener argued that this would also result in maximizing the project's net present value.

Signalta/CNRL submitted that under its processing scenario, Thunder would be guaranteed capacity of 28 x $10^3 m^3/d$ in the Holmberg plant and 70 x $10^3 m^3/d$ in the Forestburg plant, with remaining gas volumes processed on a reasonable-efforts basis. Signalta believed that on a reasonable-efforts basis, Thunder would still be guaranteed capacity unless plant turnaround or interruptions occurred. CNRL acknowledged that if its own gas deliverability increased, the available capacity for third party custom processing might be reduced. Signalta/CNRL also argued that its processing option would remove Thunder's sulphur flaring restriction of one t/d allowing Thunder to produce at higher rates and therefore securing superior project economics on a net present value basis. The intervener submitted an economic analysis based on its production forecast, indicating a net present value on a total project basis of $17.4 million, assuming a 10 per cent discount rate and a $0.40/mcf processing fee. A total capital investment requirement of $590,000 and $445,000 would be necessary for Thunder's gas to be processed at the Forestburg and Holmberg plants, respectively. Signalta/CNRL concluded that its proposed option was superior from an economic perspective.

Signalta/CNRL submitted that its proposal would require 4 km of new pipelines for Thunder to maintain sweet low pressure gas processing at the Kelsey plant and sweet high pressure gas processing at the 6-13 plant. Signalta/CNRL added that pipeline twinning would not be necessary to accommodate sweet and sour gas because some wells would deplete relatively quickly and pipelines could then be converted to sour service. Signalta/CNRL also estimated that three additional small compressors would be required on the sour gas gathering system as well as a compressor upgrade for Thunder's solution gas. Signalta/CNRL argued that its scenario would provide Thunder with an opportunity to accelerate gas production and improve the theoretical time period over which it could produce at a constant rate from approximately 20 years to 10 years. Further, the Signalta/CNRL option would provide Thunder with production flexibility through Signalta's off-loading capabilities.

Signalta/CNRL stressed that it has conducted as thorough an analysis as it could with the information provided by Thunder and that it would further refine its proposal if afforded the opportunity of detailed negotiations. The intervener maintained that the most reasonable destination for Thunder's sour solution gas and sour gas is the Holmberg and Forestburg plants.

Mr. L. Bowie and Mr. T. Bowie both indicated in their written submissions that they would prefer that Thunder's sour gas be processed through the Signalta/CNRL system.

The other interveners present at the hearing did not comment on the need for the new sour gas facility.

4.3 Views of the Examiners

The examiners accept that both Thunder and Signalta/CNRL have presented their positions based on significantly different production scenarios leading to different economic conclusions. The examiners note that total gas recovery estimates used by Thunder and Signalta/CNRL were the same and that differences in total project economics were due to differences in total investment required and timing of reserve depletion. Further, the examiners believe that based on the information submitted, neither option was clearly superior with respect to gas conservation.

The examiners accept that Thunder's option of processing sour gas at the Kelsey plant meets Thunder's needs for firm capacity and ongoing utilization of existing facilities including pipelines. Further, the Kelsey plant would provide processing flexibility to accommodate Thunder's existing gas processing requirements as well as future needs, particularly if Thunder anticipates additional drilling to the north and west of the Kelsey plant. The examiners believe that in the absence of any public interest impact that would cause the examiners to reject Thunder's option, the EUB should not intervene in competitive business decisions made by two industry participants. If neither option has an added advantage in terms of conservation of the resource, public health and safety, and avoidance of unnecessary environmental impact, then there is no basis for favouring one option over the other. In this particular case the examiners have concluded that Thunder's option would not negatively impact total resource recovery and conservation. Therefore, the examiners are satisfied that there is a need for sour gas processing at the Kelsey plant. Other public interest considerations will be discussed in subsequent sections of this report.

