

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

MAYFAIR ENERGY LTD. AND BELFAST OILS LTD. COMPULSORY POOLING BONNIE GLEN FIELD

**Examiner Report 2001-4
Application No. 1083728**

1 RECOMMENDATION

The examiner has considered the evidence and recommends that

- the Alberta Energy and Utilities Board (EUB/Board), with the approval of the Lieutenant Governor in Council, issue an order under Section 72 of the Oil and Gas Conservation Act (the Act) designating that all tracts within Section 7 of Township 47, Range 27, West of the 4th Meridian (Section 7) be operated as a unit for the production of gas from the Basal Quartz Sand, through a well with the unique identifier of 02/16-07-047-27W4 (the 2/16-7 well);
- the order allocate the costs and revenues for each tract on a reserves basis, with a 5 per cent allocation to the northwest quarter of the section and a 95 per cent allocation to the remainder of the section;
- the order specify that a penalty equal to two times the unpaid amount be applied against a tract owner's share of the actual costs of drilling and completing the 2/16-7 well in the Basal Quartz Sand, if that owner fails to pay such costs within 30 days of the later of the pooling order being issued, the owner being given notice in writing of its share of costs, and the well having commenced production; and
- the order designate Mayfair Energy Ltd. (Mayfair) as the operator of the 2/16-7 well.

2 INTRODUCTION

2.1 Application, Intervention, and Hearing

Mayfair, on behalf of itself and Belfast Oils Ltd. (Belfast), filed Application No. 1083728 under Section 72 of the Act for an order prescribing that all tracts within the drilling spacing unit comprising Section 7 be operated as a unit for the production of gas from the Basal Quartz Sand through the 2/16-7 well.

Due West Resources Inc. (Due West) filed a submission opposing the application. David D. Bentley also filed a submission on behalf of the lessors of the mineral rights of the northwest quarter of Section 7 (the Lessors) but was not represented at the hearing.

The application was considered at a public hearing on May 8, 2001, by Board-appointed examiner C. Hill.

The following lists the participants at the hearing and abbreviations used in the report:

THOSE WHO APPEARED AT THE HEARING (continued)

Principles and Representatives

(Abbreviations Used in the Report)

Witnesses

Mayfair Energy Ltd. (Mayfair)

L. A. Cusano

D. M. Wood

R. K. Chisholm, P.Geol.,

of Oxford Petroleum Corporation

R. G. Fisher, P.Eng.

R. W. Hoover, P.Eng.

A. G. Lye, P.Eng.,

of Al Lye & Associates Inc.

Due West Resources Inc. (Due West)

G. Cracco

K. W. Carruthers, P.Geol.

G. Cracco

B. Wilmot

Alberta Energy and Utilities Board staff

K. Fisher

R. Keeler, P.Geol.

G. Bentivegna

2.2 Background

The Basal Quartz gas rights in Section 7 are held as follows:

Tract	Lessor	Lessee
South half	Paul James Norris, The John Ambrose Wise Estate, Gregory Borden	50% Mayfair, 50% Belfast
Northeast quarter	Matilda Tate	50% Imperial Oil Resources (Imperial), 50% Chevron Canada Resources Limited (Chevron)
Northwest quarter	Ralph Covey, Alan Ashton Covey, William Covey Jr., David Bentley, as Executors of the Estate of William Covey (undivided interests)	100% Due West

Mayfair and Belfast obtained a pooling arrangement and farmin agreement with Imperial and Chevron respecting the northeast quarter of the section for the purpose of drilling a well to the base of the Mannville Group.

Mayfair drilled the 2/16-7 well in November 2000. Tests resulted in a final flow rate of 30 and 51 thousand cubic metres per day for the Basal Quartz intervals located from 1603.0 to 1606.0 metres kelly bushing (mKB) (the A zone) and from 1615.5 to 1621.5 mKB (the B zone) respectively.

