R. C. SECORD

ENERGY RESOURCES CONSERVATION BOARD
Calgary Alberta

MANALTA COAL LTD.
REQUEST FOR BOARD ORDER OF A WELL ABANDONMENT
CHINOOK MANAGEMENT LTD.
APPLICATION FOR PERMIT FOR PIPELINE CONSTRUCTION

Decision D 88-14
Applications 880499
and 880920

1 INTRODUCTION

1.1 Application 880499

Manalta Coal Ltd. (Manalta) applied for an order or direction of the Board to require Chinook Management Ltd., the licensee of the well, CHINOOK RED WILLOW 6-13-40-16 (6 of 13 well), to abandon the well to facilitate mining of coal through the well site, in accordance with the mine plan approved by Mine Licence No. C 85-10.

1.2 Application 880920

Chinook Management Ltd. (Chinook) applied, on behalf of the working interest owners in the 6 of 13 well, for a permit to construct a pipeline from the 6 of 13 well to a point in legal subdivision 7 of section 14, township 40, range 16, west of the 4th meridian. The pipeline would be required to transport natural gas from the 6 of 13 well to tie in to the gas gathering system for the Newalta Red Willow Gas Plant. Chinook identified a preferred and alternative pipeline route (see attached diagram).

Chinook intends to apply for the re-licensing of the pipeline between 7-14 and the gas plant to allow for carriage of natural gas containing small quantities of hydrogen sulphide.

1.3 Hearing

A public hearing of the applications was held on 25 August 1988 in Calgary before a division of the Board comprised of N. A. Strom, P.Eng., E. J. Morin, P.Eng., and R. G. Evans, P.Eng.

A list of those who appeared at the hearing is given in the following table.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Manalta Coal Ltd. (Manalta) A. L. McLarty	P. J. Scott, P.Eng. T. Jenish J. A. Taylor, P.Eng. L. A. Shier, P.Eng.
Chinook Management Ltd. (Chinook) W. J. Major, Q.C.	J. R. Neale, C.M.A. G. D. Metcalfe, P.Eng. K. S. MacKenzie (of Esso Resources Canada Limited) W. J. Irwin, P.Eng. (of Newalta Corporation) R. E. Taylor, P.Eng. (of Newalta Corporation)
Alberta Power Limited (APL) C. K. Sheard N. E. Romanow	R.K.M. Bellows, P.Eng.
Fording Coal Limited (Fording) P. J. McIntyre	J. H. Gray, P.Eng.
Luscar Ltd. (Luscar) R. C. Secord	K. E. Hebil, P.Geol. K. G. Crane
Haeberles B. L. Anderson	M. J. Haeberle
Energy Resources Conservation Board staff C.J.C. Page B. E. Madu, P.Eng. T. J. Pesta, P.Eng. K. Jamil, P.Eng. A. Kwaczek	

1.4 Positions of the Parties

1.4.1 Manalta

Manalta, as operator of the Vesta Mine, objected to Chinook's application on the basis that a pipeline located along either of the preferred or alternative routes identified in Chinook's application would interfere with mining operations according to Manalta's "Base Case" mine plan (the Base Plan). Manalta noted that the proposed alternative pipeline route would not interfere with the present mine workings, but would eventually interfere with the continuation of mining activities.

Although Manalta originally scheduled stripping of soils from the Chinook well site during the fourth quarter of 1988, it noted that these operations could be conducted in the well area immediately prior to overburden removal scheduled to commence in mid-1990.

1.4.2 Fording

Fording, the freehold lessor of coal rights in section 13, supported Manalta's application and believed that mining through the well would be the most efficient and economic means of recovering the resources.

1.4.3 APL

APL, the lessee of coal rights in section 13, originally objected to Chinook's pipeline application but subsequently modified its position and was receptive to a plan that would allow Chinook to produce its well commencing immediately and continuing until mid-1990, suspend or temporarily abandon the well, and then after 1992, when mining operations and reclamation activities would be completed, re-enter and resume production. APL stated at the hearing that it would be prepared to absorb 50 per cent of the costs of any option for suspension or temporary abandonment of the well and re-routing of the pipeline as directed by the Board on the general understanding of all parties that the combined coal and gas least-cost option would be the most beneficial to coal and natural gas interests.