5 IMPACTS OF THE PROPOSED FACILITY

5.1 Views of the Applicant

Thunder stated that an evaluation of emissions of sulphur dioxide, hydrogen sulphide, and nitrous oxides from the modified Kelsey plant, based on plume dispersion modelling, confirmed that the ground level concentrations would be below maximum guideline concentrations specified by Alberta Environmental Protection (AEP). Thunder therefore concluded that these emissions would not have any adverse effects on the environment in this area and would not pose a health risk to people living in proximity to the plant. In response to questioning, Thunder indicated that its sour gas processing facility located in Lsd 15-34-43-18 W4M (the 15-34 plant), which is licensed for sulphur emissions of 0.26 t/d, was not included in the air emission study. However, Thunder stated that this facility is presently decommissioned and it has no plans to process gas at the 15-34 plant at this time. Thunder acknowledged that in order to comply with Alberta Ambient Air Quality Guidelines, sufficient fuel gas would have to be added to the acid gas flared to ensure a minimum heating value of 14 megajoules per cubic metre. The applicant stated that continuous air monitoring would occur during the start-up phase of the Kelsey plant and would continue until it was satisfied that the plant was operating appropriately. Thunder submitted that to provide better dispersion, the flare stack height at the Kelsey plant was built to exceed minimum height requirements. The applicant also confirmed that it would continue to investigate incineration, instead of flaring, to further reduce potential emissions of products including benzene, toluene, and carbon disulphide.

Thunder submitted that there would be no storage tanks for sour fluids at the Kelsey plant. Sour water and hydrocarbons from the inlet separator would be routed to a free water knock-out tank. Thunder believed that any liquid volume retained on site would be minimal because of prior well-site separation and removal. Pump trucks designed for sour vapours would empty the free water knock-out tanks approximately once a month.

Thunder stated that following acquisition of the Kelsey plant in 1996 a sound survey was conducted which indicated that the sweet gas processing facility was not in compliance with EUB regulations. Thunder subsequently implemented extensive modifications to lower the noise level. Thunder submitted that a noise impact assessment conducted in October 1997 confirmed that the addition of the amine skid would result in the modified facility being well within the permissible sound level set out in the Board's Noise Control Interim Directive 94-4 (ID 94-4). The applicant indicated that it was reviewing further modifications to reduce some aspects of plant noise in order to minimize impacts on area residents.

Thunder argued that the impacts of Signalta/CNRL's processing option would be greater because of the issues of noise, emissions, and land use conflicts associated with the construction of new pipelines and compression facilities. Thunder further suggested that there would be an increased risk involved with transporting sour gas over a greater distance to the Holmberg and Forestburg plants, rather than to the Kelsey plant.

Thunder submitted that its application was not for a new facility but rather a modification to its existing facilities. It noted that the lease was already in place and prepared. Thunder also added that gas gathering, compression, dehydration, and refrigeration were also in place. According to

Thunder, the addition of the amine skid would allow it to optimize not just the Kelsey plant but the 6-13 plant as well. In this context, Thunder believed that its proposed modification should not be considered as a proliferation issue. Thunder concluded that the modification to the Kelsey plant meets the guidelines respecting proliferation of gas processing plants and is in complete compliance with present regulations. Further, Thunder stated that it intends to remain active in the Kelsey area for a number of years and is committed to an ongoing review of new technology and a continuous consultation process with landowners to address any concerns which may arise.

5.2 Views of the Interveners

Signalta/CNRL did not comment on issues of noise, emissions, or the environmental impact of modifications to the Kelsey plant; however, the intervener submitted that it is not in the overall public interest to allow proliferation of additional sour gas facilities in an area where existing plants have excess capacity. In response to questioning, Signalta acknowledged that its Forestburg plant was built before new sulphur recovery guidelines were implemented, therefore, the plant was not required to recover sulphur. Signalta also noted that it had investigated options to flaring, such as acid gas injection. It stated that although reducing emissions was preferable in theory it may be difficult to implement from a technical and economic perspective. However, Signalta submitted that consolidating gas volumes at larger gas processing facilities may allow these facilities to implement incineration or acid gas injection more economically than smaller facilities, such as the Kelsey plant. Signalta stated that regardless of the outcome of this hearing, it would continue to flare gas at the Forestburg plant, however it would consider improving the plant within reasonable economic limits and would try to address any direct concerns of landowners in this regard.