3 ISSUES

The examiner considers the issues respecting the application to be

- the need for a pooling order, and
- the provisions of a pooling order if issued and, in particular, the basis for allocation of costs and revenues.

4 CONSIDERATION OF THE APPLICATION

4.1 Views of Mayfair

Mayfair submitted that it had been unable to obtain a voluntary pooling arrangement on reasonable terms with Due West. It stated that it was unable to engage Due West in any meaningful discussion either through written correspondence or by telephone. The applicant provided data and its geological interpretation to Due West, but Due West did not share its interpretation until it had filed a submission with the EUB in response to a notice of hearing for the application. Additionally, Mayfair stated that it made numerous requests of Due West to meet and share technical interpretations, but no meetings took place. In view of the failure of its attempts to negotiate a voluntary arrangement, Mayfair concluded that a pooling order is therefore needed to allow for production from the 2/16-7 well.

The applicant submitted that Section 72(4)(c) of the Act establishes that allocation under a pooling order may be on a reserves basis if it can be shown that allocation on an area basis is inequitable. Mayfair stated that in this case costs and revenues under the pooling order should be allocated on a reserves basis, with a 3 per cent allocation to Due West's northwest quarter of Section 7, and a 97 per cent allocation for the remainder of the section.

Mayfair submitted that available data supported its request for a reserves-based allocation. It noted that there is a high density of wells drilled into Section 7, which allows for an unusual opportunity to define the formation structure, zone correlations, and pay maps. The applicant disagreed with Due West that the 1950s' vintage of logs for wells drilled for the deeper Leduc Formation provided only limited information. Mayfair conducted detailed analyses on the older logs and considered the log evaluations, together with drillstem tests, completion information, and analysis of recent log data from the 2/16-7 well, to be conclusive. Furthermore, where there

appeared to be disagreement between Mayfair and Due West on the validity of data, Mayfair had confirmed the data it used by tracing them back to the original source. The applicant concluded that there were sufficient data to allow for reasonably accurate reserves mapping that could be used as a basis for the allocation of production under a pooling order.

The applicant interpreted the Basal Quartz Sand in the area of interest to be comprised of three zones, with the two upper zones, the A and B, being of interest in the subject application.

Mayfair considered the A zone to have been deposited in a marine environment and mapped the zone over most of the south half and northeast quarters of Section 7, as shown on the attached figure. However, it interpreted gas pay in only one well in the northwest quarter of the section, well 00/11-07-047-27W4/0 (the 11-7 well). Using a porosity cutoff of 8 per cent and a water saturation cutoff of 50 per cent, the applicant interpreted net gas pay of 0.6 m for the A zone in the 11-7 well, and on that basis interpreted a pool boundary that encompasses only a small portion of Due West's northwest quarter. The applicant interpreted the A zone in other wells in the northwest quarter section as having poor porosity development and therefore not likely of reservoir quality.

The applicant mapped the B zone over portions of all quarters in the section, as shown on the figure. However, it did not interpret gas pay for the zone in any wells in the northwest quarter of the section. Mayfair determined the presence of a gas/water interface using modern logs obtained for the 2/16-7 well. It submitted that the B zone in the northwest quarter of the section is structurally lower than in the 2/16-7 well. As a result, the B zone in the wells in the northwest quarter of the section is below the gas/water interface and is either wet or lacks reservoir quality.

On the basis of its mapping, Mayfair calculated that 0.81 per cent of the A and B zone reserves underlie the northwest quarter of the section and 99.19 per cent underlie the remainder of the section. The applicant noted, however, that in its original application it had requested an allocation under the pooling order of 3 per cent for the northwest quarter and 97 per cent for the remainder of the section on the basis of its pool interpretations at that time. Notwithstanding its more recent refinements to its pool interpretations and allocation calculations, it was still requesting the latter allocation.

With respect to other provisions of the pooling order, Mayfair asked that it be named the operator of the well. It also requested that the maximum penalty allowed under the Act be applied to a tract's share of the actual costs of drilling and completing the well if the tract owner does not pay its share of those costs within 30 days of the later of the pooling order being issued, the tract owner being given written notice of its share of costs, and the well in question being placed on production.

