

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

DYNEGY CANADA INC.

APPLICATION FOR PIPELINE LICENCE AMENDMENTS

OKOTOKS FIELD

PINON OIL AND GAS LTD.

APPLICATION FOR A SOUR GAS COMPRESSOR

STATION AND PIPELINE LICENCE

Default Addendum to Decision 2000-20

CROSSFIELD FIELD

Applications No. 1034767 and 1034762

**DECISION ADDENDUM—IN THE EVENT OF A FAILURE OF THE
OLLERENSHAW-SOUTZO LAND AND RESOURCE DEVELOPMENT AGREEMENT
ACCEPTED BY THE BOARD ON MARCH 21, 2001**

On March 31, 2000, the Board issued *Decision 2000-20* respecting the application by Dynegy Canada Inc. (Dynegy) for various pipeline licence amendments. In that decision the Board directed Dynegy to work with certain landowners to prepare and present a land-use and resource development (LRD) agreement within a specified time frame. This direction was contained in condition 3 of the Board's decision, which reads:

- 3) In Section 3.5 the Board outlines a framework intended to allow the continuation of operations of the Dynegy pipeline north of the Bow River but leading toward a potential restriction or phase-out. This would allow for the natural progression of land-use changes that are likely to happen on the Ollerenshaw and Soutzo lands. The Board directs Dynegy to work with respective landowners to provide the Board with a logical plan (the LRD agreement) to allow for the planning and development of urban growth into the area of Dynegy's pipeline. The plan is to be based on the planning and encroachment milestones identified by the Board in Section 3.5 and must be submitted to the Board by October 1, 2000. Should the parties fail to reach agreement within the time frame given, the Board would, based on the evidence at the hearing, prescribe a plan based upon appropriate planning mechanisms and/or establish a fixed term of continued operations for the Dynegy pipeline north of the Bow River.

Based on the assurance from all direct parties that additional time would result in the finalization of LRD agreements, the time frame was extended by the Board. The agreement submitted in response to condition 3 is attached as Appendix A (Ollerenshaw-Soutzo LRD Agreement) to this addendum.

In the Board's review of the Ollerenshaw-Soutzo LRD Agreement, the Board noted that it was not provided with the renewal periods set out in clauses 6 and 13 or the "contraction date" set out in clause 8. Staff advising the Board asked if it wished to address the term of the pipeline approval without knowing what term had been agreed upon in the LRD agreement. The Board concluded that it would be appropriate to do so based on the evidence at the hearing. Consequently, the Board separately determined a term for the pipeline by signed decision that would only be released in the event that the Ollerenshaw-Soutzo LRD Agreement failed. Following the Board reaching a separate determination for the term of the pipeline, the Board

was advised of the dates set out in clauses 6, 8, and 13. This addendum sets out the Board's decision in the event that the LRD agreement has failed.

The Board extends the Dynegy Chestermere pipeline Licences No. 21027 and 17711 for a minimum 12-year term commencing March 31, 2000, provided that prior to the end of the 12-year term the licensee initiates an informal written review of the licence. Interested parties will have an opportunity to participate in the written review process. Based on the Board's interpretation of the reserve estimates, the potential for new urban development and other relevant considerations, the Board will then determine whether to conduct a formal hearing. It is the opinion of the Board at this time that a formal hearing should be held if, after reviewing the written submissions, the Board is of the opinion that urban subdivision would be adversely effected by the presence of the existing pipeline within 5 years of the written review.

If the Board is satisfied after conducting the written review that urban subdivision development would not be adversely effected within 5 years, the Board is of the view at this time that the licence should continue in effect. Additional informal written reviews should be conducted every 3 years after the 12-year anniversary to examine the need to conduct a formal hearing based on the above criteria. The Board will require the licensee to commence the written review process in advance of the March 31, 2012, anniversary date.

DATED at Calgary, Alberta, on March 21, 2001.

ALBERTA ENERGY AND UTILITIES BOARD



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



G. C. Dunn, P.Eng.
Acting Board Member



N. G. Berndtsson, P.Eng.
Acting Board Member

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

DYNEGY CANADA INC.

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**Addendum to Decision 2000-20
Applications No. 1034767 and 1034762**

DECISION ADDENDUM

On March 31, 2000, the Board issued *Decision 2000-20* respecting the application by Dynegy Canada Inc. (Dynegy) for various pipeline licence amendments. In that decision the Board directed Dynegy to work with certain landowners to prepare and present a land-use and resource development (LRD) agreement within a specified time frame. This direction was contained in conditions 3 and 4 of the Board's decision, which read:

- 3) In Section 3.5 the Board outlines a framework intended to allow the continuation of operations of the Dynegy pipeline north of the Bow River but leading toward a potential restriction or phase-out. This would allow for the natural progression of land-use changes that are likely to happen on the Ollerenshaw and Soutzo lands. The Board directs Dynegy to work with respective landowners to provide the Board with a logical plan (the LRD agreement) to allow for the planning and development of urban growth into the area of Dynegy's pipeline. The plan is to be based on the planning and encroachment milestones identified by the Board in Section 3.5 and must be submitted to the Board by October 1, 2000. Should the parties fail to reach agreement within the time frame given, the Board would, based on the evidence at the hearing, prescribe a plan based upon appropriate planning mechanisms and/or establish a fixed term of continued operations for the Dynegy pipeline north of the Bow River.
- 4) The Board directs Dynegy to work with the Shields to develop a proposed resolution to allow the Shields to proceed with subdivision plans on their property. Within the context of the discussion in Section 3.5, the Board expects that priority will be given to a resolution that does not include additional ESD valves. The Board expects this resolution to be completed by October 1, 2000. Should a mutually satisfactory agreement not be achieved, the Board will take an approach similar to that outlined in *Decision 84-7* and revisit the need for additional ESD valves.

Based on the assurance from all direct parties that additional time would result in the finalization of LRD agreements, the time frame was extended by the Board. The agreements submitted in response to conditions 3 and 4 are attached as Appendix A (Ollerenshaw-Soutzo LRD Agreement) and Appendix B (Shields Agreement) to this addendum respectively. Most of the comments in this addendum are directed to the Ollerenshaw-Soutzo LRD Agreement, as this agreement has greater impact on pipeline Licences No. 21027 and 17711 (the Dynegy Chestermere pipelines).

Having reviewed the agreements, the Board appreciates the commitment and consideration the parties brought to reaching agreement on complex issues. During the Board's review of the Ollerenshaw-Soutzo LRD Agreement, the Board was not provided with the renewal periods set out in clauses 6 and 13 or the "contraction date" set out in clause 8. Staff advising the Board asked if it wished to address the term of the pipeline approval without knowing what term had been agreed upon in the LRD agreement. The Board concluded that it would be appropriate to do so based on the evidence at the hearing. Following the Board reaching a separate determination for the term of the pipelines, the Board was advised of the dates set out in clauses 6, 8, and 13. Consequently, the Board has separately determined a term for the Dynegy Chestermere pipelines by signed decision that will only be released in the event that the Ollerenshaw-Soutzo LRD Agreement fails.

In assessing the LRD agreements, the Board had regard for the effect of the agreements in the context of the evidence received at the hearing and the decision formulated by the Board following the hearing (*Decision 2000-20*). The Board is satisfied in each case that the LRD agreements are consistent with the conclusions previously reached by the Board and accepts the LRD agreements as commitments of the parties.

The Board accordingly will continue the Dynegy Chestermere Pipeline Licence No. 21027 and Sweet Fuel Gas Pipeline Licence No. 17711, having regard for the LRD agreement (Appendix A). Should the Ollerenshaw-Soutzo LRD Agreement fail under clauses 4 or 5, the Board will implement its decision on the pipeline term, which is currently held confidential.

Recognizing that certain provisions of the Ollerenshaw-Soutzo LRD Agreement require future well applications to the Board and that the entire agreement is then contingent on the Board's approving such wells, the Board obviously cannot adjudicate on those wells in advance of an application. Therefore, notwithstanding the Board's acceptance of the Ollerenshaw-Soutzo LRD Agreement, nothing in this decision addendum should be construed as a prejudgement or consideration of the merits associated with any future well applications contemplated by the LRD agreement. Any future well applications must be considered having regard for the information brought forward in association with such applications.

The Board notes that the parties to the Ollerenshaw-Soutzo LRD Agreement provided for a horizontal well licence approval date. The Board believes that there is some potential that the parties to the Ollerenshaw-Soutzo LRD Agreement may unanimously desire an extension to the one-year period referred to in clause 5. While the Board is not a party to the agreement, it has considered the potential for such a request and believes that the integrity of the LRD agreement would not be undermined should the parties jointly agree to a reasonable extension.

The Board notes that the termination notice provisions in clauses 4 and 5 of the Ollerenshaw-Soutzo LRD Agreement do not contemplate providing notice to the Board. However, as the Board has accepted the LRD agreement as part of its decision respecting the term of the pipeline, the Board expects that any notice under either clause 4 or 5 shall be provided by Compton Petroleum Corporation to the Board within the same time limitations as those provided for notice to Ollerenshaw and Soutzo.

The Board recognizes the agreement reached between the Shields and Dynegy (Appendix B). The Board notes the addition of block valves to reduce the level of the pipeline through the Shields' property on SW 12-22-29W4. The Board notes that Dynegy must submit an amendment to its emergency response plan (ERP) prior to the installation of the valves.

The Board thanks each of the parties to both LRD agreements for their efforts in reaching consensus agreements that are consistent with the Board's conclusion and direction in *Decision 2000-20*.

DATED at Calgary, Alberta, on March 21, 2001.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

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

<original signed by>

G. C. Dunn, P.Eng.
Acting Board Member

<original signed by>

N. G. Berndtsson, P.Eng.
Acting Board Member

ADDENDUM TO DECISION 2000-20

APPENDIX A – OLLERENSHAW-SOUTZO LRD AGREEMENT

February 15, 2001



Ollerenshaw Ranch Ltd.
Robert Ollerenshaw
Alexander (Sandy) Soutzo
c/o Carscallen Lockwood LLP
1500, 407 – 2nd Street S.W.
Calgary, Alberta T2P 2Y3

Attention: Stan Carscallen, O.C.

Dynegy Canada Inc.
Suite 2200, 350 – 7th Avenue S.W.
Calgary, Alberta T2P 3N9

Dear Sir:

Subject: Land Use and Resources Development Agreement

Reference is made to Decision 2000-20 of the Alberta Energy and Utilities Board (the "Board") and particularly Section 3.5.3 thereof where the Board requested that the parties work to develop a land-use and resource development agreement. Dynegy Canada Inc. ("Dynegy"), Compton Petroleum Corporation ("Compton"), Ollerenshaw Ranch Ltd. and Robert Ollerenshaw (collectively "Ollerenshaw") and Alexander (Sandy) Soutzo ("Soutzo") hereby agree to such land-use and resource development agreement on the following terms and conditions:

1. It shall be a condition precedent to this Agreement that its terms and provisions shall be approved, consented to or otherwise implemented or acted upon by the Board. The date upon which such approval, consent, implementation or action occurs shall be called the "Commencement Date".
2. Compton's natural gas reserves north of the Bow River and contained within the Okotoks Wabamun B Pool, including third parties interests in such reserves that are operated by Compton (herein collectively "Compton's Reserves") will be subjected to accelerated depletion through two independent horizontal wells approximately 1600 meters in length (the "Horizontal Wells"), the existing vertical well at 10-13-22-29-W4M (the "10 of 13 Well") and all other wells to be located approximately at the 10 of 13 well site (collectively called the "10-13 Wells"). Subject only to the remaining existence of the 11 of 24 Well referred to below, Compton's Reserves will not be produced from any wells located north of the Bow River other than the 10-13 Wells.

Suite 3100, 150 – 6th Avenue SW, Petro-Canada Centre, West Tower, Calgary, Alberta T2P 3Y7 Telephone: (403) 237-9400 Fax: (403) 237-9410
Website: www.comptonpetroleum.com

3. All of the parties will be supportive of the concept of accelerated depletion of Compton's Reserves in a manner consistent with the timing and other parameters set forth herein. Specifically (i) Ollerenshaw and Soutzo will actively and publicly support Compton's and Dynegey's actions and procedures, including participation in regulatory proceedings, to effect such accelerated depletion and (ii) support will be given to any application for waiver of or exemptions to the rules for drilling and production of spacing units and all other rules and regulations that might otherwise prevent multiple well drilling and accelerated production from one site or one pool.
4. Forthwith after the Commencement Date, Compton shall proceed as expeditiously as reasonably possible to file with the Board well licence application(s) for the Horizontal Wells and any other wells referred to in clause 2 hereof and shall use all its reasonable best efforts to have such application(s) approved by the Board at the earliest possible time. The date which is five days after the approval by the Board, on terms and conditions acceptable to Compton, acting reasonably, of such well licence application(s) for the Horizontal Wells shall be called the "Horizontal Well Licence Approval Date". Within 5 business days after its receipt of notice of such approval by the Board, Compton shall advise Ollerenshaw and Soutzo whether or not the terms and conditions thereof are acceptable to Compton, provided however, that if Compton fails for any reason to give such advice within that time, it shall be conclusively deemed to have found such terms and such conditions fully acceptable.
5. It shall be a condition of this Agreement that if the Horizontal Well Licence Approval Date has not occurred within one year after the Commencement Date, then Compton, having proceeded expeditiously and having used its reasonable best efforts in connection with the well licence application(s) as aforesaid, shall have the right, by notice to the other parties to this Agreement, to terminate this Agreement provided that if the well license hearing has been completed and all evidence presented but the Board's decision has not been rendered, then the one year period referred to herein shall be extended until the date of the Board's decision. Any notice by Compton terminating this Agreement shall be given within 30 days after the end of the one year period or Board's decision, as applicable.
6. The Board will renew the licence for the pipeline from 12-20-22-28-W4M to 10-2-22-29-W4M (the "Chestermere Pipeline") for a period of 16 years commencing on the Commencement Date, provided that if this Agreement is terminated by Compton as aforesaid, then the Board, as soon as practicable thereafter, will make a further decision respecting the licensing of the Chestermere Pipeline on the basis of the record in the Decision 2000-20 proceeding and without reopening that proceeding, resuming that hearing or commencing any other proceeding or hearing.
7. No new petroleum or natural gas wells having a surface location on Sections 23, 24, 25 or 26-22-29-W4M will be drilled by or on behalf of Compton to produce from any formation and any petroleum and natural gas wells drilled by or on behalf of Compton on

Section 13-22-29-W4M (to any formation) will be located approximately at the 10-13 well site.

8. No later than the date that is 7.5 years after the Horizontal Well License Approval Date (the "Contraction Date"), the well located on LSD 11-24-22-29-W4M (the "11 of 24 Well") will be fully abandoned and the well site will be fully reclaimed. Upon the abandonment of the 11 of 24 Well, the tie-in lateral from the 11-24 Well to the Chestermere Pipeline will be fully decommissioned and abandoned.
9. The parties acknowledge and agree that the 11 of 24 Well is now and will remain until its abandonment a Level 1 facility and subject therefore to the appropriate Level 1 setback and emergency planning zone ("EPZ").
10. If at any time up to the abandonment of the 11 of 24 Well, Ollerenshaw determines that the set back or the EPZ applicable to the Chestermere Pipeline as a Level 2 facility north of the 10 of 13 well site is a hindrance to the planning of urban development of section 23 and the W½ of 24-22-29-W4M (the "Ollerenshaw Lands") then, where it is reasonable to do so in the circumstances, Ollerenshaw may by notice to Dynegy require Dynegy to take whatever reasonable steps may be necessary and appropriate to cause that segment of the pipeline to be changed to a Level 1 facility and all such steps will be taken within six months after such notice.
11. Upon the abandonment of the 11 of 24 Well, Dynegy will conduct its operation of the Chestermere Pipeline in such a way that there will be no set back and no EPZ from the Chestermere Pipeline north of the 10 of 13 well site that will exceed those applicable to a Level 1 pipeline. Furthermore, Dynegy will also conduct its operation of the Chestermere Pipeline north of the 10 of 13 well site such that if the laws, regulations, rules, practices or directives of the Board change so as to increase the extent of the set backs and/or EPZ arising from the Chestermere pipeline insofar as they affect the Ollerenshaw Lands, then Dynegy shall use all reasonable best efforts to alter the makeup of the gas or its constituents, the pressures, the volumes or other operational factors so as to prevent any extension of either the setback or the EPZ insofar as they affect the Ollerenshaw Lands from what they would be for a Level 1 pipeline on the Ollerenshaw Lands as at the date hereof.
12. If after the Contraction Date, Soutzo determines that the setback or the EPZ applicable to the Chestermere Pipeline as a Level 2 facility south of the 10 of 13 well site is a hindrance to the planning of urban development of any of the Ricardo Ranch Lands, (as defined in clause 17 hereof) then, where it is reasonable to do so in the circumstances, Soutzo may by notice to Dynegy require Dynegy to take whatever reasonable steps may be necessary and appropriate to cause that segment of the pipeline to be changed to a Level 1 facility and all such steps will be taken within six months after such notice.
13. No later than the date which is 16 years after the Commencement Date, all Compton wells on Section 13 shall be fully abandoned and all well site(s) including without

restriction the well site at 10 of 13, shall be fully reclaimed. The Chestermere Pipeline north of the Bow River will at that time be decommissioned and abandoned and no replacement pipeline will be built that will result in a setback or EPZ that encompasses any of the Ollerenshaw Lands or Ricardo Ranch Lands. The Chestermere Pipeline south of the Bow River will be operated by Dynegy in such a way that there will be no setback or EPZ therefrom that will exceed those applicable to a Level 1 Pipeline. For all purposes hereof, the "Chestermere Pipeline" shall refer to not only the single line of pipe currently existing within the subject pipeline right of way, but also all other pipelines and facilities that may from time to time in the future be installed in the pipeline right of way pertaining to the Chestermere Pipeline as defined above in paragraph 6.

14. From and after the Commencement Date, all testing of the 11 of 24 Well and the 10-13 Wells, including all production testing and AOF tests, will be done into the Chestermere Pipeline such that there will be no further flaring whatsoever from those wells, except as may be absolutely necessary in accordance with the rules of the Board in face of an emergency or where foreign materials or substances cannot otherwise be removed from the wells, or in order to prudently operate the said pipeline and wells, on the basis and understanding that flaring shall not be the practice and shall under all such circumstances be kept to an absolute minimum.
15. This Agreement is an agreement running with the mines and minerals and surface interests (where the freehold mines and minerals are owned by Compton and are currently understood to include recoverable reserves in the Okotoks Wabamun B Pool), such that this Agreement will be protected by caveat to be registered at the Land Titles Office against the applicable mineral and surface titles.
16. At the time of submission of this Agreement to the Board, the parties will make a joint submission to request that the Board have its staff meet with City of Calgary administration and the Alberta Provincial annexation authorities and that the Board take all other steps reasonably available to it to clarify that the sour gas facilities adjacent to southeast Calgary should not be a constraint to annexation as the board has said it is prepared to do in section 3.5.3 of the Board's Decision 2000-20.
17. At all times, subject to the terms of this Agreement, (i) both Compton and Dynegy will not directly or indirectly oppose the annexation into the City of Calgary of any lands owned by Ollerenshaw or by the Ricardo Ranch (being all of the lands owned at the date hereof by Alexander (Sandy) Soutzo and Constantine Soutzo), nor will they oppose any land development plans and proposals of Ollerenshaw or Soutzo or their agents with respect to Sections 13,23,24 or 26-22-29-W4M or any other lands owned by Ollerenshaw or Ricardo Ranch Lands provided that such plans and proposals are not inconsistent with the terms, conditions and intent of this Agreement, and (ii) Ollerenshaw and Soutzo will not directly or indirectly oppose any actions or proceedings of Compton or Dynegy, acting reasonably, that either of them may conduct or wish to conduct to give effect to the terms of this Agreement.


- 18. This Agreement is for the benefit of and will be binding upon the parties hereto and, not only their respective heirs, executors, administrators, successors and assigns, but also their respective successors and assigns as surface as well as mineral title owners.
- 19. The parties acknowledge and agree that it is a condition to this Agreement that Compton and Soutzo shall have concurrently entered into a surface lease agreement in respect of the use of the 10-13 well site for the operations of Compton contemplated hereunder.
- 20. The parties acknowledge and agree that the terms of this Agreement will be evidenced by a formal land-use and resource development agreement which will be completed as soon as reasonably practical. Until the execution and delivery of such formal agreement, this Agreement shall constitute a valid and binding agreement among the parties.
- 21. This Agreement may be executed in separate counterparts and all executed counterparts together shall constitute one agreement. A facsimile copy of an executed counterpart signature page will be as valid as an originally executed counterpart for purposes of signing this Agreement.

Yours truly,
COMPTON PETROLEUM CORPORATION

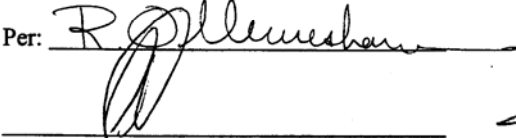
Per: 

Agreed to as of the day and year first above written.

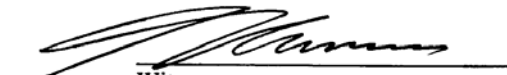
Dynegy Canada Ltd.