1.4.4 Chinook

Chinook originally objected to Manalta's application because it directly affects Chinook's ability to produce gas from the 6 of 13 well. However, Chinook recognized that interruption of the gas well production operations would have to occur to accommodate continued mining operations in sections 13 and 14. Recognizing the timing of those operations, Chinook stated it would prefer to commence production as soon as possible and continue for at least 18 months, suspend or temporarily abandon the well to allow continuation of mining according to the Manalta Base Plan, and then resume gas production thereafter. During the hearing, Chinook expressed agreement with Manalta that the least-cost option for continuation of both coal mining and gas well producing operations would be the most suitable pursuant to APL's undertaking to share 50 per cent of those costs.

1.4.5 Haeberles

The Haeberles, who are freehold gas royalty owners in section 13, expressed an interest in the immediate production of the gas from the 6 of 13 well in order to receive and enjoy royalty payments.

1.4.6 Luscar

Luscar is the operator of the Paintearth Mine (see attached diagram), and received a mine permit in 1978. Luscar originally objected to Chinook's application because it was concerned that a pipeline from the 6 of 13 well to a point in legal subdivision 7 of section 14 following either applied-for route would cause substantial disruption and increased costs to Luscar's proposed mining operations scheduled to commence in the Paintearth Mine West Block in 1996. At the hearing Luscar requested that any pipeline construction permit issued to Chinook providing for a pipeline in the southeast quarter of section 14 also include a provision that the pipeline be removed by 1996 or such later date at which Luscar would commence mining in the Paintearth West Block.

1.5 Background

The Board granted Manalta Licence No. C 84-18 in February 1985 for the Vesta Mine, and as a condition required the submission of information, prior to 31 March 1985, respecting the effect of the 6 of 13 well upon the 5-year mining plan and alternative mining schemes that would allow production from the well. Manalta presented a preferred Base Plan, which proposed mining through the 6 of 13 well with the need to either temporarily or permanently abandon the well by 1990.

A public hearing of the application took place in June 1985 to hear representations from interested parties respecting the coal and gas resource access conflict. The Board, in Decision D 85-34, expressed doubt that a clear right of preferential access existed and concluded that it was in the public interest to seek a practical means to allow orderly, efficient, and economic development of both the coal and gas resources.

The Board granted Manalta a replacement licence to continue mining in accordance with the Base Plan subject to certain conditions. The Board, noting that the commencement of gas production was scheduled for November 1985, and as the anticipated life of the well was in question and may be minimal, concluded that production at the maximum rate feasible would reduce the potential for conflict and endorsed all reasonable effort to commence gas production as soon as possible.

2 ISSUES

During the proceeding both sets of participants, those interested in orderly development of the coal resources and those interested in production of the gas well, recognized that there would be interference between those operations irrespective of the proposals put forward. In the end and predicated on APL's offer to absorb 50 per cent of the costs of whatever option was directed by the Board, there was virtually unanimous agreement that the optimum form of operation chosen would be one in which there would be minimum cost impacts and also the lowest practical level of interference of one operation upon the other. Additionally, all participants requested at the conclusion of the hearing that the Board, upon identifying the least-cost optimum course of action, give clear direction regarding approval of location and routing of pipeline facilities and, on Manalta's request of the Board, order a suspension or temporary abandonment of the well at the appropriate time. The options proposed for mining and pipeline routing are summarized in attached Tables 1 and 2, respectively.

Based on consideration of the foregoing, the Board concludes that the following are the key points to be addressed and in the sequence indicated.

- What constitutes the major aspect of interference between the mining and the well production operation and what appears to be the most practical means of overcoming that interference?
- What are the cost impacts involved in each of the options proposed?
- Are there safety considerations that would render any one of the options unacceptable?
- Which option provides the most reasonable opportunity for development of both resources?