4.2 Views of Due West

Due West agreed that there is a need for a pooling order in this case. It stated that telephone communications with Mayfair on this matter led it to believe that there was no opportunity for negotiating a voluntary pooling arrangement, because the two parties had vastly different geological interpretations of the pools underlying the northwest quarter of Section 7. Further, Due West considered that Mayfair's position on the matter was fixed. On that basis, Due West

did not accept Mayfair's invitations to meet and discuss the parties' geological interpretations.

Due West submitted that unless it could be demonstrated that reserves do not underlie a portion of a tract, the Board should rule that allocation under a pooling order must be done on an area basis. It submitted that in this case there was no information to suggest that allocation under a pooling order should be on anything but an area basis.

The intervener submitted that the 2/16-7 well is the only well with modern logs that had been drilled in the section specifically to develop the Basal Quartz Sand. All of the other wells in the section had been drilled to develop the Leduc Formation. As a result, formation damage by the invasion of drilling fluids in the shallower zones makes it difficult to obtain reliable information for the Basal Quartz Sand from the well logs. In particular, Due West considered that only limited information could be obtained from those wells with 1950s' vintage of log data, which comprise the majority of wells in the section.

Due West presented its own interpretation of the A and B zones in the area of Section 7. As indicated on the attached figure, its net pay map showed the A zone as extending over all of the northwest quarter of the section. It stated that its mapping of the B zone was not a net pay map, but represented the trend of the B zone across the northwest quarter of the section. Due West's B zone mapping showed the zone as extending over 60 per cent of the quarter.

Due West argued that there were two interpretations for the A and B zones, its own and Mayfair's, indicating that the data allowed for varying degrees of possibilities. It concluded that there was not enough reliable information to conclusively determine how the pools underlie the northwest quarter and therefore allocation under a pooling order should be on an area basis.

With respect to other provisions of the pooling order, Due West did not raise any concerns with respect to the applicant's proposal that it be named as the operator of the 2/16-7 well in the order or with respect to the proposed penalty provisions of the order.

4.3 Views of the Lessors

In a written submission, the Lessors of the northwest quarter of Section 7 submitted that as they held a 25 per cent interest in the section, 25 per cent of the costs and revenues related to the 2/16-7 well should be allocated to their quarter section.

4.4 Views of the Examiner

The examiner notes that Mayfair and Due West have not been successful in attempts to reach a mutually satisfactory pooling arrangement and concludes that there is a need for a pooling order.

Section 72(4)(c) of the Act states that allocation of production under a pooling order "shall be on an area basis unless it can be shown to the Board that that basis is inequitable." Mayfair submitted that there was sufficient well control within the section to allow a reserve-based allocation. Due West, however, argued that there was not enough reliable information to determine the distribution of gas reserves. The examiner notes that this disagreement was, in part, due to the age of the majority of wells within the section. The examiner believes that the

1950s' vintage log data do provide useful information and that despite the relative poorer quality of the data and the difficulty interpreting it, it should not be discounted. The examiner therefore considered whether these data were sufficient to determine a fair allocation within the section.

With respect to the Basal Quartz B zone, the examiner agrees with Mayfair that the interpretation of the logs in the 2/16-7 well strongly supports the existence of a gas/water interface. On this basis, any porosity present in the B zone in the 11-7 well would be below the gas/water interface. Mayfair's structure map on the top of the B zone indicates that the structure continues to drop off northwest of the 11-7 well, an interpretation not disputed by Due West. The examiner therefore concludes that any B sand with sufficient porosity to be of reservoir quality in the remainder of the quarter section northwest of the 11-7 well would be water bearing. Alternatively, the structure as presented dictates that if any gas reserves were to be present, they would have to be in a separate pool.