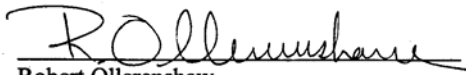
Per: 

Ollerenshaw Ranch Ltd.

Per: 

Alexander Sandy Soutzo


Witness


Robert Ollerenshaw


Witness

327148_2

ADDENDUM TO DECISION 2000-20

APPENDIX B – SHIELDS AGREEMENT

ROONEY PRENTICE
BARRISTERS



February 2, 2001

Alberta Energy and Utilities Board
640 - 5th Avenue S.W.
Calgary, Alberta
T2P 3G4

Attention: William Kennedy

Dear Sir,

**Re: EUB Application Nos. 1034767 and 1034762
Our File No. 3-061-415**

The purpose of this letter is to document for the Board the agreement that has been reached between Roger and Valerie Shields and Dynegy Canada Inc. with respect to the continued operation of Dynegy's Chestermere Pipeline (Licence No. 21027) as per the Board's Decision 2000-20 dated March 31, 2000. The formal agreement which the parties have entered into is confidential. However, we set forth below the main features of the agreement. The parties are agreed that this letter may become part of the formal record of Application No. 1034767, which was Dynegy's application to the Board for approval to extend the operating term of the Chestermere Pipeline.

Briefly, the main features of the agreement are as follows:

1. The Shields' hereby withdraw their objection to the continued operation of the Dynegy Chestermere Pipeline.
2. There shall be no time limit on the operating term of the Dynegy Chestermere Pipeline.
3. It is the intention of the Shields to commence development of a portion of the SW 12-22-29-W4M as a country residential subdivision. The approval process for such a development involves approval of an area structure plan (ASP), land use bylaw redesignation (rezoning), approval of a tentative or outline plan of subdivision and approval of a final legal plan of subdivision.

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Office: (403) 266-6105 Facsimile: (403) 266-6109


Dynegy will support the Shields in obtaining their necessary approvals. While the Shields' will have sole responsibility for obtaining their approvals, Dynegy will be available, on reasonable request, to help explain to the relevant planning authorities or to members of the public, how the continued operation of the pipeline is compatible with the country residential development being proposed by the Shields. In particular, Dynegy will explain the changes to the operation of the Chestermere Pipeline, outlined below, that will facilitate the development of the Shields' property.

4. Upon the Shields' obtaining approval of an outline plan of subdivision, Dynegy will forthwith and expeditiously undertake measures to change the Chestermere Pipeline from a Level 2 to a Level 1 facility (as defined in EUB *Interim Directive ID 81-3: Minimum Distance Requirements Separating New Sour Gas Facilities from Residential and Other Developments*) in the SW 12-22-29-W4M, through the appropriate combination of reducing the operating pressure of the Chestermere Pipeline and the installation of additional line block valves. The precise configuration of additional block valves and the changes to the pipeline's operating pressure shall be at Dynegy's sole discretion. However, the location of any future block valves shall be determined by agreement between Dynegy and the Shields, subject to physical and operational requirements and sound engineering practice.
5. Dynegy will also change the existing block valve shelters and fences to reduce their visual impact while maintaining appropriate security for the valves and the pipeline. Dynegy will consult with the Shields as to the design and color of the block valve shelters.
6. Dynegy will contract with the Shields for two new block valve sites and access to those sites now. Dynegy will provide the Shields with non-refundable compensation payable upon execution of the agreement. In addition, there will be annual rentals payable.
7. While the design of the subdivision is within the Shields' sole discretion, the Shields will consult with Dynegy and agree that the subdivision shall be configured such that the pipeline right of way falls entirely within a single lot. Further, the Shields agree that said lot shall not be developed during the currency of the pipeline's operation.

8. The agreement shall be binding on successors and assigns. In particular, Dynegy confirms that the agreement shall be binding on future owners of the Chestermere Pipeline.

We trust the foregoing provides the Board with the level of detail it requires, as per Decision 2000-20. Please do not hesitate to contact the writer should you require any further information. Thank you.

Sincerely,
ROONEY PRENTICE



Gavin S. Fitch

GSF/cg

cc. Dynegy Midstream Services
Attention: Mr. Peter Coldham

cc. Roger Shields

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

DYNEGY CANADA INC.

APPLICATION FOR PIPELINE LICENCE AMENDMENTS

OKOTOKS FIELD

PINON OIL AND GAS LTD.

APPLICATION FOR A SOUR GAS COMPRESSOR

STATION AND PIPELINE LICENCE

CROSSFIELD FIELD

Decision 2000-20

Applications No. 1034767 and 1034762

1 DECISION

Having considered all of the evidence presented and pursuant to Application No. 1034767 by Dynegy Canada Inc. (Dynegy), the Alberta Energy and Utilities Board (EUB/Board) has concluded that the continuance of operation of the Dynegy Chestermere pipeline is in the public interest, and the Board is prepared to extend Dynegy's licences. Subject to the terms described in this decision, the Board will issue amendments to pipeline Licences No. 21027 and 17711 following the submission of the requested Land-use and Resource Development Agreement (LRD agreement) by October 1, 2000. As described in Section 3.5 of this decision, the Board requires Dynegy to work with the interveners identified to detail, document, and agree upon specific criteria and milestones to consider the progress of land-use and development events within the vicinity of Dynegy's Chestermere pipeline. The Board has described a framework that it expects the parties to use to conclude the agreement and requires the parties to report back within the time frames noted in this decision.

Should the parties fail to reach agreement by that time, the Board will determine specific conditions for the operation of the Dynegy Chestermere pipeline based on evidence presented at the hearing. This may include the determination of a specific term or a term with conditions. The Board extends the current interim operating approval of Dynegy's pipelines until November 1, 2000. Conclusions on the Dynegy application are documented in Section 3.7 of this decision.

Having considered all of the evidence before it, the Board concludes that Application No. 1034762 by Pinon Oil and Gas Ltd. (Pinon) is in the public interest and is prepared to approve the pipeline and compressor station as applied for. The Board will require Pinon to strengthen its efforts in public communications. Conclusions on the Pinon application are documented in Section 4.6 of this decision.

2 INTRODUCTION

2.1 Applications and Interventions

Application No. 1034767

Dynegy Canada Inc. (Dynegy) submitted an application to the EUB pursuant to Part 4 of the Pipeline Act requesting approval to extend the operating term of its sour gas pipeline

(Licence No. 21027) and its sweet fuel gas pipeline (Licence No. 17711) in the Okotoks field to the year 2014. The existing sour gas pipeline is approximately 10.3 kilometres (km) in length with a maximum 168.3 millimetre (mm) outside diameter (O.D.). It originates in LSD 12-20-22-28W4M and ends at a pipeline tie-in point at LSD 10-2-22-29W4M and is referred to as the Dynegy Chestermere pipeline in this decision. The sour gas pipeline consists of level-1 and -2 pipeline segments transporting sour gas containing 374.9 moles per kilomole (mol/kmol) of hydrogen sulphide (H₂S). The existing sweet fuel gas pipeline connects to a pipeline tie-in point at LSD 10-2-22-29W4M and extends to three gas wells located at LSD 10-13-22-29W4M, LSD 11-24-22-29W4M, and LSD 10-20-22-28W4M. The existing pipeline licences 21027 and 17711 expired on May 11, 1999, but the pipelines were permitted to remain in operation pending consideration of this application by the Board.

Application No. 1034762

Pinon Oil and Gas Ltd. (Pinon) submitted an application pursuant to Section 7.001 of the Oil and Gas Conservation Regulations requesting approval to construct and operate a sour gas compressor station in LSD 10-21-23-28W4M. In addition, Pinon's application proposes, pursuant to Part 4 of the Pipeline Act, to construct and operate a sour gas pipeline of approximately 11.3 km with a maximum 114.3 mm O.D. from the proposed compressor station in LSD 10-21-23-28W4M to a pipeline tie-in point on Dynegy's existing sour gas pipeline (Licence No. 21027) located at LSD 12-20-22-28W4M. Pinon's proposed sour gas pipeline would be a level-1 pipeline transporting sour gas containing 20 mol/kmol H₂S.

Existing and proposed pipelines, wells, and facilities, along with emergency planning zones and certain residences in the immediate area are shown on Figures 1 and 2. The Okotoks and Crossfield gas pools are shown on Figure 3.

The Board received objections to the proposed projects from area landowners in December 1998, when the subject applications were submitted. Subsequently, the Board directed, pursuant to Section 29 of the Energy Resources Conservation Act, that a public hearing be held to consider Applications No. 1034767 and 1034762. The Board received submissions from various interested parties on March 26, 1999, June 11, 1999, and August 4, 1999, in opposition to the applications.

An intervention by Bearspaw Petroleum Ltd. (Bearspaw) was based in part on a competing application to handle Pinon's production at its existing facilities. Bearspaw's application was scheduled for a hearing commencing on December 13, 1999. Prior to the December 13, 1999 hearing, Bearspaw withdrew its application and the hearing was cancelled.

2.2 Hearing

As a result of requests by interveners for an adjournment from the original hearing date of April 6, 1999, the Board rescheduled the hearing to June 22, 1999. Prior to the latter date, requests were made for a second adjournment by various interveners, and the Board rescheduled the hearing to August 18, 1999.

The Dynegy and Pinon applications were heard consecutively. The Board agrees that the two applications are related but has considered each application independently and on its own merit.

The applications and interventions were considered at a hearing in Indus and Calgary, Alberta, on August 18-27, 1999, and November 22-30, 1999, respectively, before Acting Board Members W. G. Remmer, P.Eng., G. C. Dunn, P.Eng., and N. G. Berndtsson, P.Eng. Those who appeared at the hearing and abbreviations used in this report are listed in Attachment 1.

2.3 Background and Previous Proceedings of the Board

During the hearing, numerous references were made to previous proceedings and decisions related to energy development in the Chestermere-Okotoks corridor, of which several have had a direct bearing on resource development in the area.

Most pivotal to this hearing was the Energy Resources Conservation Board (ERCB) *Decision 84-7*. However, a number of other ERCB and EUB decision reports, informational letters, and one inquiry decision, all addressing issues of future industry/urban land-use conflicts and expeditious reserve development were referenced at the hearing. They are *Decision 80-6*, *Decision 83-13*, *Decision 85-19*, *Informational Letter 80-4*, *Informational Letter 81-7*, *Inquiry Report 83-12*, and the 1990 well licence applications by Canadian Occidental Petroleum Ltd. A summary of these documents is given in Attachment 3.

It is apparent to the Board, based on a review of these previous decisions and documents, that considerable and repeated collaborative efforts were made to anticipate and, as much as possible, minimize future energy industry and land-use conflicts.

Of particular note are the consistent attempts during the early 1980s to address the following:

- anticipate the extent and timing of future energy developments;
- encourage industry to develop resources quickly in areas of potential future land-use conflict and minimize stranding reserves;
- deal fairly and evenly with the interests of all parties to minimize impacts on each other;
- encourage collection and dissemination of geological and production data to improve decision making and achieve the best public-interest solutions;
- encourage the industry to optimize use of pipelines and gas-processing facilities;
- consider the siting of facilities with public safety and minimized current and future impacts in mind; and
- consider enacting exceptional measures to minimize future conflicts and maximize hydrocarbon recovery prior to land development pressures.

Despite varied interpretations of *Decision 84-7*, this Board reaffirms that the approval of the

pipeline in 1984 was clearly in the public interest on its own merits. It is also clear that uncertainties about the timing of future industry and urban developments led to implementation of the 15-year approval period and a mandatory future review.

Although some parties contended that the 15-year approval was inflexible, this Board believes that its decision must be made considering current facts. Clearly, the purpose of incorporating a 15-year approval period was to demonstrate the then-ERCB's commitment to review the circumstances at the appropriate time in the future.

This panel notes that while every effort was made in 1984 to use the best data available for future planning, many of the estimates have changed over time. Hydrocarbon reserves estimates, for example, are now substantially greater after evaluation of 15 years of production and performance data from the wells connected to these pipelines. Attachment 2 illustrates the evolution of the reserves and the present productive life estimates for those wells. In regard to urban growth, the Board notes that the estimate of timing for urban development encroaching on this area has also been extended.

Decision 84-7 also alluded to other means of minimizing impacts that could be implemented if rapid development occurred, including the option of installing block valves at a later date to facilitate residential development.

Despite the emphasis in 1984 on accelerated depletion, other factors, such as gas market constraints and the lack of legislation to ensure that reserves in areas of potential conflict were developed as a priority, combined to discourage rapid development. In addition, efforts to license and drill additional wells in order to expedite the recovery of the gas reserves on the north side of the Bow River failed because previous resource owners placed a low priority on doing so and because of strong public opposition. The Board believes that even if all factors had remained as initially expected, there would still have been some gas reserves to be produced and the consideration of an approval extension would have been necessary. However, the application would likely have been for a shorter term than requested of the Board in this application.

3 DYNEGY'S APPLICATION

3.1 Issues

The Board considers the issues respecting the application to be

- need to produce the reserves,
- pipeline integrity and facility operations,
- safety and risk,
- compatibility of land development and sour gas operations, and
- communication and consultation.

3.2 Need to Produce the Reserves

3.2.1 Views of Dynegy

Dynegy submitted that the requested licence extension will allow the depletion of the remaining gas reserves currently being produced from the area wells. It estimated that the remaining gas reserves would be substantially drawn down by the end of the requested extension of the term (year 2014). To support its need for this extension, Dynegy submitted its interpretation of the reserves for the wells presently connected to the pipeline and the 6-29 well it planned to tie in. Dynegy's interpretation for the Wabamun, Rundle, and Jurassic pools at those wells are tabulated in Attachment 2. Dynegy also discussed the potential for production from other developments in the area that could be connected to this pipeline. Compton Petroleum Corporation (Compton) confirmed Dynegy's estimates.

Compton stated that it acquired the subject wells two years ago and that, based on the significant amount of production performance data on the 10-13 and 11-24 wells, it had high confidence in its ultimate recovery estimates, which were based on the established decline trends observed in these wells. It estimated that the 10-13 well had the longest reserve life of all the wells currently tied in to the subject pipeline. Compton had investigated different options to accelerate gas recovery in the area of these two wells. These included drilling of additional wells, use of velocity strings, additional compression, and multileg horizontals. Compton did not want to risk the multileg horizontals at the 10-13 well. It considered a velocity string and multileg horizontals as viable options for the 11-24 well. Compton stated that additional compression was not likely to significantly help either well. Compton was unable to quantify the impact of these options. Compton also stated that if the subject pipeline licence were not extended, its plan to drill at least two wells to accelerate the depletion of the Wabamun reserves north of the Bow River was not likely to proceed.

Compton estimated that at present the 10-13 well has depleted about 50 per cent of its reserves. It also stated that the 11-24 and the 7-19 wells had depleted 65-70 and 90 per cent of their reserves respectively.

Compton also stated that it had not done any geophysical work to better understand and define the extent of the Wabamun reservoir because it had been unable to obtain the permission of the landowners to do seismic surveys on their lands.

Dynegy stated, in contrast to the opinions put forth by some of the interveners, that it believed that *Decision 84-7* had not expressly prohibited the addition of other reserves that might be sensibly tied into the existing Chestermere pipeline, but rather that any further applications would be examined on their own merit.

Dynegy/Compton submitted a conceptual development plan for the general area that included exploration and development drilling targeting a number of geological horizons. It expected a limited number of wells with low (0.3 to 3.0 per cent) H₂S containing solution gas similar to Pinon's wells to be connected to the subject pipeline for processing at its Mazeppa plant. Dynegy/Compton believed that the future wells were likely to be in small, isolated pools with limited reserve life. Dynegy did not anticipate any sweet gas to be connected to the subject pipeline, since it is an expensive option to produce sweet gas through the existing sour gas infrastructure.

Dynegy stated that the conceptual development plan for this area contemplated that any sour gas reserves that may be developed in the future would be produced to the existing Dynegy and the proposed new Pinon pipeline facilities for transport to the Mazeppa plant. It also stated that Pinon had existing gas reserves targeted for connection to the subject pipeline facilities. Dynegy acknowledged that the new pipeline facilities relating to Pinon's gas production were the subject of a separate application to the EUB. Dynegy stated that it was reasonable to connect that pipeline to its system, since there was available capacity in its existing pipeline facilities, and as the Pinon gas reserves were projected to have 8-12 years of life, it would not extend the need for the Dynegy pipeline beyond the applied-for licence extension. Any sour gas discoveries to the north of the conceptual plan area would, in Dynegy's view, be connected into the existing Wascana Balzac gathering system.

Dynegy stated that it was aware that other producers were currently examining the general area to the south and east of Calgary for new reserves. It stated that any sour gas developed to the east of this area would likely be connected to the Dynegy's Herronton Battery in Section 21-21-26W4M to the southeast.

3.2.2 Views of the Interveners

Several interveners indicated that *Decision 84-7* created the expectation that the sour gas production that necessitated the subject Chestermere pipeline would end or be very close to an end by the end of the 15-year term. Further, they believed that Dynegy and its forerunners, by not expeditiously producing the sour gas and especially the high H₂S Wabamun reserves in the area, breached the expectation that the Board initially had of Canterra Energy Ltd. (the original operator) when it approved the pipeline application in *Decision 84-7*.

Another concern shared by many of the interveners was that an extension to the term of the subject pipeline could lead to a future extension of the pipeline licence. In their view, a licence extension would likely encourage the connection of future gas reserves, thus extending the reserve base and prolonging the economic life of the subject pipeline, potentially making it more difficult for them to plan the future use of their lands.

3.2.3 Views of the Board

The Board believes that its previous decisions (especially *Decision 84-7*) were clear in terms of the Board's expectations. The Board believes that it was made clear to the operators and the landowners that the Board expected them to make every effort to recover as much of the sour gas reserves as possible within the 15-year term. The Board also believes that its earlier decisions did not specifically intend to stipulate that total depletion of the area sour gas reserves was required. Thus, the Board can understand that an expectation may have been created for some of the area residents and landowners that the sour gas production would cease in 15 years. However, *Decision 84-7* clearly indicated that the Board was uncertain of both the timing of reserves depletion and the encroachment of urban and residential development. Because of that it made provision for a review of the situation in 10 to 15 years.

The Board has summarized the gas reserves determination for the area north of the Bow River

serviced by the Dynegy Chestermere pipeline. It is evident, as shown in Attachment 2, that significant gas reserves remain to be recovered from the Wabamun pool produced from the 10-13 and 11-24 wells. Volumetric reserve determinations of 1984, based on one-section production spacing units for each of those wells, showed a recoverable reserve estimate of some 300 million cubic metres (10^6 m^3), while volumetric mapping provided estimates of $800 \times 10^6 \text{ m}^3$ for the area of the Wabamun pool north of the Bow River. Using production decline analysis provided by both Dynegy and EUB staff for the 10-13 and 11-24 wells, the Board has determined that about $950 \times 10^6 \text{ m}^3$ (33 billion cubic feet [bcf]) of gas could be recovered north of the river with the two existing wells. As noted in Attachment 2, this volume represents the remaining recoverable reserves to be drained from the Wabamun pool area north of the river. Volumetric assessment supports that determination. This scenario of increased reserve estimates from the 1980 determinations is not surprising to the Board because the Wabamun pools in both the Okotoks and Crossfield fields have performed better than expected. Based on the present performance the Board estimates that it could take 23 and 13 years for the 10-13 and 11-24 wells respectively to realize that level of recovery. The Board believes that it is possible to achieve that recovery in a shorter time frame, particularly if additional wells are drilled. Adding a velocity string to the 11-24 well could help its performance. The Board agrees with the applicant and the well owner that serious attempts to modify the 10-13 well present a risk not worth taking unless there is another good well producing in the same vicinity. In this decision the Board is considering only the existing well configuration, but it encourages parties to try to achieve as much resource recovery as possible having regard for these measures as well as other matters to be addressed later in this decision.

In the course of this decision, the Board observes the following:

- Should the 11-24 well be abandoned early and no other measures taken to improve drainage, the life of the 10-13 well would be extended.
- Based on past reservoir performance, and assuming wells south of the Bow River remain in operation, the Board notes that if the 11-24 and 10-13 wells were prematurely abandoned, some very limited volumes of gas reserves from north of the river would be drained and recovered by wells south of the river.
- Evidence presented in submissions and at the hearing indicates that water production has seriously curtailed the potential of additional recovery of gas from the Rundle and Jurassic pools, which now have wells connected to the Dynegy pipeline. The Board does recognize that recompletion work could extend the life of the Rundle wells, and therefore believes that a pipeline is needed to transport the gas to a processing plant.

The Board concludes that significant gas reserves remain to be recovered north of the Bow River. The existing pipeline is required to produce the gas, which is in the public interest, provided that the pipeline is safe to operate and an acceptable balance with other land use can be achieved.

The Board also acknowledges and accepts the submissions of Dynegy and Compton that other reserves in the area, both present and future developments, will require pipeline capacity. Applications to connect to the Dynegy Chestermere pipeline would be considered on their own

merits but must recognize the conditions placed on this pipeline in this decision. This would be in keeping with previous decisions and policy on facility proliferation. The Board believes it would be prudent to consider use of this pipeline for such developments as long as it is in keeping with the terms and conditions contained in Sections 3.3 and 3.4 of this report.