3 MINIMUM PRACTICAL INTERFERENCE

3.1 Views of the Applicants

In suggesting that gas production and coal mining operations could not occur concurrently in the area of the well site, Manalta requested a well abandonment order from the Board once mining operations reach the immediate well area in 1990. Manalta's preference would then be to "mine through" the well area according to its Base Plan schedule. In the event that its request to mine through the well was not adopted by the Board, Manalta presented two alternatives. The first was to mine around the well site leaving a pillar of unrecovered coal. Because of increased mining costs and potential sterilization of 250 000 tonnes of coal, Manalta considered the "mine around" option to be unacceptable. Manalta's second option, one which it thought feasible, would be to terminate cuts at the east side of the well area, thereby leaving an estimated 750 000 tonnes of coal in the southwest corner of section 13 unmined. This second option, depending upon future economic evaluations, might allow for future return into the unmined area after depletion and abandonment of Chinook's well.

If, on the other hand, the Board determined that mining was to proceed through the Chinook well site, Manalta envisioned two potential options available to Chinook. Chinook could re-establish the well after mining and reclamation either by drilling a new directional well from mined-out lands or re-entering the existing well.

Manalta objected to the pipeline application because it would present an additional obstacle to the execution of its Base Plan. The preferred route as identified by Chinook would immediately interfere with mining operations and the alternative route would interfere in 1990.

Chinook's original position was that it should be allowed to produce gas concurrently with Manalta's coal production for an indefinite period. It would be flexible in the pipeline routing to accommodate mining operations. However, depending on future circumstances, Chinook acknowledged that the pipeline may have to be removed and re-routed by 1990 in order to accommodate mining operations. In addressing the alternatives as proposed by Manalta, Chinook was not prepared to commit to drilling a new directional well. The re-routing of pipelines and re-entry of the well after mining has passed through and beyond the well area would be economic decisions and could only be evaluated at future dates.

Chinook was unaware of Luscar's mining plans in the West Block of the Paintearth Mine but noted that it would consider altering or removing the pipeline when necessary so as not to interfere with those plans.

3.2 View of the Interveners

APL's basis for concern was that any additional mining costs would be passed on to APL by Manalta and eventually to APL's customers. As the pipeline would affect the progression of the mine, it would affect the supply and therefore the cost of coal to its Battle River electrical generating station. APL supported Manalta's application and the alternatives identified by Manalta for Chinook to drill a directional well or re-enter the existing well. Focusing its position on seeking the lowest combined costs option, APL indicated that it would be prepared to co-operate with Chinook to provide easements over any land in which APL owned the surface rights, that would be required by Chinook to construct a pipeline as requested.

Luscar presented a proposed mine plan for the West Block of its Paintearth Mine, which indicated that the optimum mine plan would be situated in the central third of the block, covering Chinook's preferred and alternative pipeline routes. If the pipeline was still in place and transporting gas in 1996, Luscar would be forced to design an alternative plan for mining to the north or south of the central third of the block. However, even if the pipeline were initially routed around the optimum mine plan area, it might later have to be re-routed to allow mining of the north or south portions of the West Block. Luscar would prefer that the pipeline, if approved, be removed and re-routed prior to commencement of its mining operations.

3.3 Views of the Board

It is evident that the lowest level of interference with the coal operations would be that in which no further activities would be undertaken respecting the gas well until coal mining operations had completely passed through the well site area. For this to occur the well would have to be suspended or temporarily abandoned below the level of the coal seam, mining operations allowed to proceed as if the well was not present, and later the well restored and the pipeline connected. In this case the well would not be placed on production until about 1992 or 1993. However, the pipeline connection to the 7-14 site apparently would have to be severed in 1996 to accommodate start-up of mining of the Paintearth West Block, so that the duration of operation of the well would only be 4 years before a major disruption would occur. This option, while being the minimum interference for coal mining, would result in an undesirable delay in well production, and even then might allow the well to produce only for a few short years when it would be subject to further interruption. Therefore the Board does not consider this possibility to be a suitable minimum practical interference option.