Mr. Bowie stated that his primary concerns with the Kelsey plant were related to noise, emissions, and odours. He did not dispute the ability of the modified Kelsey plant to meet the noise guidelines set out in ID 94-4; however, he submitted that he should have the final say on acceptable noise levels. He expressed concerns over the efficiency of the flare stack at the Kelsey plant and emissions not included in the plume dispersion modelling or regulated by AEP including benzene, toluene, and carbon disulphide. He contended that there is a link between gas flaring and asthma and stated that he has an asthmatic condition. Mr. Bowie believed that Board regulations are out of date with respect to flaring and that the issue of eliminating flaring should be dealt with immediately. The intervener also expressed concerns regarding emissions from all sour gas plants in Alberta and with sour gas vapours being emitted from tanks at well sites. He concluded that landowners in the area considered incineration or acid gas injection as the only acceptable alternative to flaring at the Kelsey plant.

The Federation expressed general concern with gas flaring relevant to health issues in Alberta. Regardless of which plant processes the sour gas in question, the Federation believed that people who live in close proximity should not be exposed to emissions which would degrade their health and the health of their livestock. The Federation stated that flaring, with its accompanying air pollutants and associated health risks, must be eliminated. It argued that allowing flaring in view of the mounting evidence of health hazards is a violation of the human rights of parties who are forced to accept oil and gas wells on their lands and processing facilities in their neighbourhoods.

Mr. D. Anderson, the landowner of the Kelsey plant site, stated that there was no gain or loss to him with the addition of the amine skid. He submitted that the noise from the Kelsey plant has always been a problem, and noted that Thunder was the first operator to attempt to implement noise reduction measures. Further, he believed that Thunder had made an honest effort to work with landowners to resolve issues in the area.

Mr. R. Anderson stated that he did not like the expansion of the Kelsey plant; however, he recognized that the reserves needed to be produced. Further, Mr. Anderson submitted that in his experience with various oil companies, Thunder was the first operator to listen to the concerns of landowners, particularly with respect to the noise issue at the Kelsey plant.

Mr. Enright intervened in support of Thunder's application. He submitted that as a taxpayer in the County of Camrose for 25 years, he viewed the Signalta/CNRL proposal as expropriation of jobs and taxes which would otherwise remain in the county under Thunder's proposal.

5.3 Views of the Examiners

In assessing the impacts of the proposed facility, the examiners believe that they must have regard for the site-specific impacts associated with the facilities and operations.

The examiners are satisfied that the level of air emissions of sulphur dioxide, hydrogen sulphide, and nitrous oxides at the modified Kelsey facility would result in ground level concentrations in compliance with those allowed by provincial standards. The examiners note that the Holmberg and Forestburg plants are required to meet the Alberta Ambient Air Quality Guidelines. The examiners believe that overall emissions under either the Thunder or Signalta/CNRL option would be similar assuming all of the producible sour gas is processed at either facility because the acid gas extracted from the sour production would be flared in both cases. The examiners note that the sulphur inlet at the Kelsey plant would be below the daily rate for which sulphur recovery is required by the Sulphur Recovery Guidelines (IL 88-13) and that the Holmberg and Forestburg plants are also not currently required to recover sulphur under these guidelines. Based on Signalta/CNRL's proposal to produce sour reserves at a higher rate than Thunder, the examiners also believe that emission rates may be higher initially under the Signalta/CNRL option. The examiners believe that the implementation of a sulphur recovery process at either facility would have contributed to the attributes of that option. The examiners acknowledge the comments and concerns of parties at the hearing respecting flaring of gas and note that the EUB, AEP, industry, and the public are currently involved in a number of initiatives to address gas flaring issues in the province. The examiners find that Thunder's application would be in accordance with all current EUB and AEP requirements and therefore would be acceptable from an emissions point of view.