3.3 Pipeline Integrity and Facility Operations

3.3.1 Views of Dynegy

Dynegy indicated that since the start-up of the pipeline in November 1984 there had been three failures on the subject pipeline. The first occurred at the pipeline start-up at the A10-02 well site. The second failure occurred on March 5, 1998, at LSD 06-24-22-29W4M at a low-lying area approximately 400 m south and east of the 11-24 well site. The failure was described as a pinhole corrosion perforation on the bottom of the pipeline. The third failure occurred at roughly the same location as the March leak on July 22, 1998, 40 days after the repaired line had been returned to service. The leak occurred on new pipeline that had been installed as part of the repairs done subsequent to the March failure and was also in the form of a pinhole corrosion perforation on the bottom of the pipeline.

Dynegy indicated that it believed both 1998 failures were due to under-deposit corrosion that was accelerated by reduced gas velocities and changes in the gas and fluid composition resulting from new production brought on-stream in 1997 and 1998. The 11-24 and 10-13 wells produced from the Wabamun with an H₂S content of about 35 per cent (350 mol/kmol), while gas produced from the 10-20, 12-20, and 7-19 wells was from the Rundle and Jurassic pools and had an H₂S content of approximately 2 per cent (20 mol/kmol) but with associated free water content. Dynegy believed that the water from the Rundle and Jurassic gas, introduced to the pipeline in 1997 and 1998, in combination with lower flow velocities associated with declining production rates, had resulted in the formation of localized corrosion cells and, ultimately, the failures.

Dynegy explained that it had enlisted the services of several metallurgical and engineering firms to provide failure analysis, corrosion mechanism evaluation, pipe integrity assessment, corrosion monitoring and control programs, and risk assessment of the pipeline. Dynegy stated that after considering all of the investigations conducted by these consulting companies, the following conclusions were drawn:

- Significant changes in produced fluid chemistry resulting from production from the Rundle wells initiated in 1997 altered the requirements of the chemical inhibition program.
- Corrosion inhibitor residual levels in the produced water at that time were below recommended levels.
- The absence of pigging facilities prevented the removal of contaminant solids and water from the line.
- The absence of pigging facilities prevented the application of batch inhibitor treatments.
- The relatively high pipeline operating temperature accelerated corrosion rates and

encouraged the deposition of mineral scale.

Dynegy explained that after the March 1998 failure approximately 600 m of pipeline were replaced and pigging facilities were added to the pipeline by Compton, the operator of the system at that time. Dynegy succeeded Compton as the owner and operator of the pipeline after the July failure and prior to its return to service. Upon taking over responsibility, Dynegy instituted several steps to manage the corrosion program, reflecting the changes in produced fluid composition. These included

- installation of water separation facilities at the 7-19 well site to prevent water production from entering the system;
- development of a pigging and batching procedure;
- installation of electrochemical probes, electric resistance probes, and corrosion coupon monitoring sites at the 10-13, A10-02, and 7-35 well sites;
- use of shadow radiography and ultrasonic measurement of existing corrosion defects at two bell-hole sites;
- additional corrosion management training to field staff;
- utilization of independent consultants for review and evaluation;
- establishment of a laboratory program of testing and evaluation of corrosion inhibitors;
- modification of bends and emergency shutdown (ESD) valves to accommodate electronic internal inspection tools; and
- regularly scheduled program of internal pipeline inspection.

Dynegy further indicated that it had provided periodic updates of its work in progress to representatives of the EUB to keep it apprised of developments since the occurrence and evaluation of failures in 1998.

Dynegy technical experts contended that once these measures had been implemented, they believed them to be successful. The following conclusions were drawn:

- Coupons, electrical resistance probes, and electrochemical probes generally indicated that corrosion was being controlled.
- Radiography, ultrasonic inspections, and pipeline internal inspections indicated that corrosion was effectively being controlled.

- Laboratory electrochemical testing showed that the batch inhibitor currently used was effective in controlling the pitting.

As a result of its work, Dynegy stated that it had adopted rigorous corrosion monitoring and mitigation procedures that would be beneficial in the future safe operations of its facilities, namely:

- All new pipelines would be equipped with pigging facilities designed for internal inspection tools.
- A pipeline risk assessment for the entire Mazeppa system had been conducted, which would assist Dynegy in addressing other areas of potential high corrosion.
- Inhibition records were being monitored and reviewed to assure proper chemical usage.
- Monthly corrosion monitoring reports were being distributed to operations personnel to ensure that any abnormal results would be acted upon.
- A formal process to evaluate and record system changes had been developed.
- A comprehensive corrosion procedures manual had been developed.

Dynegy believed that the addition of further Rundle reserves would be beneficial to the operation of the Chestermere pipeline, as the Rundle gas would increase or maintain flow volumes and provide dilution effects to the higher H₂S-content Wabamun gas. Dynegy maintained that the dilution and increased flow would reduce the corrosive potential of the system, and thus the risk of pipeline leakage or failures.

In response to intervenor concerns about the original anticipated life expectancy of the Chestermere pipeline, Dynegy indicated that the original operator, Canterra, had expected the pipeline to handle dry Wabamun gas only and therefore intended to manage corrosion by continuous inhibitor injection only. Dynegy maintained that the original pipeline design allowed for the installation of long radius bends and pigging facilities at a future time if required; it also stated that the exposure of the pipe to different fluid conditions had not adversely affected the pipe integrity or its life expectancy.

Dynegy explained that as a result of its investigations and assessments, a significant amount of the pipeline had been replaced, particularly sections showing corrosion damage. Dynegy emphasized that the most significant defects had been removed and much of the damaged line was already new pipe. Dynegy's engineering evaluation showed that no defects over 25 per cent wall loss remained and that when evaluated using the criteria allowed by Canadian Standards Association (CSA) Standard Z662-99, *Oil and Gas Pipeline Systems*, the existing pitting was acceptable.

In response to the suggestion of acid cleaning the pipeline to remove scale and under-deposit scale, Dynegy indicated that this practice was unusual, somewhat risky to execute, and unnecessary for the continued safe operation of the pipeline. It further said that it believed the

procedure could have some risk to the pipe body as acid cleaning needed to be carefully controlled.

Dynegy stated that the short section of 88.9 millimetre (mm) (3 inch) line running from the 12-20 well, past the 7-19 well, to the 11-24 well had recently been taken out of service and was presently suspended. Although Mr. Duncan, representing the Shepard Residents, raised concerns with the procedures under which this line had been suspended, Dynegy indicated that the pipeline had been pigged, dried, batch inhibited, and filled with sweet fuel gas.

In response to questions about the application of available technology for mass balance leak detection purposes, Dynegy indicated that it had considered the technologies available and concluded that even the most advanced system would be unlikely to detect small leakage in three-phase media. It acknowledged that other on-site leak detection methodology could be employed, but it did not see these as providing additional safety for small leaks.

3.3.2 Views of the Interveners

Intervening parties at the hearing expressed a number of concerns about the Chestermere pipeline. In general these related to two particular themes. First, parties expressed the opinion that the history of the pipeline suggested that it had been severely damaged and was not suitable for the continuation of service. Second, there was a range of concerns expressed about the ability of Dynegy to monitor and control pipeline corrosion. Some parties cited the failures occurring in 1998 as evidence that corrosion conditions were beyond control and therefore that continued operation of the pipeline presented an unsafe condition.

In particular, interveners cited the conditions of low-flow velocity that could result in the settlement of solids and liquid contaminants and the additional potential for corrosion inhibitor partitioning. Some interventions emphasized that the gas and fluid contents of the pipeline could result in the deposition of elemental sulphur and mineral scales, making deposition sites particularly corrosion prone. The chloride contents, temperature, and fluid flow conditions were noted as being particularly troublesome. Interveners expressed the view that considerable attention would be needed to select corrosion inhibitors that were stable in the presence of methanol and, further, that the presence of methanol could cause the precipitation of salts from pipeline fluids.

Mr. Duncan, on behalf of the Shepard Residents, indicated that he was concerned about the overall assessment of damage to the pipeline and the corrosion monitoring and control program. Mr. Duncan believed that the internal pipeline inspection measurements ought to be compared to cutout sections of damage pipe and that validation of these pipeline inspection measurements were not thoroughly described. He was also concerned about cluster pitting, indicating that employing the 25 per cent cutout criterion alone was not enough to ensure integrity, as the CSA Standard also required consideration of the length and shape of pits.

Mr. Duncan expressed concern that it may be difficult to adequately clean the pitted areas to ensure that corrosion inhibitors were effective. He also emphasized the value of regular pipeline

pigging and collecting contaminant samples for analysis to evaluate the effectiveness of cleaning procedures and the composition of materials collected.

In regard to the monitoring devices in place on the pipeline, Mr. Duncan stated that he was unsure about how these devices had been designed and installed on the pipeline. Although he agreed that such devices could be beneficial, he had not reviewed all the information available to evaluate their effectiveness. He indicated that a number of factors could influence their usefulness. He further indicated that he was unsure, from the testing results he had reviewed, whether the currently selected corrosion inhibitors were effective.

During cross-examination, Mr. Duncan commented that even if glycol dehydration were used, there could also be some carryover of liquid into the pipeline downstream of the dehydration units. This meant that pigging and aggressive inhibition and monitoring would be required in the same way as for a wet gas line.

In response to questioning, Mr. Duncan agreed that a pipeline properly repaired to the requirements of the CSA Standard should be suitable for operation, provided that a suitable corrosion control program was implemented immediately once the line was repaired and returned to service. He further agreed that the likely mode of failure, should another occur, would be another pinhole leak.

Mr. Duncan commented that in his opinion the corrosion risk assessment was a very useful, subjective analysis of the Dynegy pipeline in that it documented the velocity and fluid flow analysis through the system and indicated where there was a high probability of liquid collection. He believed it was in these areas that pitting would be found. Mr. Duncan also indicated that the corrosion field manual was a useful tool and an improvement over what had been done previously.

Mr. Giovanetto, technical expert representing the Soutzos, expressed some of the same concerns as Mr. Duncan. He particularly emphasized the importance of pipeline cleaning and maintaining the pipeline in a clean condition. He believed that it might not be possible to adequately mechanically clean the inside of the pipeline using wire brush pigging devices and suggested that chemical cleaning may be worth considering. Although Mr. Giovanetto agreed that inhibited acid cleaning was not a common technique, he provided literature citing some benefits to the cleaning of water lines and one case in a sweet oil pipeline. He did acknowledge that there were some offsetting risks associated with acid cleaning.

When considering Dynegy's monitoring efforts, Mr. Giovanetto stated that although Dynegy had excavated bell holes for the purpose of obtaining corrosion measurements, they provided only single data points. Therefore, they were indicative only of the point at which they were taken and could not be considered to be indicative of the condition of the pipeline as a whole.

Mr. Giovanetto stated that although field water separators would remove the brine produced from the well and decrease the carryover of suspended matter, there was still water vapour in the gas that could possibly condense into free water and then dissolve acid gases to form corrosive fluids. He stated that if the pipeline was known to be totally clean, then inhibition would likely

be satisfactory and dehydration would not be required. However, in instances where cleanliness could not be assured, he believed dehydration might be more effective than inhibition.

Mr. Giovanetto also agreed with Mr. Duncan that either new or old pipe should be acceptable for use as long as the corrosion program was effective. He, too, believed that any further corrosion failures would be expected to be pinhole failures and, as such, provide a limited release.

During questioning, Mr. Giovanetto acknowledged that the addition of more gas to the pipeline could be beneficial in terms of providing dilution and increased velocities, but noted that introducing gas of different composition might impact the established corrosion protection program. Mr. Duncan also agreed that it would be beneficial if dry gas volume was increased and the resultant flow velocities sufficiently increased, as this could carry contaminants through the system and do a better job of applying the continuous corrosion inhibitor.

Mr. Giovanetto agreed that Dynegy had made significant and appropriate efforts to monitor and control the corrosion in the pipeline. He indicated that he would have been very comfortable with those efforts as applied to a new pipeline. However, as this system was already damaged, existing defects might not be adequately cleaned, and thus there was potential for further pitting.

He stated that, therefore, it could not be assured that this pipeline was fully secure or that further corrosion would not occur. He was unable to suggest any further preventive measures that could be applied, considering the technology that was currently available.

Mr. Giovanetto stated that an examination of the production history of the wells showed that water production commenced in well 10-20 in October 1985 and continued until the well was shut in in February 1995. Although the original corrosion control program had been considered effective for a dry sour gas system, it appeared to him that the operator had not undertaken any additional work to evaluate the effect of produced water on the system and implement any changes in the corrosion control program. He believed that, as Canterra was an experienced sour gas operator, this lack of action was indicative of its belief in a limited life expectancy for this system and seemed to be contrary to the commitments it had made in its original pipeline application.

During a visit to the field, Mr. Giovanetto and Mr. Soutzo had noted that the exterior polyethylene pipe wrap on the pipeline had deteriorated where the pipeline entered into the ground outside of block valve 4 (LSD 14-12-22-29W4M), exposing the pipe insulation to the weather. Additionally, the block valve site was found to be unsecured and open to the public. Although cross-examination suggested that the pipeline had another layer of polyethylene corrosion barrier beneath the insulation, Mr. Giovanetto still considered that these items indicated a poor level of attention being paid to these facilities.

In regard to the issue of using an advanced SCADA system to detect leaks, as described by an exhibit he had provided, Mr. Giovanetto stated that he had spoken to representatives of the company using the system and that they were pleased with it. However, he was unable to comment on the minimum volumes of lost gas that could be detected by the system.

Some interveners suggested that if the application is approved, the Board should mandate that any further failure on this pipeline would result in the cancellation of the operating licence and that this system be permanently shut in.

3.3.3 Views of the Board

The Board notes that, other than a problem experienced during the original start-up of this line in 1984, this pipeline has operated without incident for almost fifteen years. This was despite the production fluids changing shortly after start-up with the addition of production from the 10-20 well, which should have required revised corrosion control measures to ensure successful corrosion control. The Board did not hear any details regarding the actual programs conducted by the former operators of this pipeline during that extended period, but must assume that the operators did consider and adjust the corrosion control measures to suit the new production being carried. Otherwise it is unlikely that the pipeline would have operated without incident throughout that period. While the former operators must have certainly maintained some records of their corrosion control program activities, it appeared that Dynegy had not located or accessed those records for use at the time.

Regardless, the Board does not believe that the absence of documentation pertaining to the former corrosion control programs constitutes an argument in favour of the presumption that this pipeline was designed and operated with an intended service life of fifteen years. It is exceedingly unlikely that any operator would have considered the construction of the pipeline to be economically reasonable and justified based on this presumption. Further, it is unlikely that an operator could have operated a pipeline of this nature without suitable corrosion control for this length of time without experiencing a corrosion problem prior to 1998. Additionally, the Board believes that *Decision 84-7* clearly did not rule out the connection of future additional reserves to this pipeline, should that action be judged as reasonable and based on merit. The Board does not accept the contention that Canterra had constructed this pipeline with the intention of a limited fifteen-year life span.

The Board believes that Dynegy, upon taking responsibility for the failed pipeline, acted promptly and responsibly by initiating a number of investigative studies and investigations. It is further noted that Dynegy staff responded cooperatively to the requests and requirements of EUB Surveillance staff.

In regard to the corrosion problems encountered in the Chestermere pipeline, the Board can accept Dynegy's conclusions that these problems were caused by production brought on stream in 1997 and 1998. The changes in fluid chemistry, along with the presence of pipeline deposits that may have initiated corrosion cells, is likely responsible for the pitting corrosion. The Board notes that the expert witnesses for the interveners are generally in agreement with this conclusion and that the expert witnesses are also generally in agreement with the course of action that has been adopted by Dynegy.

The Board recognizes that although the various experts each had preferences for the way the corrosion program could be conducted, all agreed that the pipeline must be adequately cleaned and kept clean in order to enable the corrosion inhibitors to function properly. Therefore, a process of regular pig cleaning, along with batch inhibition, continuous inhibition, monitoring,

and inspection, is seen as being appropriate to control corrosion in this system. Dynegey must also be diligent in minimizing the water content of the gas in the pipeline. Dynegey has developed and documented a program to address these requirements, maintain records, and provide processes for control of change.

The Board also notes that Dynegey is continuing with further laboratory testing to validate the type of corrosion inhibitors being used or proposed for the system. The Board considers these to be appropriate actions, particularly as there is concern about the effects of methanol addition on the stability of the inhibitor films. The Board further believes that the success of the corrosion control program will depend upon its diligent execution, and in that regard, the Board expects Dynegey to retain the personnel and resources necessary to ensure this commitment.

In consideration of the issue of acid cleaning the pipeline, the Board concludes that while this method could possibly reduce the mineral scales found within the line, there is no assurance that this is in fact necessary or totally beneficial. The procedure also carries a potential corrosion risk in itself, and therefore the Board will not require Dynegey to conduct such a procedure.

In review of the consultants' reports detailing the assessment of existing defects, the Board believes that this work has been performed in accordance with the general requirements of the CSA Standard. While some consultants' reports were not signed and stamped in the manner in which Mr. Duncan expected, the Board is satisfied with the evaluations. The Board does, however, recommend that Dynegey pay attention to this in the future.

Although details of the calculations were not provided, it is noted that anomalies were evaluated using the ANSI-ASME Modified B31-G criteria, as allowed by CSA Z662. The Board notes that the application of the B31-G criteria uses a design factor of 0.72, whereas the Alberta Pipeline Regulation requires a design factor of 0.60 for sour gas pipelines. Dynegey stated that there were no remaining defects constituting greater than 25 per cent wall loss. The Board has determined that even for that depth of defect, these pipelines would still meet the design factor criterion of 0.60 at the current licensed maximum operating pressures. However, the Board expects Dynegey and its consultants to be aware of the 0.60 requirement and to consider it in further assessments of this and other sour gas pipelines, should further corrosion be encountered.

The results of the engineering assessment, which concluded that the pipelines are safe for the licensed operating pressure, are contingent upon the accuracy of the defect measurement tools. For this reason, the Board will require that Dynegey conduct another internal inspection of this pipeline to be completed within three months of the issuance of this decision, unless one has been performed during the six months prior. In either event, Dynegey is to report the findings of the inspection to the Board by July 1, 2000. This is intended to further confirm the corrosion measurements, verify that existing pits have not grown, and confirm that the required design factor is still met. After that inspection, Dynegey may incorporate an inspection schedule that is calculated to be appropriate based on its operating experiences.

The Board believes there is value in conducting internal pipeline tool inspections, but notes that caution must be exercised in view of the inherent levels of accuracy exhibited by the tools. As there is a margin for error in each run of the tool, it is important that the data be validated by

verification against previous runs and other inspection methods. The true value of the internal tool is its capability to examine the entire length of the line, as opposed to spot inspection methods, such as radiography or ultrasonic measurement, which are not representative of the entire system. The Board believes that it is the combination of the various inspection methods in conjunction with ongoing corrosion monitoring that provides confidence in the integrity of a pipeline system.

The Board notes that Dynegy has also conducted a pipeline risk assessment to examine the possibility of corrosion in other segments of the Mazeppa system. Dynegy has committed to conduct internal inspections of other segments of its Mazeppa system, having regard for the prioritization provided by its corrosion risk assessment, and the Board believes this is a beneficial and prudent exercise. The Board further notes that comments found in the pipeline risk assessment and pipeline repair program reports indicate that further work will be required and, in fact, will be ongoing. The Board will therefore require Dynegy to prepare and submit to the EUB Surveillance/Operations Group a regular summary report discussing the recent activities, monitoring results, conclusions, and actions pertaining to their corrosion control program. The first report must be made by July 1, 2000, and subsequent reports made semi-annually thereafter until the EUB advises otherwise.

The use of computerized process data collection and control to establish an automated leak detection system has been considered. The Board recognizes that this type of system is routinely used on oil transmission pipeline systems. However, the Board is not confident that current technology would enable such a system to be successfully applied to a multiphase gathering pipeline with sufficient accuracy to enable it to reliably detect a small leak. As pinhole corrosion is the mode of failure that could be expected in this system, the Board does not believe there would be significant benefit in requiring the installation of such a system on the Chestermere pipeline and will therefore not require it.

The Board concludes the Chestermere pipeline can be operated safely given the corrosion monitoring and mitigation measures proposed by Dynegy. However, in regard to the consequences that may occur in the event of Dynegy experiencing another pipeline leak, the Board confirms that the EUB applies a process of escalating consequences for instances of noncompliance with regulatory requirements. In the instance of a pipeline failure, the EUB requires operators to conduct appropriate analysis of any failures and enact suitable measures to prevent further failures. In the event of a repeat failure, the EUB would require a more stringent analysis of the system and would hold operations suspended in the subject system while those activities are being conducted. Whether the system would be judged to be corrected sufficiently to enable reinstatement would be based entirely on the actions of the operator and the results provided from the additional investigations. Should the EUB believe that the efforts of the operator were not sufficient to ensure safety, then other remedial measures could be specified or the facilities could be suspended indefinitely.

3.4 Safety and Risk

3.4.1 Views of Dynegy

In support of its application, Dynegy presented information to demonstrate its commitment to ensuring public safety in areas near the Chestermere pipeline system. A substantial amount of information was entered through direct evidence by Dynegy's management and engineering staff. Additionally, a considerable amount of evidence was offered during cross-examination at the hearing.