It is evident that the pipeline routing would result in unavoidable conflicts with mine operations in the Vesta Mine and adjustments to routing will be necessary to accommodate these operations. Recognizing this and having agreed to the concept of the lowest-cost option, Chinook indicated that it was prepared to be flexible in choosing a pipeline routing. As well, APL was prepared to provide easements to meet this objective. On that basis, the Board believes that the applied-for alternative route, as it may be modified by agreement of the parties, would be the most suitable. This route would provide a period of pipeline operation at least until the end of 1995 with possible interruptions depending on the mining option.

4 LOWEST COST

4.1 Views of the Applicants

Manalta stated that the least-cost approach should be adopted to minimize any incremental costs, and identified its mine-through approach as the most economic resolution. Manalta noted that significant deviations from the Base Plan to accommodate production of the 6 of 13 well would result in increased mining costs. Manalta noted that its preference to mine through the well would incur costs of $75 000 to $100 000 to temporarily suspend and later re-enter the well. If re-entry was unsuccessful, Manalta estimated that re-drilling the well would cost in the order of $300 000. Manalta's alternative option in avoiding the well would be to stop short of the well and leave some 750 000 tonnes of mineable coal unrecovered in the southwest corner of section 13. The incremental cost of this option was identified by Manalta to be $1.5 million, as deeper and therefore more expensive coal to the east would have to mined instead. Manalta also noted that the economics of coming back to mine this corner of section 13 at some later date was questionable. The remaining alternative that Manalta examined was to mine around the well site leaving a 270-metre-square pillar of unrecovered coal around the well. The increased mining costs and the potential for sterilization of 250 000 tonnes of coal rendered the mine around option as the least desirable alternative.

Chinook doubted that the drilling of a directional well would be economically viable. In addition, it questioned the $1.5-million additional mining costs put forward by Manalta. Nevertheless it accepted that the lowest-cost option might be some combination of commencing well production now and, when needed, temporarily suspending and later re-entering the well, as well as removing and rebuilding pipelines when required to accommodate mining operations. Also, responding to the APL offer, Chinook was receptive to absorbing part of those costs.

4.2 Views of the Interveners

APL and Fording agreed with Manalta that the least-cost approach would be to suspend the well and mine through the well area.

Luscar noted that a pipeline in place in its West Block in 1996 would force it to go to an alternative mine plan that would result in higher costs because Luscar would have to mine less attractive holdings. The least-cost solution to Luscar would be for Chinook to immediately produce its well with a view to depleting the well before Luscar's mining operations begin in 1996.

4.3 Views of the Board

Table 1 is a summary of the comparative costs and impacts for each of the alternative operating strategies discussed at the hearing. Option 1 would require suspension or temporary abandonment and later re-entry of the well or, alternatively, abandonment of the well and later drilling of a new well. Additionally, this option would require at some point that the original pipeline, extending southward from the 6-13 well, be abandoned and shifted to a suitable route in the Manalta mined-out area. Total cost of these operations, including some additional costs for the mining operation, and the costs for the well suspension or temporary abandonment and subsequent operations range from $125 000 to $400 000. This option would permit production of the well from the end of 1988 to mid-1990 (1.5 years), suspension or temporary abandonment from mid-1990 to the end of 1992 (2.5 years), followed by resumption of production from 1993 to the end of 1995 (3 years) for a total of at least 4.5 years of well production.

Option 2, the one which Manalta proposed if the Board did not order the well to be suspended or temporarily abandoned, is that of altering the mine plan to exclude the southwest corner of section 13 of the Base Plan. This option would result in increased mining costs for the Base Plan of some $1.5 million. On the other hand, this option would allow the gas well to be connected by the southern pipeline alternative and allow continuous operation of the gas well from the end of 1988 to the end of 1995 (7 years) without interruption. Accordingly, there would be no incremental costs involved for the gas well. This option, while being considerably more expensive than the mine-through option, would result in the approximately 750 000 tonnes of coal resources in the southwest corner of section 13 being deferred and mined later with the west half of section 12.