The examiners are satisfied that the addition of an amine skid to the Kelsey plant would not result in a significant increase in the noise level of the plant and that the modified Kelsey plant would meet the Board's noise control guidelines. The examiners note that Thunder has made modifications to the Kelsey facility to reduce noise and would continue to work with residents to further limit the impact of noise if necessary. Also, the Signalta/CNRL option would likely result in additional surface disturbance as a result of pipeline and compressor installation which could raise concerns of noise and emissions.

The examiners accept that the Thunder application involves modifications to an existing sweet gas facility, as well as utilizing existing gas gathering system and compression facilities. The examiners believe that the Thunder option is acceptable in terms of public interest issues such as the safe, economic, orderly, and efficient development of Alberta's oil and gas resources. Furthermore, the examiners believe that neither the Thunder option nor the Signalta/CNRL option has a significant advantage in terms of public health and safety and avoidance of unnecessary environmental impact. Therefore, the examiners conclude that the proposed modification to the Kelsey plant does not constitute gas plant proliferation.

The examiners acknowledge the supportive comments of some of the landowners respecting Thunder's willingness to address their concerns and to maintain open communication and expect that this would continue through all subsequent phases of operation of the modified facility.

6 OTHER MATTERS

The examiners heard representations from Thunder and Signalta/CNRL regarding interpretation of the requirements for notification of industry as set out in Guide 56, *Energy Development Application Guide and Schedules*. Guide 56 requires an applicant to consider all existing facilities in the area, the feasibility of upgrading an existing facility in commercial partnership with other operators, the area's future production potential, and inactive commercial wells in the area which might require processing capacity. In a case such as the proposed plant modification, a specific area of investigation of facilities is not prescribed, but the applicant is strongly encouraged to discuss its proposal with operators of similar facilities and/or pipelines that the applicant identified as viable alternatives, and with those that may be affected by the application. In determining the potential viability of alternatives, applicants are encouraged to place emphasis on the views of the operators of such similar facilities and/or pipelines, and this may require notification of operators of existing gas plants located some distance away from the proposed plant.

The examiners note that Signalta initially approached Thunder respecting gas processing capacity at the Forestburg plant, and that the gas gathering systems of both the Holmberg and Forestburg plants are located in close proximity to the Kelsey plant and Thunder's gas gathering system. The examiners therefore concur that CNRL and Signalta are potentially affected parties who did not receive direct written notice of this application from Thunder. The examiners endorse the intent of Guide 56 to encourage the exchange of information to fully meet the expectations of consultation.

The examiners also acknowledge the comments of some of the local interveners respecting the lack of direct participation by EUB staff at townhall meetings held by the applicant. The examiners note that the meetings in question were part of the applicant's public consultation process and that the role of Board staff at such meetings is as impartial observers to facilitate communication between industry and the public and not as active participants.

7 RECOMMENDATION

The examiners recommend that

- Approval No. 1997-1225 for the gas processing scheme remain in good standing, and
- Application No. 1013399 for the increase in the H_2S content of the pipelines be dealt with without further notice.

DATED at Calgary, Alberta on 25 March 1998.