In particular, Dynegy's management emphasized to the Board and hearing participants that Dynegy was specifically in the midstream service business and was committed to the business at hand. Mr. Woodward emphasized his commitment to the company's responsibilities in pipeline operations and public safety. The company cited the following activities as examples:

- goal of zero-tolerance of pipeline leaks and failures;
- enhancement of corrosion monitoring and control measures (as mentioned in Section 3.3.1);
- regularly scheduled testing of emergency shutdown valves (monthly) and calibration of valve pressure sensors (annually);
- conducting pipeline operations for maximum safety including setting low-pressure shutdown limits at 700 kilopascals (kPa) (100 pounds per square inch [psi]) below current operating pressures and providing for well isolation using a remote-controlled data system at the Mazeppa plant;
- commitment to the retention of long-term experienced operations staff and the maintenance of current emergency response plan (ERP) training for Dynegy and Compton staff;
- revision and maintenance of the ERP and providing H₂S Alive training to applicable emergency response groups and regular communication with municipal disaster services as needed;
- use of an automated emergency telephone notification system (Comm-Alert) and testing of the Comm-Alert system; and
- commitment to ongoing open communications with the public, including open houses and regular newsletters.

In response to a request made by the Shields, Dynegy enlisted the expertise of Jacques Whitford Environment Ltd. to prepare a risk assessment for the North Chestermere Pipeline between block valve 4 and block valve 6. Dynegy did not believe that this risk assessment was a requirement of the application process and it therefore proposed that it should not be considered part of its formal application. Further, experts for Jacques Whitford contended that there were no set guidelines or standards for preparing a risk analysis. Dynegy's experts predicted the risk at the Shields' residence to be 0.6 chances in a million and that, as a result, all land uses without

restriction would be acceptable at this distance, based on the Major Industrial Accident Council of Canada (MIACC) guidelines for acceptable levels of risk.

By comparison, Mr. Zelensky, a risk assessment expert retained by the Shields, had calculated a risk of approximately one chance in a million at the Shields' residence. Dynegy contended that this difference was statistically insignificant and did not result in any substantive risk concerns. Dynegy believed that the risk from the pipeline at the current level-2 setback distance of 100 m was acceptable, regardless of whether the applicant's or the intervener's value was used.

In response to Mr. Zelensky's contention that Dynegy should have considered a larger hole for its modelling of a pipeline leak scenario, Dynegy's experts maintained that the probability of having an undetected large perforation was remote and much less than the probability of a smaller perforation. Dynegy responded that it believed it had modelled the release case with the higher probability.

Dynegy conceded that although the setback could be reduced by the installation of extra ESD valves, resulting in level-1 sour gas designation, this was in fact an undesirable alternative, as it would theoretically allow development right up to the pipeline right-of-way. Dynegy argued that it would be more prudent to maintain the larger setback required by the level-2 pipeline, thus restricting development and decreasing the actual risk. Dynegy further stated that additional block valves, being above-ground facilities, actually increased risk due to the potential of leakage.

Dynegy also disagreed with the interveners' expert's suggestion that ESD valves be installed below ground rather than above ground in order to eliminate the potential for a horizontal release. Dynegy replied that doing so would subject personnel to the increased risk of entering a confined space. Further, there was potential for groundwater to collect around the valve, which could adversely affect the reliability of its operation.

With respect to its ERP, Dynegy emphasized the benefits of the Comm-Alert telephone system to assist it in notifying residents of various levels of emergencies or activities regarding its Mazeppa facilities, including the Chestermere pipeline. It pointed out that the Comm-Alert system was an automatic phone system that could notify a large number of residences within a very short time using a computer voice-mail dial-out process. In response to intervener concerns about the system, Dynegy said that it had improved the messages, reworking them into six concise statements specific to its Mazeppa operations. It proposed additional training to ensure that site-specific information would be provided when required. Dynegy indicated that its backup to the Comm-Alert system would be direct telephone contact from Mazeppa plant staff to residents. It also indicated that it has two-way radio communication between the Mazeppa plant and Dynegy's head office in Calgary.

Dynegy acknowledged that its ERP had been revised three times in the last eight months. It also emphasized that it had held an open house in July 1999 to ensure that residents in the Mazeppa ERP area had an opportunity to review the Dynegy ERP. It said that it mailed postcard invitations and used the Comm-Alert system to remind everyone of the event. At the open house Dynegy made copies of the ERP manuals available for review, displayed operating models of emergency shutdown valves, and had experts in various disciplines to assist in understanding

the various components of its system and the ERP. Additionally, Dynegy said that it had distributed a questionnaire that asked specific questions regarding the Comm-Alert system and Dynegy's level of preparedness. It summarized the responses to the questionnaire by saying that everyone was very complimentary of Dynegy's program.

Dynegy also responded to some concerns of the Gerald White family with respect to general safety concerns as well as a specific alleged "sour gas" exposure incident reported by Mrs. White as occurring on March 11, 1998. Dynegy representatives said that they had met with the Whites well after the date of Mrs. White's exposure incident and explained that while there had been two pipeline leaks, neither was close to the date and time of the incident reported by Mrs. White. One leak occurred on March 5, 1998, and the other on July 22, 1998. Dynegy could not make a connection between the pipeline leaks it had experienced and the incident reported by Mrs. White.

Dynegy stated that on March 11, 1998, its operations centre had received a telephone message from Mr. Gerald White reporting a possible sewer or rotten-egg smell from the west. He stated that knowing of the pipeline excavations, he was concerned there might be a problem at a site. Dynegy reported that the pipeline crossing the Whites' property from the 12-20 well site to the 11-24 well site was inoperative and had been purged with sweet gas prior to March 11. That leg of the system had been shut down as a result of the pipeline leak that had occurred March 5 south of the 11-24 well and was not returned to service until a number of months later. Dynegy indicated that on March 11, work was being conducted on a subsurface safety valve at the 10-13 well.

Dynegy stated that it had attempted to communicate with the Whites in a forthright manner and regretted that its efforts may have been misinterpreted. It pointed out that it was increasingly difficult to maintain proactive communication if residents did not wish to speak with company representatives and perceived their efforts at communication as threatening. This was a concern to Dynegy and it was anxious to correct that situation.

3.4.2 Views of the Interveners

Mr. Gerald and Mrs. Florence White are residents on the northwest quarter of 19-22-28W4M. Mrs. White stated that on March 11, 1998, when she stepped out of her house she encountered a choking smell that caused her to fall back against her house. She reported experiencing a severe headache, dry heaves, and loss of vision. Although disoriented, she was able to get into the house, and after several minutes she was able to regain composure enough to advise her husband of the smell outside. Mr. White then phoned in a report of the smell. Mr. White had been outdoors about 45 minutes earlier and had not noticed anything unusual at that time. Mr. White recalled smelling odours that day and said that field personnel he spoke to that day indicated that there had been a release at one of the well sites. Mrs. White stated that she believed she had been exposed to a cloud of drifting sour gas from a pipeline release from the Dynegy Chestermere pipeline.

Mrs. White reported that several symptoms of illness continued well past the time of the initial incident, including headaches, lingering odours, skin colouration, and extreme anxiety. Mrs. White said that she had consulted medical doctors but was unable to obtain a satisfactory

explanation for her continued illness. Finally she was diagnosed as having post-traumatic distress syndrome, resulting from the high level of mental distress she had experienced during and after the incident. Medical testing did not indicate any physical ailments. Medical opinion, however, suggested that an important part of Mrs. White's recovery involved her facing the issue directly, and she had taken that step by appearing at this hearing. In order for Mrs. White to fully recover from her ailment, it was suggested that it would be necessary to either remove the perceived threat or for her to leave the area of the perceived threat.

The Whites commented that they felt poorly informed of work being performed on the pipeline on their property in 1998 and that Compton had not informed them of the pipeline leaks until sometime afterward. Additionally, they believed they were not informed of changes in pipeline ownership, well flaring incidents, excavation operations, pipeline repair, heavy truck traffic, or well-servicing operations. They said that although Dynege personnel had visited them in March 1998 to explain the work being done on the pipeline, the Dynege people were unsympathetic to her claim of exposure and had refused to take her complaints seriously. Subsequently, Mrs. White believed that certain Dynege staff members were attempting to harass her, which caused her even further stress.

The Whites also expressed that in their opinion Dynege's Comm-Alert system was not very trustworthy because people may not be at home or may be outside of the house and would not hear the telephone. They suggested that perhaps an air siren might be more useful. The Whites stated that it would be their preference if someone from the plant would just phone them with simple instructions rather than receiving a long automated message from Comm-Alert.

Mr. George White, resident of the southwest quarter of 19-22-28W4M, stated that he was totally opposed to the relicensing of the pipeline, as it crossed the road that provided the only emergency egress for his family. When he had built his home in 1990 he expected the pipeline to be decommissioned in ten years. Although Mr. White was aware of the recommendations for sheltering in the event of a gas leak, he was concerned that family members outside of the house might not hear the telephone and be unaware of the need to take shelter. He proposed that perhaps some audible warning might be useful.

The Shields took issue with the risk assessment work done by Jacques Whitford. In particular, the Shields' expert, Mr. Zelensky, was not satisfied with the use of an ideal gas assumption inherent in the GASCON2 model. In response, Mr. Zelensky utilized a "real fluid" approach. He argued that the use of ideal gas laws was not appropriate for this fluid mixture and would result in an underestimation of the risk.

Mr. Zelensky also believed that the applicant's modelling indicated that the ESD valves might not close unless a perforation exceeded 18 mm in diameter. The interveners argued that the risk assessment done by Dynege was based on the modelling of a release from a 5 mm hole. They contended that a release from a perforation greater than 5 mm could result in a larger emission.

The Shields acknowledged that they had no concern about the risk at their residence from potential pipeline releases, but intended rather to ensure that the risk to future development close

to the pipeline right-of-way was acceptable. The Shields' modelling confirmed an acceptable level of risk at a 100 m setback from the right-of-way under the current licensed conditions.

However, the Shields' modelling suggested that the level of risk at the edge of the pipeline right-of-way, even with the pipeline operation amended to a level-1 facility, would be excessive for residential development. Mr. Zelensky suggested that the level of risk at the edge of the pipeline right-of-way could be reduced by restricting the approved pipeline operating conditions, installing additional ESD valves, and placing the ESD valves below grade. Therefore the Shields requested that Dynegy be required to implement these measures.

With the measures he proposed, Mr. Zelensky calculated the risk to be about 10 chances in a million at the pipeline right-of-way. In consideration of the high percentage of H₂S in the gas, Mr. Zelensky stated that he was not comfortable with this level of risk and therefore that his solution precluded residential development right up to the right-of-way. He suggested that an option in this case might be for the Board to exercise its discretion to determine a setback of a greater distance and thus prohibit residential construction within that zone.

Ollerenshaw Ranch Limited (Ollerenshaw) also requested that Dynegy be required to install extra ESD valves to reduce the pipeline segment near its property to a level-1 facility. It also supported the concept of a sophisticated mass balance leak detection system.

The Shepard Residents voiced concerns about Dynegy's ERP. The residents believed that the plan should identify an evacuation centre north of the Bow River. They also stated concerns about evacuation routes, with particular concern about the route identified to the south of Range Road 283 (southeast corner of Section 16-22-28W4M). Residents believed that this route would not be accessible in winter and also observed that parts of the route were not well graded and developed. The residents also expressed concerns about the location of school buses and notification procedures in the event of a problem. The residents believed that they lacked information and indicated that they would like to be more involved in the emergency response planning and maintenance.

3.4.3 Views of the Board

With regard to the matter of dispersion modelling and risk assessment done for the Shields, the Board is familiar with the GASCON2 model and the original limitations inherent to it. These limitations are acknowledged in ERCB report series 90-B. The Board is also aware of potential progressive improvements that could be applied to the model. This level of consideration was obviously beyond the scope of the hearing and would need to be considered by recognized experts and peers with the expertise needed to debate the issue. The Board notes that the results of the GASCON2 model have been verified by extensive field testing. The results of these tests were, in fact, influential in persuading the ERCB to adopt the use of the GASCON2 model in the early 1990s. While there may well be some improvements available to the model along the lines suggested by Mr. Zelensky, the Board would view the likely outcomes more in the realm of fine tuning. The Board is confident that the applicant's results using ideal gas assumptions in

this case with the GASCON2 model are reasonable.

In addition, the Board would not rely only on risk modelling to arrive at significant safety decisions. It fully recognizes that risk models, and other models, are simply the best predictions made by using a defined set of conditions and there could be limitations or inherent uncertainties associated with some of those input conditions. This is part of the reasoning as to why conservative estimates and worst-case assumptions are often applied to such modelling.

In this context, considering the difference in risks predicted by Dynegy and the interveners, (0.6 chances per million versus 1 chance per million), the Board is satisfied that they are not significant. Although small differences could be considered more significant if thresholds of acceptability were being approached, overall the Board in this case does not find that the difference would affect its decision.

The interveners, however, placed considerable emphasis on the level of risk up to the edge of the pipeline right-of-way. Mr. Zelensky calculated that the risks at the edge of the right-of-way of a level-1 pipeline could be greater than those at the 100 m setback from a level-2 pipeline. The Board concurs that this could be the case in at least some circumstances and would not encourage plans for residences immediately adjacent to the right-of-way even if the pipeline were modified to a level-1 facility. The Board also notes that municipal authorities require housing setbacks from property lines. Therefore, the Board believes that proper planning should be readily able to avoid this problem, given the size of lots proposed by the Shields. Further, the Board notes the suggestions of Dynegy with regard to the Shields' subdivision plans, which are described in Section 3.5.1.

The Board continues to believe that the current level-2 facility designation, with its 100 m setback, is appropriate. Given that Dynegy expressed a willingness to accommodate the Shields, the Board would prefer this option over directing the installation of emergency shutdown block valves to reduce the pipeline to a level-1 facility at this time.

The Board notes that Mr. Zelensky identified certain operational changes to the pipeline outside of the changes or additions of ESD valves that could reduce risk at the pipeline right-of-way. Dynegy had indicated that changes in the licensed maximum operating pressure and maximum H₂S content would be possible. Although these changes would not further change the sour gas level designation of the subject pipeline sections for either the current situation or a level-1 situation, the Board suggests that Dynegy should evaluate these changes and how they might reduce the calculated risk and accommodate the Shields' future development.

In response to the suggestion that ESD valves be installed below grade, the Board acknowledges that this would reduce the potential for a horizontal release and would lower the risk. However, the Board accepts the applicant's position that doing so could pose an additional risk to workers and could lead to complications in valve functioning. The Board will therefore not require that ESD valves be installed below grade.

With regard to the incident reported by Mrs. White, the Board notes that the Dynegy Chestermere pipeline in the vicinity of the Whites was not operating on the day in question and in fact had not been operating for several days. It is therefore difficult for the Board to accept

that the source of the fugitive emission was the Dynegy pipeline. It seems more likely to the Board that the odour may have been from domestic sources or fugitive emissions from maintenance procedures being conducted at a well site.

The symptoms described by Mrs. White would seem to indicate an exposure to a fairly high H₂S concentration. However, no H₂S release was reported to the EUB by Compton, Dynegy, or other residents in the area, which would likely occur upon a significant H₂S release. The Board, therefore, is uncertain as to the source or level of exposure Mrs. White may have encountered, but recognizes that any level of exposure could be perceived to be very threatening and stressful to a person unfamiliar with the specifics of sour gas. The Board empathizes with Mrs. White in this incident and appreciates her participation at the hearing.

However, the Board does not believe that the existence or operation of the Dynegy Chestermere pipeline segments constitutes an undue hazard that is fundamentally different from or more critical than the existence of thousands of kilometres of other sour gas pipelines located widely across Alberta, of which many are in close proximity to residents. The Board believes that any threat that exists as a result of the presence of the Dynegy pipelines can be minimized and controlled by careful operations. The Board is satisfied with Dynegy's efforts in that regard, as explained in Section 3.3.3.

The Board recognizes the situation whereby the only road providing access to the residence of Mr. George White crosses a sour gas pipeline. While this is not a preferred situation, the Board notes that the Whites were aware of the presence of the pipeline when they built their residence, and there was no firm commitment at that time that the pipeline was to be decommissioned. The Board notes that this circumstance is not unique, but nevertheless it will require Dynegy to work with the Whites to ensure that the ERP includes provision for notifying and providing an expeditious evacuation procedure for the George White family in the event that were to become necessary.

The Board notes the concerns expressed by the Shepard Residents respecting the ERP. In reviewing the plan, the Board notes that it is very comprehensive, and the Board is confident about the general safety of the public. The Board notes the residents' comments on the use of the trail extending south from Range Road 283 and agrees with them that the use of this route for evacuation may not be suitable. The Board also understood from Dynegy's evidence that it did not intend this to be an evacuation route, but rather would rely on a method whereby it would provide specific directions to residents in the unlikely event of a release. Evacuation would occur to the north along Range Road 285 when safe to do so. The Board believes that this plan is adequate. However it appears that some further communication with the potentially affected residents (those along Range Road 285) is needed to ensure that they clearly understand the plan and the safety inherent in it.

The Board also notes the interveners' comments that school bus routes were not identified correctly. It is recognized that school bus routes can change during the school term, and generally the Board believes there is a practical limit to the frequency that the ERP's school bus routes would need to be updated. However, the main purpose of identifying school bus routes within the ERP should be to ensure that there is a quick communications link to school bus operators to advise of road closures and other events and to plan around any potential limited

access. The Board encourages Dynegy to update school bus routing information in the normal course of its communication with the public and regular ERP update procedures. The Board further suggests that the facility operator should focus its notification process to one contact bus coordinator, rather than try to maintain contact through individual bus drivers.

In regard to the identification of an additional evacuation centre, the Board understands from Dynegy's comments that this could easily be done, and accordingly this should be incorporated into its ERP.

In regard to the Ollerenshaw request that the pipeline adjacent to its property be redesignated to level 1, the Board believes that currently there is no need to do so. Upon conclusion of the consultative process between Dynegy, Ollerenshaw, and the Soutzos, as described in Section 3.5.3, the Board expects that the process would also consider the operation of the pipeline, including its H₂S facility designation level.

3.5 Compatibility of Land Development and Sour Gas Operations

3.5.1 Views of Dynegy

Dynegy stated that continued operation of the subject sour gas facilities would not impede development of lands within the current city limits or the annexation of additional lands to the east of the existing Calgary city limit.

Dynegy indicated that the sour wells and pipelines were level-2 facilities with an associated 500 m urban setback and as such would not restrict development within the current city limits. According to its expert, it was not reasonable for the interveners to assume that Calgary City Council would impose a setback of three times the setback of 500 m recommended by the EUB to urban residential development from a level-2 facility, as suggested in the Ollerenshaw submission. Dynegy stated that in northeast Calgary developments, the city had imposed a setback three times that of the 100 m setback recommended by the EUB required because the wells were level-1. Dynegy's understanding was that the purpose of this was to reduce potential nuisance impacts and was not intended as a greater distance for safety. Dynegy contended that the 500 m level-2 setback to urban development in itself would provide sufficient distance to protect the public from any nuisances.

Dynegy stated that it did not believe that existence of sour gas facilities in southeast Calgary alone would inhibit future annexation of the area. It added that the city had previously used a sour gas constraint area as a planning tool; however, upon the advice of the EUB it no longer did so.

Dynegy understood that the city was in the process of developing long-term growth strategies supported by intermunicipal development plans with the surrounding municipalities. Currently, the preferred corridors for future urban growth were to the north and south of the existing city boundaries. It added that lands to the north and south had been previously included in an annexation proposal but were not included in the lands approved by the province. Therefore, it believed it would be logical to include these lands in the next annexation proposal. It further stated that urban growth to the southeast of the current city boundaries was not forecast to occur

until after the preferred north/south corridors had been developed, partly due to the need for a new sewage treatment plant to serve the southeast.

Dynegy concluded, based on discussions with the City of Calgary administration and the Municipal District of Rockyview, that expansion of the city into the area of the subject pipeline would not likely occur until at least 2018. It believed that until urban development took place, the best use of the lands would remain agricultural, as referenced in the Intermunicipal Development Plan. It believed that there would be sufficient time to draw down the hydrocarbon reserves within the 15-year extension requested prior to potential land-use conflicts occurring. Following the 15-year period, Dynegy believed that a further review and assessment of the need for continued reserve depletion versus urban development could take place.

Dynegy's expert outlined the steps in the local land planning and development process following annexation: First a growth area management plan would be developed to set overall land usage, followed by a more formal statutory area structure plan. The developer would then prepare an outline plan and land-use redesignation. Approval of the outline plan would result in a development agreement between the developer and the City of Calgary, which would establish responsibility for payment of infrastructure costs. The developer would be responsible to pay for all local facilities and the city would be responsible for all main facilities, with a contribution coming from the developer as well.

Dynegy believed that it would be certain that surface development would take place once the city had approved an outline or tentative plan. At that point, the city would be satisfied that services would be available to support the development and would have made a commitment to the developer, and the developer would have made a financial commitment to the city. Dynegy agreed that this stage would likely be a key time for discussions to occur between the landowner and the resource owner regarding eliminating any sour gas constraints. Dynegy stated that it made no sense to prematurely and arbitrarily terminate gas production and sterilize the resource to allow developers to proceed with planning future development. It argued that this planning process should not be confused with the point in time that actual developments on the ground might be expected to occur.