Option 3 would be to mine around the 6 of 13 well leaving a 270-metre-square pillar of unrecovered coal. This would result in increased operating costs due to extremely short cuts of the dragline on the southwest side of the pillar and likely sterilization of about 250 000 tonnes of coal. Manalta contended that costs for this mine-around option may be modestly less than Option 2, but Option 3 is not viable because of mining complications and potential for sterilization of coal. The Board believes that overall costs for this option, including costs for relocating pipelines and coal sterilization, would be close to Option 2. The gas well would be able to produce from the end of 1988 to mid-1990 at which point the pipeline would have to be abandoned and shifted from the unmined area over into a reclaimed mined area. Thus the gas well could be reconnected and could resume production from 1991 to the end of 1995 for an overall production period of 6.5 years.

5 SAFETY

5.1 Views of the Participants

Manalta noted that it could proceed with topsoil and subsoil salvage operations as scheduled up to a certain distance from the well. It would have to analyse the type of equipment to be used in the immediate well area and the operating procedures. Manalta agreed that the well could be produced up to the time that actual mining operations reached the well site, providing that mining operations were conducted in a safe manner. After suspension of the well and conclusion of mining in the well area, Manalta envisioned rebuilding the well by re-attaching joints of casing back to surface. A mound of earth would be built around the wellbore as ground restoration progressed to the original elevation surface. Manalta noted that there would be little subsidence in the area surrounding the wellbore as heavy mobile equipment would be used to build the mound. Based on its geotechnical assessments and safety concerns, the pipeline would have to be located at least 90 metres from the mining operations.

5.2 Views of the Board

Because of the nature of operations, careful attention would have to be given to geotechnical factors which come into play when the mining operation is in proximity to the well and pipeline. Clearly the safest option for protection of the well casing would be either to by-pass mining in the southwest corner of section 13 or to provide for a safety pillar of some 270 metres square around the 6-13 well. The option of suspending or temporarily abandoning the well and mining through introduces some well safety considerations that would require careful procedures. The Board would not expect subsidence to be a problem given that heavy mobile equipment would be used in reclaiming the well area. Special procedures to rebuild the well and reclaim the immediate well area would have to be developed by Manalta and Chinook and ultimately approved by the Board. Regarding pipelines, precautions would be required to ensure that shifting the pipeline into previously disturbed land would not result in a risk to the pipeline from soil subsidence. The most critical aspect of safety is that of avoiding situations where heavy equipment operators might inadvertently damage either the wellhead or pipeline during soil stripping or mining operations.

6 OPPORTUNITY FOR DEVELOPMENT OF EACH RESOURCE

6.1 Views of the Applicants

Manalta, following its preferred mine-through strategy, put forward two mine plan schedules. Following the Base Plan schedule, the well would be suspended by mid-1990 with the well being re-established in 1993. This schedule would allow an initial 1.5 years of gas production followed by a 2.5-year suspended period. The second schedule, involving acceleration of the Base Plan, would require suspension of the well in mid-1989 with the well being re-established at the end of 1990. This option would allow 6 months of initial gas production followed by a 1.5-year suspended period.

Given a choice between the two mine schedules proposed by Manalta, Chinook's preference would be the immediate commencement of well production followed by suspension of the well from mid-1990 until the end of 1992. The 1.5-year period of initial production would allow Chinook to conduct reservoir performance studies so as to better define likely recoverable gas reserves. Chinook would then be in a better position to evaluate the economics of re-entering the well after 1992, compared to the case where only 6 months of production was obtainable. This interim production period would also enable Chinook to initially fulfil a gas sales contract and gathering and processing agreements with Esso and Newalta. In a related matter Chinook was concerned that suspension or temporary abandonment of the well, even if the well were to be later re-entered, might automatically trigger termination of its petroleum and natural gas lease.