<Original signed by>

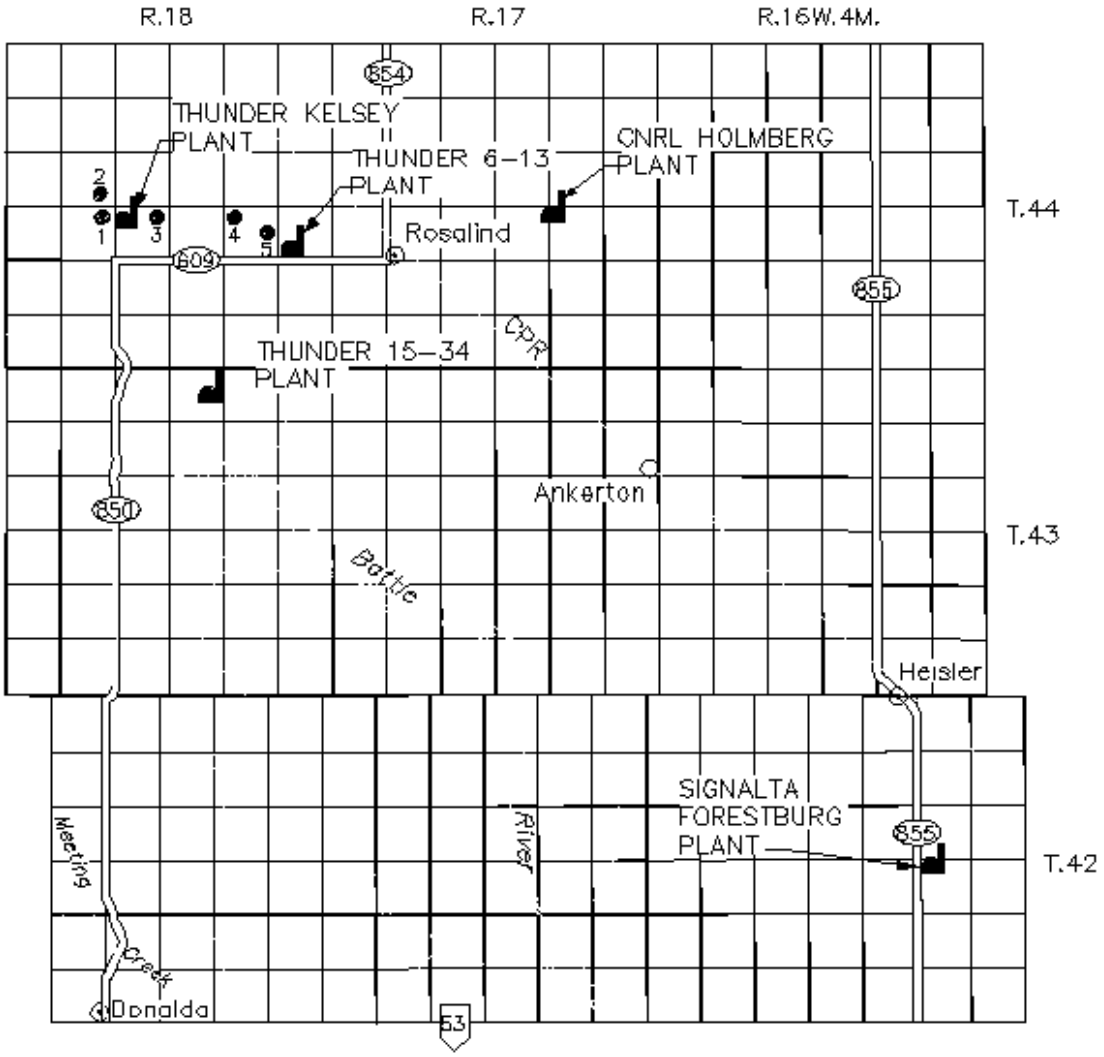
C. A. Langlo, P.Geol.

<Original signed by>

G. A. Habib

<Original signed by>

T. J. Pesta, P.Eng.



LEGEND:

- GAS PLANT
- RESIDENCE OF PARTIES WHO INTERVENED AND/OR APPEARED AT HEARING (SOURCE: EXHIBIT 8)
  1. D. ANDERSON
  2. R. ANDERSON
  3. T. BOWIE
  4. R. ENRIGHT
  5. L. BOWIE

OVERVIEW OF AREA
Applications No. 1007719 and 1013399

Examiners 98-2