Dynegy indicated that it would support a cooperative approach involving industry, landowners, the city, and the EUB to consider ways in which responsible land development could be accommodated. Dynegy indicated that when the point of intensive development was reached, the best use of the land would be such development and it would not want to operate its facilities in that environment.

Dynegy was of the opinion that sour gas facilities had not posed any impediment to country residential development on the Shields' property, which, it maintained, was within an area of the Municipal District of Foothills where there was extensive rural subdivision taking place even with the presence of sour gas facilities. It agreed, however, that the setbacks from the level-2 sour gas pipeline on the Shields' property would potentially limit the flexibility of the subdivision design. Dynegy noted, though, that it would be possible to design a country residential subdivision with the same 15-lot density as proposed on the property but with a different configuration.

Dynegy stated that it would be possible to add additional ESD valves in order to reduce those segments of line to level-1 volumes on the Shields' property. However, Dynegy believed that this would generally be undesirable, as it would allow development to move closer to the pipeline. It believed that it was preferable to maintain the 100 m setback to country residential development for the level-2 pipeline than to allow closer contact to the reduced-volume but equally sour level-1 pipeline where the setback is the pipeline right-of-way. Dynegy also recognized the consequences the location of the existing ESD valves might have on the future subdivision possibilities of the Shields' land. Dynegy indicated a willingness to work with the Shields in the event of impending subdivision to minimize impacts through consideration of a number of possibilities, including possible subdivision redesign, pipeline modification, timing, compensation, or other options.

3.5.2 Views of the Interveners

Ollerenshaw expressed concern that the continued operation of sour gas facilities on or near its property clearly restricted its opportunity to consider urban development on its lands. Mr. Soutzo pointed out that his land was located directly south of the Ollerenshaw land and he indicated that development of his lands would follow closely behind Ollerenshaw's. He therefore expressed similar concerns regarding the impact of the sour gas facilities on the future development of his property.

Ollerenshaw strongly disagreed with Dynegy's statement that according to City of Calgary growth forecasts, urban development would not occur in the vicinity of the existing pipeline system until 2018. During the hearing, Hopewell Residential Communities Inc. (Hopewell) and Ollerenshaw outlined their development plans for the area, with timing and infrastructure needs, including a north-south freeway. Development would take place in both Sections 23 and 24 on either side of this freeway. Ollerenshaw stated that it, in partnership with Hopewell, proposed to initiate development of lands south of Highway 22x by 2004, with housing starts in 2005. It stated that the city preferred development to take place in a logical, affordable manner and did not try to force development on lands where it would be very expensive and would require major up-front expenditures for utilities or roadway infrastructure. It added that the city left it up to landowners and developers to find the most economical places to build.

Ollerenshaw stated that the Municipal District of Rockyview and the City of Calgary Intermunicipal Development Plan recognized the southeast corridor where the Ollerenshaw lands were located as one of the least constrained and most efficiently serviceable potential long-term growth corridors. Brown and Associates were of the opinion that urban development of the Ollerenshaw lands would be extremely well positioned vis-a-vis major employment centres and roadway structures. However, in its opinion, the ability to plan, develop, and successfully market the lands would be compromised by the continued operation of sour gas facilities in Section 24.

Regarding development within the city, Ollerenshaw expressed its opinion that there was a potential development constraint on its Section 23 lands as well as the west half of Section 24. It stated that the current sour gas setback distance from sour gas facilities borders Section 23. However, it said that there was the potential for the city to require an additional setback, which

would then encompass lands within city limits.

Regarding annexation, Ollerenshaw stated that it believed it had a strong case to request that the city include the west half of Section 24 in its next annexation proposal. It believed that development of those lands would precede development of lands already within the city because there were no natural or topographical constraints to urban development of its lands. It stated that its lands were accessible by existing and proposed transportation systems, without the need for major interchanges. It also stated that Section 23 lands could be serviced by the Fish Creek wastewater treatment plant and that the west half of Section 24 could be serviced by pumping into sanitary sewage mains within the current serviceable area. It further stated that there were no water, natural gas, or electrical constraints to extending these services from urban development directly north.

Ollerenshaw believed that continued operation of the sour gas facilities located on the west half of Section 24 would affect the willingness of City Council to consider future annexation of the lands, preventing it from including Ollerenshaw lands in development plans. It believed that these lands would continue to be excluded from annexation plans until the sour gas pipeline and related facilities were removed or relocated. Ollerenshaw believed that there would be merit in a dialogue between EUB staff and the city administration regarding annexation of the lands. It understood that the parties had a good working relationship but was still concerned that recent increased public concern about sour gas facilities had resulted in increased political concern. It stated that the City Council could still take a very conservative approach, even though the EUB may have suggested that that was not necessary.

Ollerenshaw outlined the regulatory approvals it would need before development would be allowed to proceed and its estimate of timing for each phase. Lands outside of the city would require annexation to bring them within City of Calgary jurisdiction before they could be included in the city's regulatory approval process. The first step in the municipal planning process would be development of a community plan or area structure plan, which, it stated, would take from eight to eighteen months for approval, depending on the number of landowners involved. Ollerenshaw believed that the timing for the subject lands would be somewhere in the middle because of the small number of landowners involved. It noted that the west half of Section 24 could not formally be included in a community plan until it had been annexed; however, general discussions regarding annexation and community planning of the lands could occur with the city during community planning of the lands already within city jurisdiction. Thought could be given to the roadway and servicing infrastructure that would be required for the west half of Section 24, and once the lands had been annexed, they could easily be included in the community plan. Ollerenshaw noted that the city had already initiated dialogue on the area structure plan.

Ollerenshaw stated that the next step in the municipal process would be development of an outline plan, which would provide a layout of roads and utilities subject to approval by City Council. Concurrently, a land-use redesignation application would be made that would describe permitted land uses, also subject to approval by City Council. Ollerenshaw stated that it believed that these two processes would take six to twelve months to complete and receive approval. Following approval of the outline plan and land-use redesignation, developers could come forward to the city with applications to develop the lands based on approved conditions.

The next approval stage would be development of a tentative plan of subdivision and engineering drawings, which would be submitted to the city administration for approval; that would usually be granted within three months. Ollerenshaw indicated that in many cases developers submit tentative plans and engineering drawings to the city while it is considering the outline plan and land-use redesignation applications. Although the city could not approve the tentative plan until Council had approved the other applications, the process could occur quickly. Ollerenshaw believed that an additional six months following approval of tentative plan would be required before it would become a legally registered plan of subdivision. It explained that housing construction would normally occur following approval of the tentative and engineering drawings and would not need to wait for the plan to be legally registered.

At the request of the panel, Ollerenshaw presented its views of what would be a fair and equitable process for all parties. It believed that the Board's decision should state that the existence of sour gas facilities should not deter the city from annexation of lands east of the current city limits, approval of a community plan and/or area structure plan, or approval of land-use redesignation. It requested the Board to direct that sour gas facilities be decommissioned within one year of the city approving a tentative plan of subdivision for any portion of Ollerenshaw lands east of the proposed east freeway. It was suggested that such a "trigger mechanism" for the decommissioning of sour gas facilities could provide City Council with some certainty and allow annexation and other municipal application processes to take place.

Ollerenshaw believed that the resource industries had had ample opportunity to extract the resource and that it was in the public interest to now give priority to the surface owners to consider development plans because of the higher value and better use of the property. Ollerenshaw estimated the value of the proposed community development once completed in Section 23 and the west half of Section 24 to be \$1.2 billion, compared to what it believed to be less than \$1.2 million for the remaining sour gas reserves. It believed that the resource owners had been given adequate opportunities to expeditiously deplete the sour gas reserves, but this had not been done.

Ollerenshaw stated that it rejected Dynegy's application as it stood because it did not agree with an additional 15-year operation of the facilities with a further review to follow, as proposed by Dynegy. It explained that it required some certainty that the sour gas facilities would be decommissioned when it was in a position to move forward with residential development. Hopewell stated that when it purchased the lands two years ago it believed that the 15-year producing period set out in the Board's 1984 decision represented a reasonable balance between the needs of the subsurface owner and the surface owner. It stated that it purchased the lands specifically for development of residential communities. It believed that a reasonable approach could be taken now to define a balance based on the certainty of residential development occurring.

Ollerenshaw agreed that it was not necessarily asking that the sour gas facility be immediately decommissioned. It also did not believe that an absolute date for decommissioning of facilities was necessarily the right approach. Rather it suggested that it would be more helpful to consider a mechanism for identifying a point in time when urban residential development would be quite certain to occur on Ollerenshaw lands and then begin the process of decommissioning sour gas facilities. That way depletion of the resource could continue until the land was needed for urban

development. It believed that there were options available to the resource industry to continue producing the reserves so there would not be premature decommissioning and the conflict between the surface and subsurface owners would be reduced.

Ollerenshaw stated that it would be agreeable to the Board establishing a short fixed term within which sour gas production could continue to occur, with a process thereafter whereby the parties would work together to determine when facilities should be decommissioned based on predefined criteria. Ollerenshaw indicated the term should be 5 years, while Mr. Soutzo stated a term of 8 years for his lands, and Mr. Shields suggested that after a term of 10 years the pipeline through his lands should be abandoned.

Ollerenshaw stated that it had a good working relationship with Dynegy and found it to be fair. It was confident that an amicable solution to the land-use conflict could be achieved through consensus, possibly by a committee involving the EUB, the developer, surface owners, and subsurface resource owners. It preferred resolution through this type of process rather than being forced back to another formal public hearing process, which it viewed as expensive and time consuming. It would, however, still be concerned that the subsurface owners be specific about their expectations so that a satisfactory resolution could be reached. It was concerned with the potential for a change in ownership and the willingness of new parties to resolve the matter outside another formal hearing process. Ollerenshaw recognized that if the parties were unable to reach agreement, it might still be necessary to come back to the Board for a final decision. It would prefer, however, that the Board's decision now be very clear in terms of the mechanism or formula to be used to trigger when urban development priority would take place over resource development.

The Shields requested that the Board require the portion of Dynegy's pipeline that crosses its property to be reduced from a level-2 to a level-1 facility if the Board approves the extension application. It stated that this would minimize the impact of the pipeline on its proposed 15-lot country residential development. The minimum setback distance to country residential development for a level-2 facility would be 100 m, while the level-1 setback would be only the pipeline right-of-way. The Shields stated that if the facilities continued to operate as level-2, it would reduce the number of developable lots in its proposed subdivision from 15 to 10.

The Shields stated that their property has excellent country residential subdivision potential because it is located on the Bow River escarpment. They did not believe that reconfiguration of the 15-lot concept plan would result in equivalent quality residential sites. In addition, fragmentation of the remaining area available for hay production would occur.

3.5.3 Views of the Board

In addressing the relationship between surface developments and sour gas facilities the Board must first consider EUB *Interim Directive (ID) 81-3: Minimum Distance Requirements Separating New Sour Gas Facilities from Residential and Other Developments* and *ID 97-6: Sour Well Licensing and Drilling Requirements*. These directives set out minimum setback requirements that must be maintained between sour gas facilities and surface development. Level-2 facilities, such as those in Section 24, restrict wells and pipelines from being located within 500 m of urban density development and 100 m of unrestricted country development

(defined as eight or more dwellings per quarter section). The Provincial Subdivision and Development Regulation, pursuant to the Municipal Government Act, requires that identical setback distances be applied to surface development that could encroach upon existing sour gas facilities. The legislation gives the planning authority the right to increase the distances in consultation with the EUB. However, it may not decrease the distances. The purpose of setback distances is to provide a safe distance between sour gas facilities and the public.

At the hearing arguments were raised regarding the impact of the Dynegy/Compton facilities both on future land development within the city boundaries and on lands outside the city that must be annexed before urban development could occur. The Board believes that current level-2 urban setback requirements would not impede development of the subject lands currently within the city limits. The Board's experience is that the City of Calgary and other planning authorities have always relied on advice received from the EUB in determining appropriate setback distances where development has been proposed in close proximity to sour gas development. The Board acknowledges that the city of Calgary discontinued the use of a Sour Gas Constraint Area as a planning tool in 1995 on the advice of the EUB. The Board believes that generally the city would now only consider the EUB's minimum setback distances as constraints to approval of surface development, and it does not believe that it is likely the city would impose a greater distance. The Board would expect that the city would rely on the Board's advice in this case as well.

Regarding annexation, The Board notes that although the city may have previously eliminated consideration of lands constrained by sour gas, the Board would not expect the city to take the same approach now with the elimination of the sour gas constraint. The Board understands the concerns of Ollerenshaw that City Council could possibly take a very conservative approach due to general public concern and not consider annexation of lands east of the city limits unless there was some certainty as to when the sour gas facilities would be removed. The Board would be prepared to have its staff meet with the city administration and other parties to clarify that the sour gas facilities adjacent to southeast Calgary should not be a constraint to annexation.

The Board does not believe that it would be in the overall public interest to prematurely decommission sour gas facilities and forego important nonrenewable resources in the event surface development did not occur as forecast. At the same time, the Board does not believe that it would be appropriate to approve Dynegy's request for a 15-year term of operations with a review period at the end without considering the interests of surface owners. The Board notes that Mr. Soutzo and Ollerenshaw suggested a 5-year term for the 11-24 well, Mr. Soutzo suggested an 8-year term for 10-13 well, and Mr. Shields a 10-year term for the pipeline through his property. The Board believes that the reserves value suggested by Ollerenshaw is substantially underestimated. Therefore, the Board has decided that it must consider options that would recognize the rights of both the surface and subsurface owner and the overall public interest. One option could include requiring the resource and land developers to jointly establish a mutual land-use and resource development agreement (LRD agreement) corresponding to the various municipal planning stages through phased construction, concluding with abandonment when construction commences in close proximity to the sour facilities. The Board notes that Dynegy, Ollerenshaw, and Mr. Soutzo agreed that they could work together to explore this or other options.

Should an agreement not be possible within a reasonable time frame, then the Board will either prescribe a plan based upon appropriate planning mechanisms and/or utilize an approach similar to that in *Decision 84-7* and specify a pipeline licence term leading to a review upon expiry. A review term will be necessary because, based on the evidence at the hearing, the Board believes that significant uncertainty still exists regarding the time line for urban development, and premature abandonment of the sour facilities must be avoided.

At the hearing, both the interveners and applicants agreed that it would be beneficial to add more certainty regarding timing for the depletion of the sour gas resource and urban development. They also indicated a desire for certainty on what would happen along these time lines. The applicant and Ollerenshaw appear to be in agreement regarding the land-use planning process, the time frame required for each step, and the point at which there could be some certainty that urban development would proceed. Both parties suggested that there would be a high degree of certainty that urban residential development would take place on lands once a tentative plan had been approved. However, Ollerenshaw argued that at that stage the 11-24 well and associated pipeline be abandoned within one year of plan approval, while Dynegy argued that, in addition, the actual start of construction must be considered.

The Board believes that the parties should continue to work in a collaborative manner to develop an LRD agreement along the lines suggested above. To assist this process, the Board outlines below its views on a number of factors that should assist the development of the agreement:

- Premature well abandonment must be avoided to minimize the loss of reserves.
- The Board reaffirms previous Board decisions that resource owners in the area should take all reasonable steps to accelerate production. The Board notes that although the 10-13 and 11-24 wells were drilled in 1969 and 1970, they were not placed on production until 1984 and 1985 respectively. In addition, although considered by previous resource owners, for a number of reasons additional wells were not drilled. The Board will not direct that additional wells be drilled in the area. Rather, it is up to the resource owner to conduct its evaluations and apply for an EUB well licence if this could be seen as reasonable. In Section 3.2 the Board presents observations on the limitations of achieving gas recovery depending on the length of time the 11-24 and 10-13 wells can continue to produce. The Board believes that there has been ample notice to the resource owners regarding the need for accelerated production, and that poor performance in this area should not be a factor that negatively impacts the timing of urban development.
- Recognition must be given to previous Board proceedings and recommendations that indicated that a balance between resource and urban development must be achieved. A point may be reached where sour facilities should be abandoned because housing is too close to the sour facilities. This may mean that drainage must occur from wells farther away or ultimately result in a loss of reserves.

- The presence of sour gas should not hamper annexation or the development of the various municipal plans, including the growth area management plan, the community plan and/or area structure plan, the outline plan, and the tentative plan.
- The Board agrees with both the applicant and interveners that intense urban housing very close to sour gas facilities is not prudent and should be avoided.
- Dynegy and the Board estimate the life of the 11-24 well to be 10 to 13 years. Should this well become nonproductive and be abandoned before the LRD agreement applies, then the pipeline from the 11-24 well to the 10-13 well should continue to operate as a level-1 facility, given the nature of other sour gas being produced through this section of pipeline. Once the LRD agreement criteria are exceeded, the well, even if still producing, and the associated pipeline, even if in use, should be abandoned.
- A collaborative approach should be utilized so the interests of all parties can be met to the greatest degree possible. The Board agrees with the comments made at the hearing that a future review hearing would be a second expensive review and should be avoided if possible. The Board notes a willingness of the parties to discuss options. The Board believes the framework for the LRD agreement should be established within the next six months and should not wait several years down the municipal planning process. The pipeline licences would remain in good standing during this six-month period. If the parties are unable to reach agreement that can be enforced, the Board will either prescribe a plan and/or establish, similar to *Decision 84-7*, an operating term followed by further review.

The Board has considered several development scenarios and provides the following comment for consideration regarding the trigger mechanisms suggested by Dynegy and Ollerenshaw.

The Board notes that the Ollerenshaw and Soutzo lands east of the city limits must first be annexed in order for urban development to proceed. This process would be initiated by the city. Once the lands were within the city, development would follow the municipal planning process.

The Board agrees that there is a measure of certainty that development could take place following tentative plan approval. However, the Board believes that a one-year time frame from tentative plan approval to abandonment of the 11-24 well, as suggested by Ollerenshaw, could still lead to premature abandonment and loss of reserves. The Board notes that Ollerenshaw indicated that development would proceed on either side of a new freeway through its property. Therefore the Board believes that as development proceeds eastward, consideration should first be given to reduce the 11-24 well and pipeline to level-1. The city could apply a similar approach to that used in northeast Calgary and place a 300 m nuisance zone around the well. As the community continues to develop towards the sour facilities, a trigger based on actual development should be established as to when the sour facilities should be removed. Factors in the trigger could include the need to cross the pipeline with local sewers, roads, or other local infrastructure that would create additional, unwarranted expense for the developer. Another factor could be development within 300 m of the well or pipeline. The Board also notes that a similar approach could be developed for the 10-13 well and associated pipeline on the Soutzos' land.

The Board requests that Dynegy, Ollerenshaw, and the Soutzos develop and document an LRD

agreement relative to the Ollerenshaw and Soutzo lands. The Board expects Dynegy and Ollerenshaw to initiate the actions. The Board also expects relevant surface owners, the city, and EUB staff to participate. The Board suggests a time frame of six months to complete an agreement, but this deadline may be modified if agreed to by all parties involved. The LRD agreement would be submitted to the Board for review, and an addendum to this report will be issued that will acknowledge the agreement, set out the Board's expectations, and establish pipeline licence conditions.

The Board notes that although the country residential subdivision plan developed by the Shields for the hearing was conceptual, it did demonstrate to the Board that serious consideration was being given by the Shields to proceed through the subdivision approval process. The Board also recognizes the impact the continued operation of a level-2 pipeline across the Shields' lands will have on the proposed development. Therefore, the Board will expect Dynegy to work with the Shields as the plans are being developed to explore, as it suggested, options to minimize the impact of the level-2 pipeline. The options could include those suggested by Dynegy and identified in Section 3.5.1 of this decision. The Board will therefore require Dynegy to work with the Shields to develop a resolution, taking into account the Board's comments, and report back to the Board on the solution reached. Should a mutually satisfactory agreement not be achieved, the Board will take an approach similar to that outlined in *Decision 84-7* and revisit the need for additional ESD valves.

3.6 Communication and Consultation

3.6.1 Views of Dynegy

Dynegy said that it had had opportunities to introduce itself to the community and recognize many of the public concerns through its open houses in October and December 1998 and its public consultation process conducted prior to filing its application. It noted that it had completed its initial consultation process as per the requirements and that it had continued to consult with the public. Dynegy said that its preference would be to resolve issues through direct consultation and submitted that it was still ready and willing to address all concerns, if possible. It noted, however, that consultation is a two-way process and, in its view, Dynegy had made substantial efforts to consult with members of the community and to create avenues of communication. It had also worked with Bearspaw and Pinon to try to come to an acceptable resolution with respect to Pinon's proposal.

Dynegy said that it did have some direct meetings and discussions with some of the parties in an attempt to resolve issues, but mentioned that it was not able to have any early communication with others, such as the Shields family. Dynegy said that it had made a considerable effort to contact the Shields, including providing them with information and telephone calls. It noted that it was unfortunate that the Shields did not approach Dynegy with their subdivision plans but instead chose to bring their plans forward in the formal hearing process. Dynegy also noted that it had had difficulty in establishing effective lines of communication with Mrs. White and asked the Whites to consider a method of communication and exchange of information that would be acceptable to them.