6.2 Views of the Interveners

APL and Fording supported Manalta's proposals. Luscar would prefer that any pipeline in its West Block be abandoned or removed by 1996 in order that it could produce its resource. The Haeberles could not address the effect of a temporary suspension or permanent abandonment of the well on the possibility of termination of their lease with Chinook. If, as a result, the lease did expire, they noted that it might not be economical for another company to re-drill or re-enter the well to recover the remaining gas reserves.

6.3 Views of the Board

The optimum choice for development should provide for the reasonable earliest commencement of gas well production operations and the longest reasonable duration of those operations. The mine-through option offers the optimum possibility of meeting these objectives as it involves only minor mining operations adjustments and allows a reasonable period of well production before interference with the planned Luscar operations would occur. Indeed, an improvement to the mine-through option would be to shorten the period of well suspension or temporary abandonment to perhaps no more than a year.

The Board considers the question of the continuance of the petroleum lease agreement to be a legal matter and not within the jurisdiction of the Board. In any case, whether or not this lease would terminate is a business risk that would not influence the Board's decision.

7 DECISION

The Board has decided to grant Chinook's Application 880920 with the location of the pipeline to be that location identified as the alternative route. The Board would accept modifications to the alternative route as agreed upon by Manalta, Chinook, APL, and Luscar. The pipeline permit will be issued upon appropriate licensing of the pipeline from 7 of 14 to the gas plant for the transportation of gas containing hydrogen sulphide.

The Board concludes that Option 1 (as noted in Table 1) is the most suitable strategy for accommodating the various interests. Accordingly, regarding Manalta's Application 880499, the Board directs that arrangements be made to suspend or temporarily abandon the CHINOOK RED WILLOW 6-13-40-16 well on or about 1 July 1990 or such other date as later directed by the Board. The suspension or temporary abandonment shall be effected in a suitable manner at a depth below the base of the coal seam to facilitate mining of coal through the well site.

To ensure that properly co-ordinated and safe operations are conducted by Manalta and Chinook on a continuing basis, the Board will establish an operating committee. For convenience, the committee will be called the Manalta/Chinook Committee. The committee will be chaired by an ERCB representative and will meet at the request of the chairman when any concerns, safety matters, or scheduling difficulties arise. Chinook, Manalta, APL, and Luscar will each be given the opportunity to provide a committee member.

In accordance with the foregoing, and subject to future advice from the Manalta/Chinook Committee, the Board informs the participants of its expectations concerning schedules and activities that may be undertaken by Chinook and Manalta:

1. Chinook would be expected to commence production from the 6 of 13 well as soon as possible.

2. Construction of the Chinook pipeline should commence as soon as possible after the Board permit is issued. The route will be the alternative route as proposed or such other route as is acceptable to Manalta, Chinook, APL, and Luscar. To allow continuation of mining operations, a portion of the pipeline will be abandoned and re-routed simultaneously with the suspension or temporary abandonment of the 6 of 13 well. For those purposes Chinook will submit the necessary applications to the ERCB's Pipeline Department.

3. The 6 of 13 well will be suspended or temporarily abandoned by about 1 July 1990.

4. The operations and procedures for suspending or temporarily abandoning the well with setting of appropriate bridge plugs and cement will be subject to review and approval of the ERCB's Drilling and Production Department and Coal Department after receiving advice from the Manalta/Chinook Committee.

5. Manalta will mine through the well area in accordance with its Base Plan and by 1 January 1993, or earlier if feasible, complete reclamation operations so as to permit Chinook to re-enter the existing well or drill a replacement well.

6. For the purposes of clauses 1 to 5, the Board may alter the dates specified upon advice from the Manalta/Chinook Committee.