For the A zone, the examiner notes that both Mayfair and Due West agree that there is a good possibility of pay within the 11-7 well, although they do not agree on the pay thickness (Mayfair suggests 0.6 m and Due West 2.2 m). The examiner believes that based on log response, it is reasonable to interpret approximately 1 to 1.5 m of gas pay within the interval. The examiner agrees with Mayfair that this is the only well within the northwest quarter that shows good potential for gas pay. The vintage of the well logs makes it difficult to quantify reservoir properties such as net pay, porosity, and water saturation; however, the examiner believes the data do allow a qualitative assessment of the possibility of gas reserves being present. This assessment of the log data for the remainder of the wells in the northwest quarter does not show any response that could reasonably be considered indicative of gas pay.

On the basis of the foregoing, the examiner concludes that A and B zone gas reserves do not extend over all of the northwest quarter of the section, and therefore it would be inequitable to pool on an area basis.

The examiner is of the view that contouring a pool is an interpretive process by nature. However, in this particular case, the vintage and quality of the well logs make accurate net pay determination very difficult, further diminishing the accuracy of contoured net pay maps. Therefore, the examiner is not prepared to use contouring on a map as a basis on which to allocate production.

The examiner is of the view that allocation should be based on the probable area of the A and B zone pools in the northwest quarter of the section in comparison with the area of the pool in the remainder of the section, as indicated by the well data. For the A zone, as noted earlier, the examiner considers that the net pay in the 11-7 well may be from 1 to 1.5 m. This net pay would have the effect of moving the edge of the pool slightly to the northwest of where it is depicted on the Mayfair map, placing a small additional area within the pool boundaries. For the B zone, again as noted earlier, the examiner does not see any data that indicate that any well in the northwest quarter of the section could reasonably be assigned gas pay. The pool edge as mapped by Mayfair is a reasonable depiction of the maximum probable area of the B zone underlying the

northwest quarter of the section. With respect to the Due West mapping, it was not clear how the net pay map for the A zone was derived. In addition, Due West did not provide a net pay map for the B zone.

Based on the above, the examiner believes that Mayfair's allocation of 3 per cent for the northwest quarter is reasonable with some modification. Taking into account an adjustment of Mayfair's A zone pool edge, as explained above, and the interpretative nature of identifying the exact edges of the pools, the examiner believes that rounding the allocation to 5 per cent for the northwest quarter is appropriate. Therefore, the examiner concludes that the allocation of costs and revenues under the pooling order for Section 7 should be 5 per cent for the northwest quarter and 95 per cent for the remainder of the section.

With respect to other provisions of the pooling order, the examiner notes that no concerns were raised with respect to the applicant's request that it be named operator of the 2/16-7 well under the order or to the requested penalty. The examiner also notes that these requested provisions would be normal terms in a pooling order and concludes that the order should include these provisions.

5 OTHER MATTERS

The examiner notes that Mayfair's attempts to negotiate and exchange detailed interpretations outside the EUB application process were not reciprocated by Due West, apparently due to a perception by Due West that Mayfair's position on the matter was fixed and so far from Due West's view as to render discussions useless. The examiner believes that Mayfair conducted itself properly in this circumstance by contacting Due West by telephone and by requesting meetings on several occasions. However, the examiner was disappointed by the lack of response by Due West. Normal negotiations should include the reciprocal exchange of relevant information. The examiner would encourage Due West, and other parties in a similar situation, to fully enter into meaningful negotiations to increase the opportunity to resolve the issue without EUB involvement.

6 CONCLUSION

The examiner concludes from a review of the evidence that a pooling order with the provisions as noted previously should be issued to address the matters raised by the hearing participants.