Dynegy confirmed that it was not the operator of the Chestermere pipeline at the time of the two

pipeline leaks in March and July 1998. It confirmed that Compton was the owner/operator at the time of the first pipeline leak in March 1998 and it was Compton's responsibility for dealing with the operational issues at that time. Dynegy stated that it was in active negotiations with Compton to purchase the Chestermere pipelines at the time of the second pipeline leak in July 1998 and was involved with the pipeline repair. Dynegy said that Compton did inform it promptly of both leaks. However, it said that Compton was still the operator at the time of the leaks, even though Dynegy was technically the owner at the time of the second leak.

3.6.2 Views of the Interveners

In general, most of the public interveners expressed concern with the number of operator changes with respect to the Chestermere pipeline licence over the history of its operation. They believed that this has caused a number of difficulties over the years regarding effective communication, access to information, prudent operation, and emergency response preparedness issues.

The Soutzos and Ollerenshaw stated that they had been actively involved as interveners regarding the issues of sour gas development in the area southeast of Calgary since the first wells were drilled in the 1960s. The Soutzos confirmed that they had had discussions with Dynegy regarding its application to extend the licence term for the Chestermere pipelines and the impacts it would have on their lands. The Soutzos also confirmed that Dynegy had developed a level of goodwill with them and there had been a reasonable level of communication between the two parties.

Ollerenshaw noted the two leaks on the pipeline and expressed its displeasure with regard to Compton's handling of information and communication following the pipeline leaks. It said it wrote a letter requesting a report detailing the probable cause of the leakage, as well as an environmental impact assessment of the damage caused. Ollerenshaw said it finally received a call from a representative from Compton some six weeks after the leak informing it of Compton's plans to enter onto Ollerenshaw's lands to perform pipeline repairs. Ollerenshaw requested, for a second time, a full explanation of the probable cause of the leakage and an environmental impact assessment of the damage prior to any remedial work being performed on the pipeline. Upon review of the pipeline failure report, Ollerenshaw expressed a number of concerns with respect to the analysis and remedial measures, which were documented in the report. Ollerenshaw said that it was never given an opportunity to discuss these concerns with the Compton representative. It said the whole incident was not pleasant to deal with and did little to reassure Ollerenshaw that appropriate measures were being taken to ensure the safety and integrity of the pipeline.

Ollerenshaw again expressed concerns following the second leak and sent a letter to the EUB on July 28, 1998, identifying its concerns regarding the condition of the sour gas pipeline. Ollerenshaw said that the incident and follow-up communication did not bode well for ensuring confidence in the company or the pipeline.

The Whites expressed concern with regard to Compton's handling of information and communication following the pipeline leaks. They said that they were not informed immediately of the leaks. The Whites also indicated that they were not informed of any of the operations relative to the pipelines or wells in the past. They also said that they had not been notified of pipeline ownership changes, well flaring incidents, excavation operations, pipes replacement, heavy truck traffic, and well-servicing operations. In addition, the Whites expressed significant concern on the approach and attitude of Dynege regarding Mrs. White's odour incident and the health problems that followed.

The Shields took exception to Dynege's evidence with respect to its efforts in providing dialogue with them and other landowners. They pointed out that the first time they were introduced to Dynege was in October 1999, when they signed a one-year right-of-entry agreement that allowed Dynege access to a pipeline access port (bell hole) that was to be installed on their land. The Shields said that they were very concerned with Dynege's suggestion that the Shields had avoided dealing with Dynege and had refused meetings. They said that this was not the case and suggested that if Dynege had initiated discussions at the time of the first announcement of the licence reapplication, it would have determined that their issues related to the impact of the pipeline on future land development. They suggested that Dynege should have come forward with some options and then some common ground may have been reached and the Shields would have then had an opportunity to discuss their future development plans with Dynege.

Mr. Marshall, of the Shepard Residents group, said that he had concerns with the Compton 7-19 well just west of his property. Mr. Marshall said that he was not notified or consulted about the well until site construction commenced. He said that the same applied to the 12-20 well lease, which existed immediately to the north of his property and was visible from his deck. He indicated that the 7-19 site included a number of black production tanks and that it was serviced by an aboveground electric power line. Mr. Marshall said that the prominent visibility of the facilities from his residence was unwelcomed. Mr. Marshall also said that it was his understanding that Compton would move the surface facilities if the Dynege pipeline were relicensed. Mr. Marshall noted that in a letter Compton had stated that the well was not drilled by Compton, but notwithstanding, the company accepted responsibility to remedy the situation after it was brought to its attention that there were some outstanding issues yet unresolved.

3.6.3 Views of the Board

The Board recognizes and shares some of the concerns raised by the interveners with respect to communication between companies and the public resulting from ownership/operatorship changes on the Chestermere pipeline licence over the history of its operation. It is apparent that this has caused a number of difficulties over the years with respect to effective communication between the stakeholders, likely resulting in some inconsistencies in the sharing of vital information. The Board is very concerned with this issue, particularly in this case, where land-use conflicts, environmental matters, and public safety issues are paramount. The Board believes that identifying local and landowner concerns and issues should be a key process in the company's due-diligence program when it purchases new properties. The program should include a public and landowner communication element to indicate a change in ownership as well as direct consultation to gain an understanding of issues.

The Board heard evidence from Mr. Ollerenshaw and the Whites regarding the lack of communication about pipeline leaks and remedial work required on the pipeline. The Board is disappointed in Compton's actions and notes that Compton should have reacted promptly in notifying landowners and residents of the pipeline leaks to ensure that they were informed. Compton should have responded to Mr. Ollerenshaw's requests in a timely manner. The Board recognizes that Dynege only became actively involved after the second leak.

The Board notes that although they were unable to reach mutually acceptable solutions for some conflicts, Dynege did make substantial efforts at public consultation for the subject application.

The Board notes that since Dynege has become operator of the pipeline, communication with landowners has clearly improved. The Board understands that Dynege is committed to consulting with members of the public and ensuring that avenues of communication are maintained. The Board recognizes that communication is a two-way process and provides an opportunity for affected parties to have access to information and understand the company's operation and its impacts. It is only through this exchange of information that the operator can understand and address issues and concerns raised, such as pending land-use conflict issues, safety, emergency response preparedness and special needs, and environmental matters. For the process to be effective, the Board believes strongly that all parties must be willing to participate.

The Board notes the communication difficulties between Dynege and the Whites. The Board recognizes that because of these poor relations it may be difficult to establish communication and understanding between them. The Board notes the commitment by Dynege to accommodate the Whites in a communication process comfortable to the Whites and would suggest to the Whites that they will need to be proactive in assisting this process. It is vital that communication exists to ensure understanding regarding emergency response measures.

3.7 Conditions and Conclusions on Dynege's Application

Having reviewed all of the evidence before it, the Board is satisfied that the Dynege Chestermere pipeline can continue to be operated safely. The Board is satisfied with the measures being taken to ensure corrosion is being controlled. In addition, Dynege will be required to review and amend its emergency response plan.

- 1) With regard to pipeline operations, including corrosion monitoring and mitigation measures, the Board is generally satisfied with the program planned by Dynege. However, the Board will require Dynege to conduct a full pipeline internal inspection within three months of the release of this decision, unless such an inspection has been made within the six months prior to the release of the decision. In either case, Dynege shall present the interpreted results to the Board by July 1, 2000. Further, as stated in Section 3.3, Dynege shall submit follow-up summaries of the corrosion plan activities and results to the Board by July 1, 2000, followed at six-month intervals thereafter until the Board advises otherwise.
- 2) In this decision the Board has identified some necessary updates and corrections (see Section 3.4.3) to the Dynege emergency response plan. Dynege is expected to consult with the affected public parties, update and amend the plan as appropriate, and then submit the revised plan to the EUB for examination by July 1, 2000.

- 3) In Section 3.5 the Board outlines a framework intended to allow the continuation of operations of the Dynegy pipeline north of the Bow River but leading toward a potential restriction or phase-out. This would allow for the natural progression of land-use changes that are likely to happen on the Ollerenshaw and Soutzo lands. The Board directs Dynegy to work with respective landowners to provide the Board with a logical plan (the LRD agreement) to allow for the planning and development of urban growth into the area of Dynegy's pipeline. The plan is to be based on the planning and encroachment milestones identified by the Board in Section 3.5 and must be submitted to the Board by October 1, 2000. Should the parties fail to reach agreement within the time frame given, the Board would, based on the evidence at the hearing, prescribe a plan based upon appropriate planning mechanisms and/or establish a fixed term of continued operations for the Dynegy pipeline north of the Bow River.
- 4) The Board directs Dynegy to work with the Shields to develop a proposed resolution to allow the Shields to proceed with subdivision plans on their property. Within the context of the discussion in Section 3.5, the Board expects that priority will be given to a resolution that does not include additional ESD valves. The Board expects this resolution to be completed by October 1, 2000. Should a mutually satisfactory agreement not be achieved, the Board will take an approach similar to that outlined in *Decision 84-7* and revisit the need for additional ESD valves.

4 PINON'S APPLICATION

4.1 Description of Pinon's Application

Pinon proposes to construct and operate a sour gas compressor station in LSD 10-21-23-28 W4M (10-21). Additionally, it proposes to tie in two gas wells and four oil wells to the location. The facility is currently operating as an oil satellite where oil production is tested and the oil effluent is then recombined and sent through a group oil effluent pipeline to Bearspaw's multiwell oil battery located in LSD 7-33-23-28W4M. The Bearspaw battery then processes the oil emulsion and sends the group gas production north, through the Wascana pipeline system, to the Balzac plant for final processing. Pinon's application proposes to maintain the oil testing facilities at 10-21. However, the group gas would then be separated, compressed, and delivered to the Dynegy Mazeppa plant for processing via Pinon's proposed 11.3 km sour gas pipeline. The Pinon pipeline would transport the gas south from its proposed 10-21 facility to a pipeline tie-in point located at LSD 12-20-22-28W4M on Dynegy's existing sour gas gathering system. Pinon would continue to direct its oil production and any gas remaining in solution from its proposed 10-21 compressor facility to the Bearspaw battery for processing.

4.2 Issues

The Board considers the issues respecting the application to be

- need to produce the reserves,
- pipeline route and options for production disposition, and
- communication, consultation, and safety.

4.3 Need to Produce the Reserves

4.3.1 Views of Pinon

Pinon stated that as of January 1, 1999, it had $360 \times 10^6 \text{ m}^3$ (13 bcf) of proven gas reserves and another $108 \times 10^6 \text{ m}^3$ (4 bcf) of probable gas reserves in the Chestermere/Shepard area. In addition, it had proven oil reserves of $101 \times 10^3 \text{ m}^3$ (638 thousand stock tank barrels [mstb]) and probable oil reserves of $46 \times 10^3 \text{ m}^3$ (300 mstb). According to Pinon, these reserves were estimated by an independent consultant based on the geological, engineering, and recently acquired three-dimensional seismic data of the subject reservoirs. Pinon estimated, in addition to these reserves, that there were potential gas reserves of $135 \times 10^6 \text{ m}^3$ (5 bcf) and potential oil reserves of $17 \times 10^3 \text{ m}^3$ (100 mstb) on its lands.

Pinon stated that its current oil production and the associated solution gas was connected and producing via the Bears paw 7-33 battery to the Wascana Balzac gas plant gathering system. It further stated that its current production was only a fraction of the total existing capability of the Pinon properties in the area due to the limited capacity (2.3 mmcf/d in 1998 and 2.5 mmcf/d through May 1999) available to Pinon through the system. This resulted in Pinon's flowing oil wells being restricted for the last three years and two significant productive wells being shut in completely. Pinon stated that the current total capability of the its wells was $260 \times 10^3 \text{ m}^3/\text{d}$ (9 mmcf/d), with potential deliverability of $390 \times 10^3 \text{ m}^3/\text{d}$ (13.5 mmcf/d). This, Pinon stated, demonstrated that the productive capability far exceeded the available transportation/and gas processing capacity.

Pinon confirmed that at the time of the hearing all of its wells were shut in pending the results of Wascana's workover and the testing of wells in the south end of the Crossfield Wabamun Field. It was Pinon's understanding that if Wascana's well activities proved successful, Pinon would be given notice to permanently terminate production to the Balzac system.

Pinon stated that its lands were developed with a total of six wells. Three of these wells were producing oil and gas from the Crossfield Rundle P and Q pools. Two additional wells had been drilled in these pools but were not on production. Another well had encountered gas in an undefined Rundle pool and was currently waiting to be tied in.

Pinon stated that the Rundle reserves were capable of relatively high production rates that decline rapidly. Therefore, it anticipated that its reserves would be depleted in 10 to 12 years. It also indicated that even if the Dynegy Chestermere pipeline was relicenced for a shorter period of time, it could still produce a significant portion of its reserves. It estimated that two-thirds of its reserves could be produced by 2005 if production commenced soon. Pinon argued that this favoured connection with the Dynegy system, as it would allow expeditious production of known reserves in advance of potential land-use conflicts resulting from encroachment by the city.

4.3.2 Views of the Interveners

Bears paw stated that it attempted to verify Pinon's wells' deliverability and the associated reserves to confirm Pinon's claim that it needed 10 mmcf/d additional capacity. It indicated that

it used geological and geophysical data, as well as reservoir pressures, both from public files and from information provided by Pinon. It stated that the most recent reservoir pressure data (that of September 1999) supported Bearspaw's position that the Pinon wells are basically acting as separate reservoirs. In Bearspaw's opinion, the pressure differences were so great that it interpreted permeability barriers to be present between the wells. Accordingly, Bearspaw maintained, drainage was interpreted to be poor. It concluded that the total deliverability for Pinon's wells would be $225 \times 10^3 \text{ m}^3/\text{d}$ (8 mmcf/d) initially, with a 60 per cent rate of decline. It assessed Pinon's remaining recoverable oil and gas reserves (updated in September 1999) to be $32 \times 10^3 \text{ m}^3$ (203 mstb) and $118 \times 10^6 \text{ m}^3$ (4.157 bcf) respectively. Further, Bearspaw disagreed with Pinon's mapping, which was based on seismic information and the assumption that all the wells were in a contiguous reservoir. It claimed that this resulted in Pinon's volumetric reserves estimate being significantly higher than Bearspaw's. It accepted, however, that there could be some communication between Pinon's wells and they could be producing from one common pool.

The views of the other interveners reflected a common concern that the Pinon reserves would result in an extension to the expected life of the Dynege Chestermere pipeline. Further, the interveners were concerned that the Pinon reserves could be used to justify connecting even more of the nearby reserves to the Dynege pipeline in the future, potentially resulting in even greater extension of the expected life of the Dynege pipeline.

4.3.3 Views of the Board

The Board observes a significant range in volumes of recoverable reserve estimates for the wells that Pinon proposes to connect to the proposed pipeline. This is not uncommon for pools of this nature. Rather than try to more specifically determine the recoverable reserve estimates, the Board is relying more on the summation of the initial production capacity to justify the need for these facilities. Accepting Bearspaw's figure of $225 \times 10^3 \text{ m}^3/\text{d}$ (8 mmcf/d), which is comparable to the lower figures of Pinon, and applying a significant decline rate provides an assurance that sufficient gas will be produced to justify the pipeline. Pinon is prepared to take the risk of investing in this pipeline in order to produce its gas reserves, and the Board does not believe it is an unacceptable risk.

The Board concludes that Pinon needs a pipeline to produce its gas reserves and believes that connecting Pinon's gas to the Dynege Chestermere pipeline is a viable option. In addition, the Board believes that this option will not result in proliferation of the facilities in the area and it will improve the use of the existing Dynege Chestermere pipeline during its remaining life. The Board accepts this as a feasible option as long as the life of the Dynege Chestermere pipeline is not extended as a result of the Pinon gas being tied to it. The Board believes that Pinon understands this condition; its evidence also suggested that Pinon's gas reserves will be depleted before the gas reserves currently tied in to the Chestermere pipeline are depleted to a reasonable level. If approved, the Board will not be placing a term on the Pinon pipeline but expects Pinon to ensure that all parties considering using its pipeline are aware of the urban development issues in the area and the conditions associated with Dynege's Chestermere pipeline.

4.4 Pipeline Routes and Options for Production Disposition

4.4.1 Views of Pinon

Pinon applied to construct and operate a gas battery and compressor station at its oil satellite facility located at 10-21-23-28W4M. Liquids produced from the inlet separator of the gas battery would be tied to Pinon's oil satellite and then move to the Bearspaw oil battery located at

7-33-23-28W4. Sour gas, having a maximum H₂S content of 2 per cent, would be produced through the proposed 114.3 mm (4 inch) gas pipeline approximately 11.3 km in length, running from the 10-21 site to a pipeline tie-in to the Dynege Chestermere pipeline located at 12-20-22-28W4M, and then to the Mazeppa gas plant.

Pinon stated that about 40 m³/d of liquids and 90 10³ m³/d (3.2 mmcf/d) of associated solution gas were being produced by the Pinon facilities located in Sections 20 and 21-23-28W4M into the existing Bearspaw 7-33 oil battery, with the gas then moving on to the Wascana Balzac gas plant. Pinon maintained that the deliverability of its current and potential wells far exceeded the current capacity of the Bearspaw battery and consequently its production was either restrained or shut in. Pinon acknowledged that upgrades of the Bearspaw facility might allow gas takeaway capacity to be increased perhaps to a maximum of 137 10³ m³/d (4.9 mmcf/d). However, Pinon argued that even with the upgrades, the Bearspaw battery would still have insufficient capacity available to allow Pinon to effectively produce its reserves. The pipeline between the 7-33 battery and the Wascana 6-9-24-28W4M header is only 88.9 mm (3 inches) in diameter, and therefore additional pipeline installation would be necessary to provide enough flow capacity.

Pinon's understanding was that from the 6-9 connection point, the Wascana line was pressure limited in order to achieve a level-1 sour gas facility designation. As a result, adding more capacity would require the installation of more pipeline. As well, the existing line was licensed only through 2008, and Pinon believed that it was not likely that further lines would be easily added, since there has been strong resident opposition to sour gas lines in the area. Pinon stated, however, that the existing 88.9 mm (3 inch) water disposal line from the 7-33 battery was sufficient in size to accommodate the additional water that would result from any increased Pinon production.

Pinon stated that it had approached Wascana Energy in July 1998 to determine whether the Wascana system had capacity available to accept additional volumes of Pinon gas. Pinon believed the range of capacity required would be between 225 10³ m³/d (8 mmcf/d) up to as much as 340 10³ m³/d (12 mmcf/d). Pinon stated that its discussions with Wascana had included the possibility of installing additional lines into the south end of the gathering system to enable collection of these volumes. However, Pinon stated that Wascana had replied late in 1998 that it was unable to confirm whether it had sufficient capacity available, as it was currently revising the gas gathering system model for the entire Crossfield gathering system. Wascana indicated that it planned to be able to complete its system revision and reply to Pinon by February 1999.

In August 1999, Pinon received notice from Wascana that in order for Wascana to conduct well workovers and testing of its Wabamun wells in the south Crossfield field, all Pinon wells would

be shut in from August 18 to September 2, 1999. Pinon stated that Wascana subsequently

indicated that should Wascana's well activities sufficiently increase production, Pinon would be required to permanently terminate gas production to the Wascana system.

Pinon indicated that it had considered alternate schemes, such as the installation of its own gas plant and other pipeline routes. It believed that the installation of a new pipeline to the Mazeppa system was economically viable, with a payout in the order of about two years, and the most reasonable solution, as it was the shortest pipeline distance and had the least impact on residents. Pinon acknowledged that its tie-in to the Dynegy system was subject to the renewal of the operating licence for the Dynegy Chestermere pipeline and any long-term operating restrictions that might be applied.

Pinon disputed Bearspaw's contention that the Pinon project was significantly more costly than options proposed by Bearspaw, and under cross-examination Bearspaw agreed that its cost estimate of the Pinon project included components that Pinon maintained were unnecessary, oversized, or redundant. In addition, Pinon suggested that Bearspaw's instrumentation and SCADA equipment at the 7-33 battery might need to be upgraded, and it also suggested that Bearspaw's pipeline cost estimates were too low.

Pinon conducted a noise assessment study of its proposed compressor facility to ensure compliance with EUB guidelines for sound levels at the nearest residence. Its noise impact assessment concluded that the proposed facility would meet the guidelines and the predicted sound level at night time would be 37 decibels (dBA) or less at the nearest or most impacted dwelling. Pinon proposed use of a muffler and a low-noise fan. To address potential nitrogen oxide emissions, Pinon proposed to install a lean-burn engine. However, it said that this would not be required to meet the emissions guidelines. Regarding flare emissions, Pinon stated that its design was for essentially a zero-emissions facility, and a flare would be for emergency purposes only.

Pinon stated that its proposed pipeline would be constructed to sour-service specifications, as required by CSA Z662 and CSA Z245. It further confirmed that all Pinon well tie-ins would include pigging facilities and that a suitable corrosion control program would be developed and implemented in consultation with Dynegy. Pinon's well sites would be equipped with separation equipment to prevent any free liquids from entering the pipeline and then continuing into the Dynegy pipeline. The company also explained that Dynegy would be the contract operator of the pipeline and the Pinon pipeline would be incorporated into Dynegy's comprehensive ERP. Pinon planned to install two ESD valves on the line, maintaining it as a level-1 sour gas line having a setback at the right-of-way boundary for country residential development.