7. In accordance with the Board-directed program as set out above, and the undertakings by APL respecting cost sharing, the Board believes it appropriate that certain costs should be shared and directs the allocation of costs as follows:

   a) The costs associated with the Board-directed well suspension or temporary abandonment operations, rebuilding of surface casing, re-entry of the well and reinstallation of the wellhead equipment, or re-drilling of the well shall be borne equally by Manalta and Chinook.

b) Manalta shall be solely responsible for all costs associated with removal of the well casings to the base of the coal seam and all overburden backfilling and reclamation activities.

c) The costs associated with the abandonment, replacement, relocation, and reconnection of the pipeline shall be borne equally by Manalta and Chinook.

DATED at Calgary, Alberta, on 16 November 1988.

ENERGY RESOURCES CONSERVATION BOARD

N. A. Strom, P.Eng.
Vice Chairman

E. J. Morin, P.Eng.
Board Member

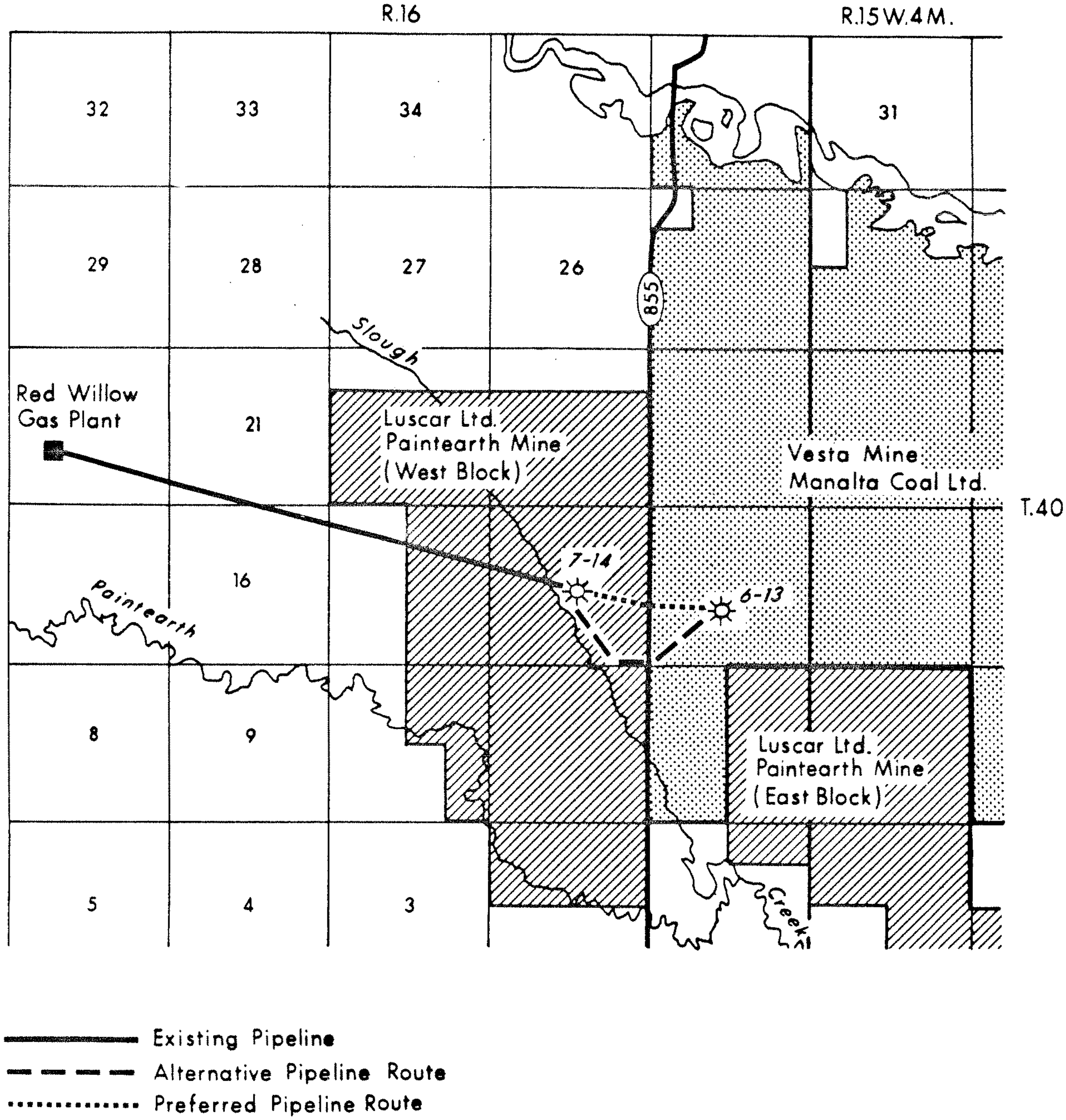
R. G. Evans, P.Eng., Acting Board Member, concurs with the contents and with the issuing of this report.

