

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**NORTHSTAR ENERGY CORPORATION
REQUEST TO SUSPEND THE WELL
APL ET AL GULL 12-22-41-28 W4M**

and

**BEAU CANADA EXPLORATION LIMITED
SUSPENSION OF THE OFF TARGET PENALTY
APL ET AL GULL 12-22-41-28 W4M
MORNINGSIDE GLAUCONITIC D POOL
MORNINGSIDE FIELD**

**Decision 99-21
Applications No. 1030981 and 1033083**

1 DECISION

Having carefully considered the evidence, the Board directs that

- application of the off-target penalty factor to the 12-22 well be suspended effective the date of this decision,
- Board staff issue an allowable order for 1999 that reflects the overproduction status to the date of this decision,
- overproduction be calculated based on the June 1996 pressure point and a 25 per cent pressure decline thereafter, and
- the 12-22 well be shut in immediately to retire overproduction.

1.1 Follow-up Action

The Board directs its staff to meet with representatives from CAPP and SEPAC to review ID 94-2 and make any necessary enhancements. With the ID being in effect for 5 years and representing a significant departure from previous rules, and given the differing interpretations presented in this proceeding, a review is considered appropriate. The Board also understands that its staff are reviewing the principles behind the current method for the Q_{\max} determination and that stakeholder consultation will occur.

Finally, the hearing has identified possible deficiencies in the EUB's management of equity issues related to off-target gas wells. While industry shares a responsibility with the EUB to ensure proper equity management, the EUB has recently taken measures to address the matter by ensuring annual pressure tests are conducted and submitted for off-target gas wells. The need for any additional steps should be assessed as part of the previously referenced reviews.

2 INTRODUCTION

2.1 Background

The well APL et al Gull 12-22-41-28 W4M (the 12-22 well) was drilled by APL Oil and Gas Ltd. (APL) in June 1993 and was acquired by Beau Canada Exploration Ltd. (Beau) with the purchase of APL in April 1998. It commenced production in December 1993 and was subsequently placed in the Morningside Glauconitic D Pool. The 12-22 well is located 147 metres (m) east and 551 m south of the nearest boundaries of Section 22-41-28 W4M and is off target for the production of gas from the drilling spacing unit comprising Section 22. An off-target penalty factor and annual allowable were assigned to the 12-22 well in January 1994 on the basis that the well was off target in a multiwell pool of competitive mineral right ownership.

In October 1994, pursuant to Interim Directives (ID) 94-2 and 94-5, APL applied to the Alberta Energy and Utilities Board (the EUB or Board) to have the off-target penalty factor removed from the 12-22 well. APL argued that the off-target penalty was no longer applicable under the policy changes introduced by these interim directives. Northstar Energy Corporation (Northstar), licensee of two offset wells, opposed the application to remove the off-target penalty, arguing that the penalty was required to maintain its equity in the pool. The application was denied, but the off-target penalty factor was revised from 0.2457 to 0.25 in accordance with ID 94-5. Although APL did not agree with the decision to deny its application, it decided not to pursue the off-target issue any further.

In May 1995, Northstar requested the EUB change its administrative procedures such that allowables for the 12-22 well would be redetermined at three-month intervals. It argued that the annual allowable was excessive because it was calculated using reservoir pressures which did not accurately reflect the actual pressure decline in the Morningside Glauconitic D Pool. In a letter from Board staff dated 8 June 1995 Northstar's request was denied. In the letter Northstar was advised that the deliverability data and rates had been found to be reasonable. However, the Board did agree that a stabilized reservoir pressure should be obtained at the 12-22 well on an annual basis in order to ensure that the annual allowable is adjusted to reflect the actual pressure decline in the pool. This letter was forwarded to APL by Farries Engineering (1977) Ltd. but there was no follow-up from the EUB to clarify the requirements or to monitor for compliance. In the absence of specific pressure information, the Q_{\max} was calculated by the EUB using a 5 per cent pressure decline assumption.

2.2 Applications

Northstar and Rustum Petroleums (1993) Limited (Rustum) filed Application No. 1030981, pursuant to Section 10.280(3) of the Oil and Gas Conservation Regulations, for an order to suspend the well APL et al Gull 12-22-41-28 W4M. Northstar alleged that the 12-22 well had produced more gas than it was entitled to under its off-target status and should be shut in in order to retire the claimed overproduction.

Beau Canada Exploration Ltd. (Beau) filed Application No. 1033083, pursuant to Section 4.060 (1) (2) of the Oil and Gas Conservation Regulation, and ID's 94-2 and 94-5, to remove the off-target penalty factor applied to the 12-22 well. Beau stated that it believed that the off-target penalty was no longer applicable under the policy revisions introduced by the above interim directives.

2.3 Hearing

The subject applications were considered at a public hearing, at the offices of the Board, on 2 and 3 June 1999 before Board Member B. F. Bietz, P.Biol., and Acting Board Members R. J. Willard, P.Eng., and T. M. Hurst.

Those who appeared at the hearing are listed in the following table.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)

Witnesses

Northstar Energy Corporation (Northstar)
Rustum Petroleums (1993) Limited (Rustum)
S. C. Lee

D. H. Cole, P.Eng.
W. J. Doenz, P.Geol.
G. D. Metcalfe, P.Eng.
of Fekete Associates Inc.

Beau Canada Exploration Ltd. (Beau)
F. M. Saville, Q.C.
B. Roth

R. N. Waldner, P.Eng.
D. R. Baldwin, P.Geol.
J. K. Farries, P.Eng.
of Farries Engineering (1977) Ltd.

Alberta Energy and Utilities Board staff
T. Donnelly
T. Byrnes, P.Eng.
L. A. Schmidt, C.E.T.