4.4.2 Views of the Interveners

Some interveners expressed the opinion that the Dynegy Chestermere pipeline had been constructed for the express purpose of depletion of the 10-13 and 11-24 Wabamun wells north of the Bow River only and had not been intended to carry additional production. Therefore, there was opposition to the addition of the Pinon gas and the construction of the Pinon pipeline. They believed that the addition of further sour gas pipelines into this area was opposite in principle to the concepts of expeditious recovery of reserves and removal of sour gas facilities

in the area and contrary to the rulings of the Board as described in the series of earlier ERCB decisions. They suggested that approval of the Pinon pipeline and connection to the Dynege system would only encourage other operators to undertake more drilling activity in the general area, and thus exacerbate potential conflicts.

Some of the interveners believed that they had not been properly notified of the proposed construction and subsequent pipeline size changes. Some believed that they had not yet consented to the routing of the pipeline. Intervenors also questioned how Pinon had determined that the Mazeppa pipeline route resulted in the least impact to residents. Further, they questioned Pinon's contention that it was a shorter distance to transport gas for processing at Mazeppa as opposed to Balzac. Intervenors estimated that it was 35 km from 10-21 to Balzac and 59 km from 10-21 to Mazeppa, and they suggested that the gas should be routed to the Wascana plant at Balzac in order to reduce the transportation distance.

The Chestermere Group expressly opposed the gas routing to the Wascana plant. They explained that they had for years been working with Wascana in order to find ways to remove sour gas pipelines from the area west of Chestermere Lake. They also expressed the view that additional integrated long-term planning in the area was needed. The Chestermere Group also emphasized that they recognized the importance of the energy industry to the province and the strength of the current regulatory processes.

Bearspaw contended that there was no need for the Pinon facilities. It argued that modifications to its 7-33 oil battery would enable it to handle current and future needs of Pinon in the area. Bearspaw stated that its facilities and the Wascana pipeline were currently capable of handling approximately $113 \times 10^3 \text{ m}^3/\text{d}$ (4 mmcf/d), and it believed that Pinon's applications indicated a need for approximately $169 \times 10^3 \text{ m}^3/\text{day}$ (6 mmcf/d) capacity. Bearspaw was of the opinion that with minor modifications to the Bearspaw and Wascana upstream facilities, capacity of that magnitude could be achieved.

Bearspaw estimated that the 114.3 mm (4 inch) diameter pipeline between 10-21 and 7-33 could handle up to $169 \times 10^3 \text{ m}^3/\text{d}$ (6 mmcf/d) of gas and associated liquids. Bearspaw agreed that a 168.3 mm (6 inch) diameter pipeline would have capacity for $282 \times 10^3 \text{ m}^3/\text{day}$ (10 mmcf/d) of volume. However, its reservoir expert believed that actual volumes would be significantly less and concluded that existing lines would be adequate. Bearspaw also believed that Pinon's production of $169 \times 10^3 \text{ m}^3/\text{d}$ (6 mmcf/d) could be adequately handled by the existing 88.9 mm pipeline from the 7-33 battery to the Wascana system tie-in with the addition of compression at the 7-33 battery. Bearspaw maintained that this compressor would be in the order of 110 to 180 kilowatts (kW) (150 to 250 horsepower), compared to Pinon's applied-for 450 kW (600 horsepower) compressor. It argued that the smaller compressor could be driven electrically, thus reducing noise. Bearspaw estimated that the cost of upgrading its 7-33 battery to handle an additional $170 \times 10^3 \text{ m}^3/\text{d}$ (6 mmcf/d) would be less than the cost it estimated that Pinon would incur to install facilities at 10-21. Bearspaw contended that Pinon needed a maximum capacity of about $170 \times 10^3 \text{ m}^3/\text{day}$ (6 mmcf/d). It suggested that Pinon had not explored all alternatives, particularly the use and upgrades to the Bearspaw battery. Bearspaw conceded that it had negotiated with Pinon to explore these options but that in its view the negotiations had failed.

Under cross-examination Bears paw conceded that its own projected costs underestimated pipeline costs and did not consider the possible necessity of SCADA equipment upgrades to achieve communication with the Mazeppa plant. Bears paw agreed that if all these costs were adjusted, the overall costs of each project could be similar. Bears paw had submitted an application to the EUB containing this alternative proposal.

Bears paw believed that the Wascana system was limited to about $282 \times 10^3 \text{ m}^3/\text{d}$ (10 mmcf/d) and in the event that Pinon's deliverability reached this level, its proposal was to return volumes beyond this through the Pinon-applied-for pipeline and into the Dynege system. To accomplish this, Bears paw proposed that a 114.3 mm (4 inch) diameter pipeline from its 7-33 battery to 10-21 would be needed. Bears paw believed that Pinon's existing 114.3 mm well effluent pipeline could be converted to this service and operated at higher pressure. Bears paw admitted that there might be some pipeline integrity issues that would have to be considered for this conversion. It further suggested that if the existing effluent pipeline was not suitable, a second 114.3 mm pipeline would be needed between 7-33 and 10-21. Bears paw agreed that its impending application required the construction of the pipelines proposed by Pinon once the capacity of the Wascana system was exceeded.

Bears paw stated that it had contacted Wascana and received comment that it was unlikely that Wascana would permanently shut in Pinon gas, as it wished to accommodate third-party gas volumes. However, during cross-examination Bears paw confirmed that it had not received any firm commitment from Wascana as to exactly what capacity of gas it would be able to accommodate. Bears paw indicated that it had firm service-processing agreements with Wascana, while Pinon did not, and this was the reason Pinon production had periodically been shut in.

Bears paw commented that it acted as a central operator in the area of its oil battery and that this was beneficial to the public, as it provided a singular contact for inquiries from the public. It believed this benefit would be neutralized if Pinon were also operating facilities in the area. Bears paw also pointed out that its corporate offices were located near the facilities, enabling a rapid response to emergencies.

The Board had scheduled a hearing to consider the alternative Bears paw application for December 1999. However, subsequent to the completion of the Dynege/Pinon hearing, Bears paw withdrew its application.

4.4.3 Views of the Board

The Board heard a number of wide-ranging views from landowners affected by the Pinon and Dynege applications and Bears paw's intervention. Not surprisingly, the resident groups promoted a range of ideas and appeals, often conflicting, to the Board with regard to the disposition of the Pinon application. Residents to the southeast of the city generally expressed the view that Pinon production should be delivered to the Wascana Balzac facility to the north, while residents east of the city had mixed views, with some suggesting that the Pinon gas be delivered to the Dynege Mazeppa system. The Board acknowledges the proactive approach taken by resident groups in the past, such as the Northeast Calgary Application Consultation Committee and the former Bow North Surface Rights Group. However, it appears to the Board

that while some agreements on certain principles have been achieved, total consensus among groups and individuals with diverse interests is elusive.

With regard to the issue of transporting Pinon's gas north versus south, the Board sees little distinction between the two based on a distance criterion. It notes, however, that as of 1999, sour gas pipelines extended nearly the full distance between the Balzac plant and Mazeppa plant, with the exception of the short section applied for by Pinon. The Board believes there is little advantage or disadvantage to either alternative on the face value of distance to processing and therefore it must rely on all evidence before it to reach a conclusion. The Board notes, however, that even should it conclude that some gas could be produced to the Wascana system, it appears from the information provided that the Pinon pipeline connecting to the Dynege system would be necessary in any event to effectively produce the Pinon reserves in a timely fashion. To some extent, as mentioned earlier, one of the goals of the ERCB was to ensure maximum recovery of the resources in a timely manner.

In this proceeding, the Board heard considerable argument as to how the Dynege pipeline could provide an impediment to urban development in the relatively near future. However, the Board did not hear, other than in a general local sense, reasons why the addition of the Pinon pipeline would provide a hindrance to urban or residential subdivision development at this time. The Board certainly recognizes that this is conceivable in the future. However, the Board does not find any such conflict at this time. Rather, the Board considers that the addition of the Pinon line would be beneficial, as it should result in the production of area resources in an expedient manner.

From the evidence presented, the Board believes that the Dynege pipeline will in all likelihood become the first section of pipeline that will be affected by urban development encroachment. Therefore, the development of the Pinon line, and any tie-in to the Dynege line must be made with the full knowledge that restraints to the operation of the Dynege pipeline may limit the production of gas from the Pinon system.

During the hearing, certain Wascana (Canadian Occidental Petroleum Ltd.) authored documents were submitted and referred to. It appears to the Board that the southerly portion of the Wascana system (north of the 6-9 junction) is currently pressure limited to maintain it at a level-1 facility designation. It appears to the Board that this pressure limitation would likely restrict additional capacity to about 70×10^3 to $90 \times 10^3 \text{ m}^3/\text{d}$ (2.5 to 3 mmcf/d), assuming the Wascana system is loaded downstream to the level of recent years. The Board notes that the referenced Canadian Occidental documents suggested that additional pipeline looping construction between the 6-9 junction and the J-8B junction at 31-24-28W4M would be the only effective method of assuring increased capacity on the Wascana system. The Board heard no firm evidence confirming ongoing capacity to meet Pinon's needs. Therefore it cannot assume that such availability would be the case. The Board therefore does not accept the proposal made; by Bearspaw that Pinon gas should go to the Wascana plant. The Board does not believe there are any compelling cost arguments for the Bearspaw option. The Board therefore finds no merit to the Bearspaw proposal, especially in view of the fact that the Pinon pipelines are required for either proposal. In fact, the Board notes that Bearspaw withdrew its competing application that was scheduled for a hearing subsequent to completion of this hearing.

4.5 Communication, Consultation, and Safety

4.5.1 Views of Pinon

Pinon said that it completed its public consultation process with respect to its application prior to filing it with the EUB, as per the requirements. It also held an open house in Shepard, Alberta, in August 1998 in order to initiate open dialogue and communication between Pinon and members of the community. Pinon said that invitations or notices of its open house were mailed only to those parties that would be affected by its proposed pipeline right-of-way and not to those parties who might be potentially located in the emergency planning zone (EPZ). It noted that although a number of the parties in attendance raised concerns about Pinon's project, the meeting, which was well attended, overall was a positive exercise.

In response to questioning, Pinon said that although Ollerenshaw and the Soutzos did attend its open house and raise concerns regarding its project, Pinon did not put them on its list to receive further communication or materials regarding its application. Pinon thought that the Soutzos and Ollerenshaw were more directly involved in Dynegy's application and therefore left that process to Dynegy.

Pinon said that it had also worked with other industry operators, such as Bearspaw, Wascana, and Dynegy, in an attempt to reach a resolution with respect to its gas processing needs in the area. It indicated that discussions with Bearspaw were very difficult and it took offence at some of the negotiating tactics used by Bearspaw. Pinon characterized Bearspaw's offer of ownership participation in the 7-33 battery as a take-it-or-leave-it offer. Pinon said it had fully considered the use of the 7-33 battery in its overall production scheme and it simply did not achieve Pinon's objectives, even if a working arrangement on the 7-33 battery would have been achieved.

Pinon stated that it had considered alternative schemes and believed that the installation of new pipeline connecting to the Dynegy Chestermere pipelines would have the least impact on residents. Pinon concluded that the route selected avoided residences and used existing rights-of-way as much as possible.

Pinon acknowledged that it did change the proposed diameter of its pipeline from 168.3 to 114.3 mm following additional design considerations and its original consultation process with affected parties. Pinon said that it did not formally notify all parties along its proposed pipeline right-of-way of the proposed pipeline diameter change because this was not considered to be a significant change. Therefore it was only addressed in writing to a number of affected landowners on the north end of its proposed pipeline as a result of a site-specific routing change that needed to be conveyed to those directly affected parties.

Pinon contended that it had provided the public with adequate information with respect to its proposed project and that it had continued with its consultation process over the past year. It acknowledged that its letters of notification to the public did not illustrate the implications of any setback restrictions on surface land use. However, it said that it did discuss these matters with each of the affected parties during its visits. It noted that parties were advised that the setback would simply be that of the right-of-way associated with a level-1 facility. Pinon also

said that it only had general discussions with the parties with respect to its ERP and that it did not send a separate letter of notification to those parties within the EPZ. It noted, however, that it did not discuss the EPZ size or its implications, nor did it obtain any input into the ERP procedures.

Pinon stated that the maximum sour gas concentration in the system would be 20 mol/kmol (2 per cent). This would result in EPZ distances of 260 m for the north segment of the proposed pipeline, 425 m for the middle segment, and 240 m for the south segment. Pinon stated that there were three residences within the EPZ for its entire system and five residences in close proximity to the outside of the EPZ. It also contended that allowing the proposed Pinon dry gas into the Dynegy system would dilute the concentration of H₂S.

Pinon explained that Dynegy would be the contract operator of the pipeline and would be the first responder in the event of a pipeline incident, taking full responsibility for emergency response measures. Further, Dynegy would incorporate the pipeline into its comprehensive ERP for the remainder of the Mazeppa system. In the event of well incidents, Bears paw would take responsibility for emergency response. Pinon also made reference to mutual aid arrangements between Bears paw, as operator of the wells, and the Municipal District of Rockyview.

Pinon planned to install two ESD valves on the pipeline. Pinon stated that even without the two ESD valves, the volume of H₂S for the entire line would result in a level-1 designation. The ESD valves were an added safety consideration in light of the general presence of residences and roadways in the area.

4.5.2 Views of the Interveners

Bears paw said that it had considerable discussions and correspondence with both Pinon and Dynegy relative to Pinon's proposed project and the alternative of using the 7-33 Bears paw facility. It said that as soon as it was advised of Pinon's intention to construct its own facility, Bears paw immediately raised its concerns and spent time with Pinon to review the history of the area back to the early 1990s so that Pinon would be fully aware of Bears paw's position. It made several proposals to Pinon with regard to using its 7-33 facility, but Bears paw maintained that it did not receive any reasonable counterproposals.

Bears paw emphasized that its corporate offices were located near its facilities, enabling it to respond in a timely manner to any emergencies.

Mr. Sutherland, of the Shepard Residents group, offered the view that the oil and gas industry is a boom-or-bust business, which results in numerous operations changing ownership, along with potential standards or business practices of the new owners. Mr. Sutherland said that he was concerned with the ethics of Pinon's landman. He noted that he was presented with a right-of-way agreement and was asked to sign it within 72 hours. Additionally, he said that the landman implied that all of his neighbours whose land would be affected had signed. Mr. Sutherland said that he had refused to sign until he had spoken with his neighbours.

The Shepard Residents questioned how Pinon had determined that the Mazeppa pipeline route would result in the least impact on residents. They contended that assessing the impact on

another party was very subjective.

The Chestermere Group said that a number of its members had been actively involved in surface rights groups and committees over the years and they had worked collaboratively with other stakeholders on sour gas issues surrounding Calgary. They believed this approach should be followed in the development of a plan through an integrated planning process to ensure that economic and orderly depletion of the resources would take place in east Calgary within a specific time period. The Chestermere Group said it participated in the hearing as a result of the alternative option put forward by Bearspaw. It believed that the Bearspaw proposal would provide the option of routing gas north to the Balzac plant and this could have a direct impact on its members.

The Chestermere Group believed that the distance between the Wascana pipelines and the Peter Lougheed Hospital represented the shortest distance between a sour pipeline of its level and a hospital in Alberta. They contended that a feasibility study was needed to establish an appropriate north/south pipeline corridor farther from the significant population and the hospital. The Chestermere Group believed that this form of integrated planning was a preferable approach in regard to public safety. Regarding the Wascana system, the Chestermere Group stated that the system should be considered to be at full capacity for public safety reasons.

4.5.3 Views of the Board

The Board is disappointed that the operators in the area were unable to reach mutually acceptable solutions and agreements to produce and transport the resources. The Board notes that Pinon did notify other operators of its proposed project and met with operators, including Wascana, Bearspaw, and Dynegy, to discuss alternatives. However, it appears to the Board that the communication between the parties was not effective due to timing, the lack of exchange of information, and an unwillingness of some parties to negotiate cooperatively. It appears to the Board that Bearspaw in particular did not make the necessary effort to respond to Pinon, choosing rather to oppose Pinon's application and file its own application. The Board notes that Bearspaw failed to respond to some hearing undertakings and subsequent to the proceeding it withdrew its application.

The Board heard considerable evidence with respect to Pinon's public consultation process and is concerned with some of the responses provided by Pinon. For example, the Board believes that the proponent should not judge what may be important to potentially affected landowners. Even though the Board sees this as a minor matter, Pinon should have renotified each landowner and occupant along its proposed right-of-way of the reduction in pipeline diameter. It appears that it relied on the Board's hearing notice to convey this change to affected parties. Pinon's land agent appeared to the Board to focus on obtaining right-of-way agreements and, it appears, made little effort to provide landowners with consistent and factual information about the project.

As the subject project proceeds, Pinon must make efforts to improve its communication with all affected parties. It should consider establishing avenues of communication that are consistent, and accessible to the public and should provide area landowners and residents with a company contact for addressing concerns and issues.

The Board observes that although Pinon did discuss issues such as the implications of setbacks and ERPs in general with the public, it did not provide sufficient details. The Board believes that the public must have sufficient information as early as possible to understand the proposal and its impacts.

The Board notes that Pinon restricted the invitation to its open house to only those parties directly affected by the pipeline right-of-way and failed to provide any notice to parties beyond the right-of-way who might be impacted by the EPZ. Although the Board does not precisely define the scope of the public involvement process, it does suggest that projects be disclosed to the widest audience possible early in the planning process and that proponents recognize circumstances where the process should exceed the minimum requirements. In this particular case, the Board believes that Pinon could have held a broader public meeting or open house to discuss this proposal, since its application materials suggest that the project's viability was dependent upon the term extension of Dynegy's pipeline licences. The Board also notes that even though Ollerenshaw and the Soutzos did attend the open house in August 1998, Pinon chose not to include them on its mailing list.

The Board believes that the suggestion by the Chestermere Group regarding an integrated planning approach for the area immediately east of Calgary has merit. However, the Board notes there are other initiatives currently under way, including work by an advisory committee on public safety and sour gas. The Board believes the Chestermere Group could raise this suggestion in conjunction with their ongoing efforts with operators in the northeast Calgary area.

The Board agrees that the addition of dry gas volumes to the Dynegy Chestermere pipeline would be beneficial in reducing the likelihood of corrosion and consequent pipeline leakage or failure on that system. Also, the Board acknowledges that the addition of gas with a lower concentration of H₂S would serve to dilute the gas in the Dynegy Chestermere pipeline.

The Board agrees with all parties that the facilities must be operated safely. The Board notes Dynegy's commitment to include the proposed Pinon pipeline in its ERP and believes that this will provide an effective approach to emergency response planning. The Board also notes that the construction of the pipeline meets the applicable requirements of CSA standards and the Pipeline Regulations for sour service.

4.6 Conclusions on Pinon's Application

The Board has reviewed all of the evidence before it and concludes that the approval of the Pinon facilities as applied for is in the public interest. The Board concludes that without having access to production facilities of adequate capacity, Pinon's production would be delayed or even stranded and lost. The Board also believes that the tie-in to the Dynegy system provides a reasonable compromise of resource recovery prior to potential restrictions or elimination of the Dynegy Chestermere pipeline north of the Bow River. The Board reiterates to Pinon that the outcome of the Dynegy/Ollerenshaw/Soutzo LRD agreement could potentially impact Pinon's

ability to deliver its gas through Dynegy's system in the longer term. The Board also requires Pinon to strengthen its public consultation processes and ensure that information is made available on request and that residents have an ongoing contact for inquiries.

Dated at Calgary, Alberta, on March 31, 2000.

ALBERTA ENERGY AND UTILITIES BOARD

(Original signed by)

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

(Original signed by)

G. C. Dunn, P.Eng.
Acting Board Member

(Original signed by)

N. G. Berndtsson, P.Eng.
Acting Board Member

ATTACHMENT 1

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)

Dynegy Canada Inc. (Dynegy)
A. L. McLarty
L. H. Olthafer

Pinon Oil and Gas Ltd. (Pinon)
H. R. Hansford
D. Kearl

Witnesses

S. Woodward
P. Coldham, P.Eng.
B. Patterson,
of Bernie Patterson & Associates Ltd.
D. Voroney
T. Brown
G. Lee, P.Eng.,
of Alliance Engineering and Inspection
Ltd.
B. Milne, P.Eng.,
of ATECH Application Technology
Limited
D. Leahey, Ph.D.,
of Jacques Whitford Environment
Limited
K. Preston, Ph.D.,
of Jacques Whitford Environment
Limited
K. Davies, P.Geoph.,
of Compton Petroleum Corporation
A. Szabo, P.Eng.,
of Outtrim Szabo Associates Ltd.

W. Irwin, P.Eng.
J. Anhorn, P.Eng.,
of Gilbert Lansten Jung Associates
Limited
D. Curial, P.Eng.,
of Polaris Engineering Limited
J. Gunn,
of MSL Land Services Limited

THOSE WHO APPEARED AT THE HEARING (cont'd)

Principals and Representatives (Abbreviations Used in Report)

Witnesses

Bearspaw Petroleum Ltd. (Bearspaw)

F. Zinkhofer
B. Conway

P. Wright
J. Kaplan
D. Cartwright, P.Eng.,
of Martin & Brusset Associates
A. Toews, M.E.T.,
of Gas Liquids Engineering Ltd.