TABLE 1 SUMMARY OF RESOURCE DEPLETION OPTIONS

Strategy	Option	Impact on Resource Operations		Summary of Estimated Costs (Mine, Well & P/L)	Participant Views	ERCB Conclusion
		Coal	Gas			
Mine through 6 of 13 well.	1	Nil.	Produce end 1988 to mid-1990 (1.5 year). Suspend mid-1990 to end 1992 (2.5 years). Resume production 1993 to end 1995 3 years). Total 4.5 years. $50 000 P/L relocation cost, $75 000 to $100 000 suspension and re-entry cost, or $300 000 re-drill new well.	$125 000 to $400 000.	Manalta's preferred option.	Least-cost option. Approved.
By-pass mining of southwest quarter of section 13.	2	Mining of 750 000 tonnes deferred.	Well produce end 1988 to end 1995 (7 years).	$1.5 million.	Manalta's alternative. Fording loss of revenue $1.5 million to $2 million.	More expensive than mine-through option. Mining of coal deferred.
Mine around 6 of 13 (pillar).	3	Sterilization of 250 000 tonnes.	Produce end 1988 to end 1995 with short interruption for P/L shift ($50 000) to allow mining around pillar (6.5 years).	Less than Option 2.	Manalta - not a viable alternative. Fording's loss of revenue for 250 000 tonnes of coal.	Mining complications. Potential for coal sterilization.

TABLE 2 SUMMARY OF PIPELINE ROUTE OPTIONS

Strategy	Impact on Resource Operations		Participant Views	ERCB Conclusion
	Coal	Gas		
Preferred P/L route:				
P/L directly west; 6 of 13 well to 7-14.	Direct interference with mine operations by 1988/89.	a) Install late 1988.	Chinook agreeable to any route. Want to produce well immediately.	a) Immediate interference between mine and well operation. Impractical, costly, safety problems. Denied.
		b) Defer installation to late 1992 to allow completion of mining and reclamation.		b) Useful period of P/L 1993 to end 1995 (3 years).
Alternative P/L route:				
a) From 6 of 13 well to south boundary of section 13.	a) Would not interfere now but in 1990.	a) Would allow operations of well at least until end of 1995 with possible interruptions depending on mining option.	Chinook agreeable to this route. Manalta wants to avoid future interference with mine. Luscar does not want P/L in Paintearth West Block in 1996. APL prepared to give P/L ROW easement for least-cost route.	a) Optimum route chosen to provide for least interference. Well could produce from late 1988 to end of 1995, uninterrupted for the by-pass mining option, with short interruption for mine-around option, and 2.5-year interruption (mid-1990 to end of 1992) for mine-through option.
b) From south boundary of section 13, directly west into section 14, then north-west to 7-14.	b) Directly interferes with Luscar's mine plan in 1996.	b) Interruption of P/L operation in late 1995.		b) Situation in 1996 uncertain. Well production may be near termination. Grant alternative route through southeast quarter of section 14 to 7-14 well.



MANALTA COAL LTD. AND LUSCAR LTD. MINE PERMIT AREAS
Applications No. 880499 and 880920
Battle River Area

D 88-14
ERCB