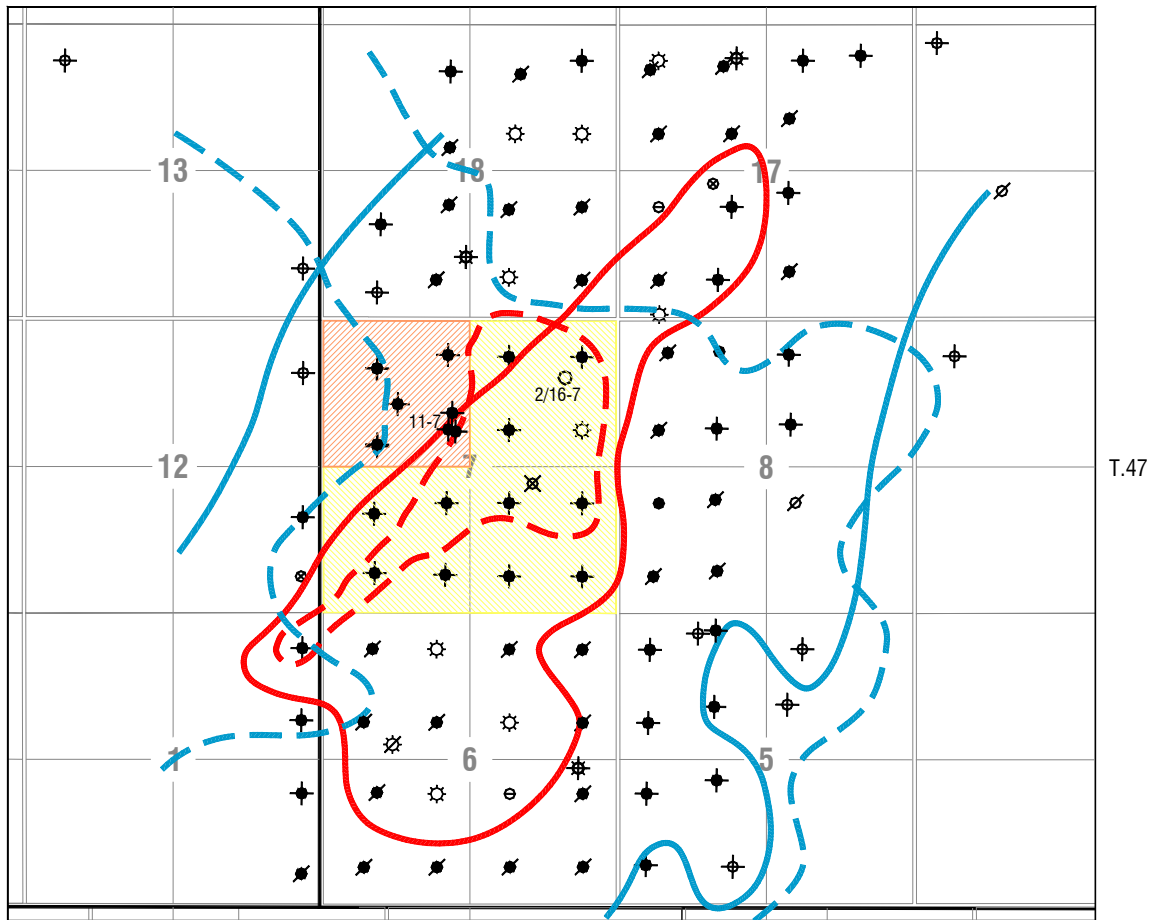
DATED at Calgary, Alberta, on July 9, 2001.

(Original signed by)

C. Hill

R.28

R.27W.4M.



Legend

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|--|--|--|---------------|--|---------------------------|
| | Interests held by Mayfair and Belfast | | Abandoned | | Abandoned gas |
| | Interests held by Due West | | Pumping oil | | Standing |
| | Mayfair Basal Quartz A zone pool edge | | Suspended oil | | Water disposal |
| | Mayfair Basal Quartz B zone pool edge | | Abandoned oil | | Suspended water injection |
| | Due West Basal Quartz A zone pool edge | | Flowing gas | | Observation |
| | Due West Basal Quartz B zone channel trend | | Suspended gas | | Cycling |

Overview of Application Area/Bonnie Glen Field
 Application No. 1083728
 Mayfair Energy Ltd. and Belfast Oils Ltd.

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