The Soutzo Family (Soutzos)

D. C. Edie

A. Soutzo
R. Giovanetto, P.Eng.,
of R & H Engineering (1986) Ltd.

Ollerenshaw Ranch Limited (Ollerenshaw)

S. Carscallen

R. Ollerenshaw
J. Dewald, B.Sc., P.Eng., M.B.A.,
of Hopewell Residential Communities
Inc.
G. Brown, M.B.A.,
of Brown & Associates Planning Group

The White Families (Whites)

R. C. Secord
K. E. Buss

M. van Olm, M.D.
F. White
Gerald White
George White
H. Hindson

Calgary-Chestermere Landowners and Residents (Chestermere Group)

R. C. Secord
K. E. Buss

S. Nelson
L. Ryder
H. Belzberg
L. Laycock
N. Singh
J. Hodgson
T. Taylor
E. Haymour

The Shields Family (Shields)

G. S. Fitch

R. Shields
R. Wrigley,
of Brown & Associates Planning Group
M. Zelensky, P.Eng.

THOSE WHO APPEARED AT THE HEARING (cont'd)

Principals and Representatives
(Abbreviations Used in Report)

Witnesses

The Southeast-Loop Residents
and other local interveners (Shepard Residents)
W. J. Hope-Ross

C. Duncan, P.Eng.,
of C & M Engineering Ltd.
N. Oloman
M. Christensen
J. Hennessey
G. Sutherland
D. Pearson
G. Marshall
B. Evans
D. Agar

T. J. Taylor

T. J. Taylor

Alberta Energy and Utilities Board staff
W. Y. Kennedy, B.A., LLB., Board Counsel
D. L. Schafer
M. D. Brown, P.Eng.
M. Craig
A. Beken, P.Eng., P.Geol.
D. Grzyb, R.E.T.

Mr. T. J. Taylor registered as a participant at the hearing in Indus, Alberta, on August 18, 1999.
Mr. Taylor did not present direct evidence or a closing argument.

ATTACHMENT 2 SUMMARY OF RESERVES

History of Reserves Determinations for Wells - Pipeline Application No.1034767

(all volumes in $10^6 \text{ m}^3 \text{ bcf}$)

	<u>Wabamun¹</u>		<u>Other gas reserves¹</u>	
	North of river	Sec. 13&24	Rundle ² 10-20,12-20& 6-29	Jurassic (7-19)
Recoverable reserves				
1980 ³ Amerada Board	1640 (58)	249 (8.8) 227 (8.0)		
1984 ³ Canterra Board	845 (30) 817 (29)	422 (15) 333 (11.8)	422 (15) 272 (9.6)	
Appl'n 1034767 Dyn/Comp Board		912 (32) ⁴ 950 (33) ⁴	198 (7) 113 (4) produced	23.9 (0.8) 4 (0.14) produced
Remaining recoverable reserves 1999 (recoverable less production)				
Dyn/Comp Board		457 (16) ⁴ 495 (17) ⁴	96 (3.4) ⁵ 12-20 needs recompletion	22.5 (0.7) watered out
Production		455 (16) (Jan'99)	101 (3.6) (Jan'99)	4 (0.14) (Jul'99)
Estimated remaining productive life – years				
Dyn/Comp Board		<u>10-13</u> 19-21 yrs 20-23 yrs	<u>11-24</u> 11-13yrs 10-13yrs	Short Short

¹ Process shrinkage factor applied to raw gas volumes to obtain recoverable (marketable) gas reserves:

- Wabamun – 0.5
- Rundle and Triassic – 0.1

² No reserves included for 6-29 well.

³ Estimates in 1980 and 1984 based on volumetric determinations.

⁴ Estimates based on decline analysis and therefore represent major portion of Wabamun reserves north of the river.

⁵ Dynegy/Compton plan to

- recomplete 12-20
- complete, test and produce 6-29 but requires a pipeline connection to 12-20 location pending success of the test

ATTACHMENT 3 SUMMARY OF REFERENCED DOCUMENTS

(Full copies of the following documents may be obtained by contacting EUB Information Services).

Informational Letter 80-4

In this letter of 1980, the Board requested all resource operators in the Okotoks area, in the interest of efficient development, to cooperate in the preparation of a plan intended to address overall development in the area for the next five years. Issues to be considered were timing, drilling, pipelines, processing capacity, sales, and abandonments.

Decision 80-6

In 1979, Amerada Minerals Corporation applied for a permit to construct a secondary pipeline in the Chestermere-Okotoks area that would carry sour gas from wells north of the Bow River to the gathering system south of the river.

Amerada was concerned about future urban expansion and therefore proposed to increase the production rate from these wells to recover the reserves as quickly as possible.

The Board believed that every attempt should be made to recover the gas reserves and that the 11-24 well, being closest to the city, should be placed on production as soon as possible. The Board was unable, on the basis of evidence presented at that hearing, to establish a reasonable estimate as to when encroachment from the city might occur. Therefore, an approval for the proposed facilities was granted for a 12-year period, at the end of which time a review would be conducted.

The application was approved but Amerada did not construct the pipelines.

Informational Letter IL 81-7

In this letter to energy operators, planning authorities, and landowners in the Okotoks region, the Board noted that sour gas reserves in the area were likely more extensive than previously believed. The Board was concerned that production of the reserves could be seriously affected by future urban, town, and subdivision development and that land use could be adversely affected by improperly planned sour gas development.

After reviewing the information provided by industry as requested in *IL 80-4*, the Board concluded that exploration and production should be carried out in an expeditious manner. The Board determined that additional gas processing capacity would likely be required, that the industry should coordinate its development efforts, and that planning authorities, developers, landowners, and industry should cooperate to expedite resource depletion.

The Board believed that unless these measures were followed, there could be unavoidable restrictions on land subdivision in the region for an indefinite period of time and losses in the recovery of significant gas resources.

Inquiry Report D 83-12

In 1982, the Lieutenant Governor in Council requested that the ERCB hold an inquiry to determine how potential conflicts between the development of sour gas reserves and residential development might be minimized in this area.

The participants in that proceeding, including 18 industry and landowner groups, concluded that future land-use conflicts were likely unless resource depletion was accelerated. However, conflict could be minimized by expeditious depletion, deferring further residential development, and preferentially marketing gas produced from this area. The inquiry also concluded that it was unfair to indefinitely defer residential development in favour of future sour gas production.

Decision 83-13

In 1983, Canadian Occidental Petroleum Ltd. (Can Oxy) applied to construct a new sour gas processing plant at Mazeppa. Can Oxy intended to be able to process all sour gas in the area that was not currently being transported to the Canterra plant at Okotoks and included the Amerada reserves located to the north of the Bow River. Can Oxy stated that it was in the public interest to deplete the reserves in the Okotoks area at the earliest possible time.

The Board believed that having adequate processing capacity to ensure the early depletion of reserves in the Okotoks area was desirable and, consistent with the general findings of public inquiry *D 83-12*, approved the application. Can Oxy subsequently constructed the plant.

Decision 84-7

In 1984, Canterra Energy Ltd. applied to build a sour gas pipeline to connect its recently procured reserves north of the Bow River to the gathering system south of the river.

The Board believed that the reserves should be recovered expeditiously, as urban encroachment upon the area might occur, but was uncertain as to when this might take place. The Board determined that a 15-year production period would represent a reasonable balance between the need to recover the resources and the desire for further urban development. The Decision also allowed for a review of the situation at or near the end of the 15-year period in view of a possible extension.

The Board agreed that voluntary emphasis should be placed on producing the more sour Wabamun reserves in close proximity to the city. The Board was hesitant about hindering possible depletion acceleration should conditions change and therefore did not condition Canterra's applications to preclude the tie-in of new wells, but instead undertook to review any future applications on their relative merits at that time.

Subsequently, the Board issued the appropriate pipeline permits and the pipeline was constructed.

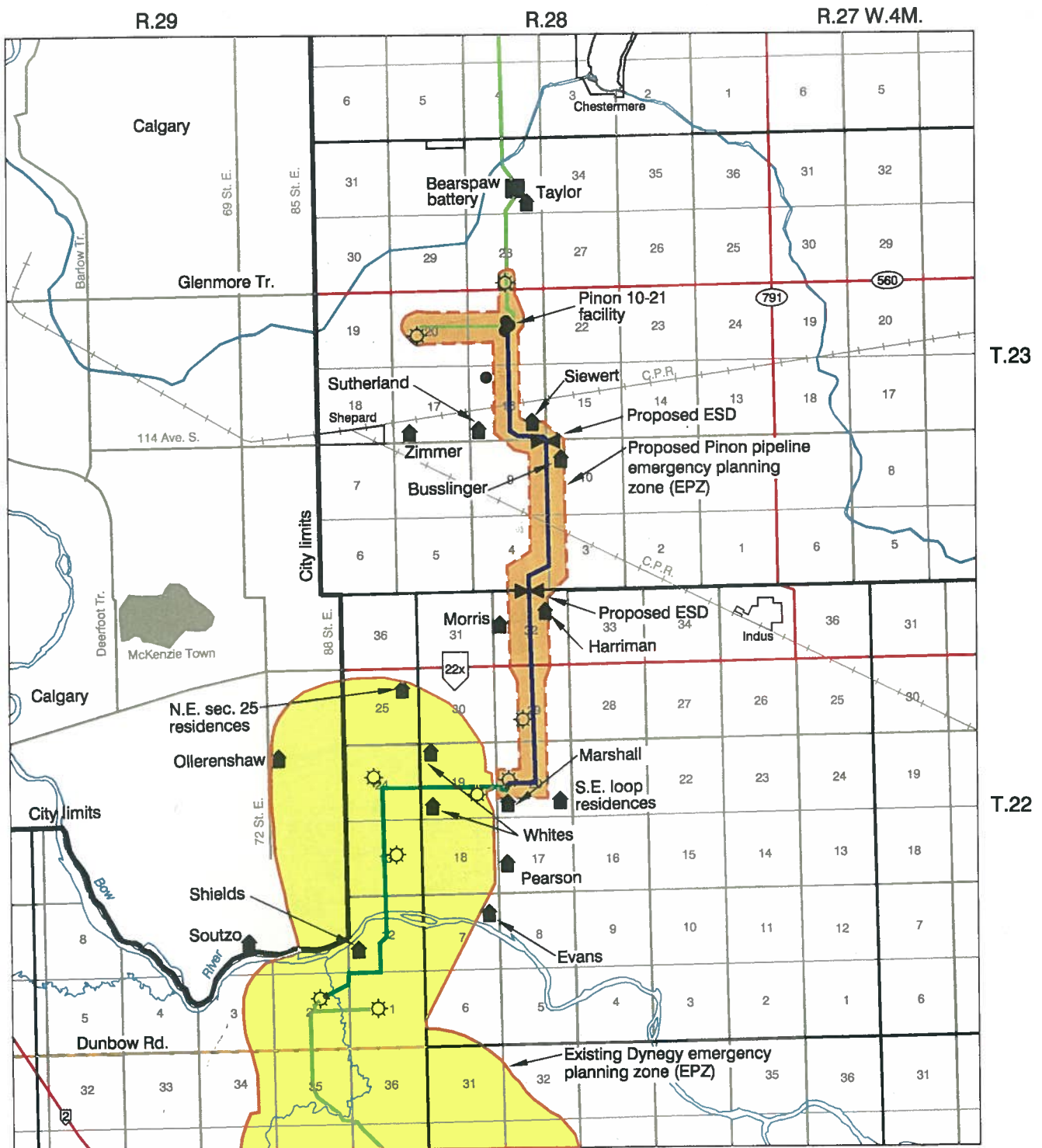
Decision 85-19

In 1985, Can Oxy applied to construct approximately 92 km of pipeline in the Mazeppa area to facilitate the recovery of raw gas, deliver processed gas to market, and dispose of produced waters.

As the Mazeppa gas plant was designed to accommodate all sour gas production in the Okotoks area that was not being processed at the Canterra Okotoks gas plant, the proposed pipeline system was deemed to be an integral and essential part of the Mazeppa gas processing project. The Board approved the applications and the pipelines were subsequently constructed. The Okotoks plant was later decommissioned and the gas was routed to the Mazeppa plant for processing.

Memorandum of Decision Pre-Hearing Meeting Application No. 910253

In August 1990, Canadian Occidental Petroleum Ltd. applied for two well licences to drill and produce sour gas from sections 18-22-28W4M and 12-22-29W4M. Both wells were to be drilled from a surface location in LSD 6-18-22-28W4M. There was strong opposition to these applications and ultimately Can Oxy withdrew them in 1994.



Legend

- Existing Dynege Chestermere pipeline (licence renewal)
- Proposed Pinon pipeline
- Existing pipeline
- Oil well
- ⊙ Gas well
- 🏠 Residence

Figure 1. Shepard - Okotoks/Crossfield Sour Gas Development
 Applications No. 1034767 and 1034762
 Dynege Canada Inc., Pinon Oil and Gas Ltd.

Decision 2000-20



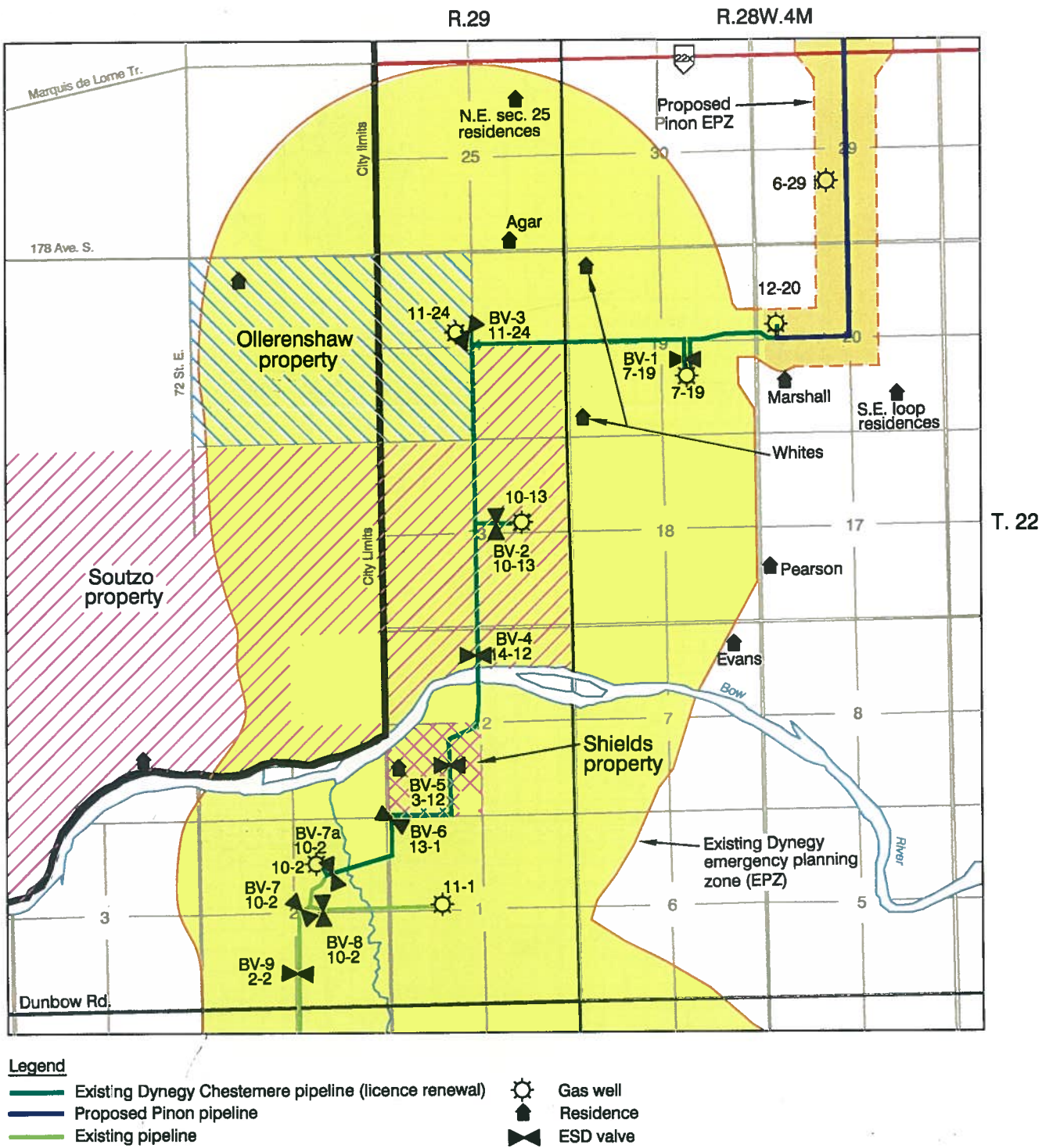
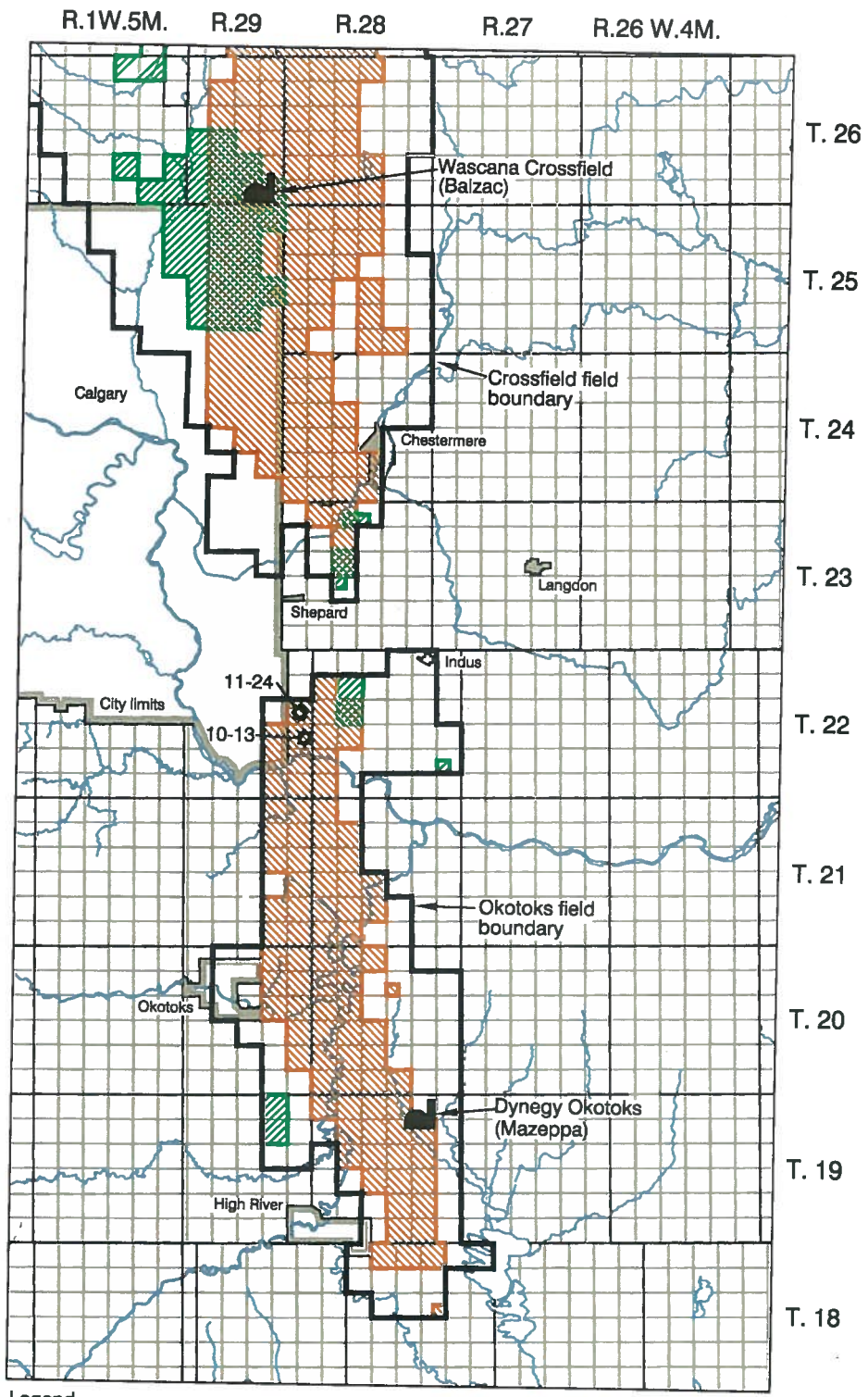


Figure 2. Southeast Calgary Area
 Applications No. 1034767 and 1034762
 Dynege Canada Inc., Pinon Oil and Gas Ltd.

Decision 2000-20





Legend

Rundle pools (0.5 to 3.0 per cent H ₂ S)	Gas wells (not all are shown)
Wabamun pools (33 to 36 per cent H ₂ S)	Gas plant

Figure 3. Area Field Boundaries and Applicable Pools
 Applications No. 1034767 and 1034762
 Dynegy Canada Inc., Pinon Oil and Gas Ltd.