Northstar appeared at the hearing on behalf of itself and working interest partner Rustum.

3 ISSUES

The Board considers the issues to be:

- the allowable calculation for and the overproduction status of the 12-22 well, and
- the off-target penalty status of the 12-22 well.

4 VIEWS OF NORTHSTAR

4.1 Allowable Calculation

Northstar stated that the 12-22 well should be shut in based on its view that the production from the well has been inequitable. It indicated that reservoir pressure assumptions used by Board staff in the allowable calculation for the years 1997 and 1998 did not accurately reflect the actual pressure depletion in the Glauconitic D pool. Northstar submitted that the Board-assigned allowables were higher than appropriate and consequently the 12-22 well captured more gas from the pool than it was entitled.

Northstar stated that the high allowables were a direct result of APL's non-compliance with a Board direction (letter dated 8 June 1995) to obtain an annual stabilized reservoir pressure at the 12-22 well. It also noted that APL conducted a pressure test in June 1996, but that the test results were not submitted to the Board until November of 1998. Northstar maintained that had APL submitted the pressure test on time, the Board would have used it to calculate the 1997 allowable. This allowable, Northstar believed, would have been approximately 40 per cent lower than the one calculated by the Board using an assumed pressure decline rate of five per cent per year. Northstar also stated that the June 1996 pressure data would have alerted the Board to the steep pressure decline in the pool and that the Board could have ensured that the annual allowable properly reflected the actual pressure depletion in 1997 and 1998.

Northstar also submitted a calculation of annual allowables from 1993 to 1999 based on its interpretation of the appropriate reservoir pressures and pool production. It concluded that the 12-22 well overproduced its allowable in 1995 and that overproduction had continued through to the present. According to its calculations, the 12-22 well should have been suspended 1 January 1998 when its overproduction at year-end 1997 exceeded its 1998 allowable. Northstar estimated the total overproduction for the 12-22 well to be $236\,234\,10^3\text{m}^3$ as of 31 March 1999.

Northstar stated it was unacceptable that because of APL's and Beau's non-compliance with the Board's regulations and direction, Northstar could potentially be denied the opportunity to obtain its fair share of production from the Morningside Glauconitic D Pool. Consequently, it requested that the Board, when determining the adjusted allowable for 1999, take into account the 22 June 1996 pressure data from the 12-22 well and the resulting cumulative overproduction to year-end 1998.

Northstar argued that the Board has the legislative authority needed to issue what might be viewed as a retrospective order. Such an order, Northstar believed, could account for past or

historical considerations, yet be effective on the date the order is made or at some future date.

4.2 Status of the Off-Target Penalty Factor

Northstar submitted that the 12-22 well should continue to be assigned an off-target penalty because:

- the well was intentionally drilled off-target to obtain production from the Glauconitic D pool,
- the 12-22 well gained access to the Morningside Glauconitic D pool solely as a result of its off-target location,
- the 12-22 well is creating lease-line drainage of Section 21, and
- ID 94-2 provides for an off-target penalty to be applied to the 12-22 well.

Northstar submitted that the 12-22 well is off-target towards Section 21 to which it holds the petroleum and natural gas rights. Geological interpretation based on well data from the 9-16-41-28 W4M and 12-22-41-28 W4M wells, combined with seismic data interpretation and material balance calculations, indicate that the Morningside Glauconitic D pool must extend over Section 21. Northstar's geological interpretation is shown on the attached figure.

Northstar stated that according to its geological interpretation, Section 22 contains an estimated $414.0 \times 10^6 \text{ m}^3$ gas in place, whereas the 12-22 well has produced $622.0 \times 10^6 \text{ m}^3$. This it argued also indicates that the 12-22 well is draining offset lands, but it was not certain from which direction. Northstar acknowledged the gas may be coming from Sections 21, 27, 16, or 15.

Northstar submitted that the 12-22 well gained access to the Morningside Glauconitic D pool solely as a result of its off-target location. It noted that the 12-22 wellbore penetrated the top of the Glauconitic sand 147.4 m east and 551 m south of the boundaries of Section 22. As drilled, the 12-22 wellbore is not deep enough anywhere in the target area of Section 22 to penetrate the Glauconitic sand. Northstar stated that this confirms that the well established contact with the Glauconitic sand outside of its target area. However, Northstar acknowledged under cross examination, that according to its geological interpretation, a well could have been drilled in the gas target area of Section 22 to access the Glauconitic D pool.

Northstar maintained that the 12-22 well meets the criteria by which an off-target penalty would be assigned. It concluded that the 12-22 well was intentionally drilled off target, and gained access to the reservoir as a result of its off-target location.

5 VIEWS OF BEAU

5.1 Allowable Calculation

Beau submitted that it acquired the 12-22 well in April of 1998 through the purchase of APL. At the time of the purchase Beau stated that it had no idea that Northstar had any issue or complaint with the gas allowable orders issued for the well by the Board for the years 1997 and 1998. It stated that Northstar's Application No. 1030981 would effectively shut in its 12-22 well for the remaining life of the Glauconitic D Pool in order to retire the alleged overproduction. Beau said that it had exercised the standard industry due diligence in reviewing APL's assets prior to purchase and during that process did not see any evidence of an allowable restriction in the 12-22 well's production. Beau confirmed that it knew the well was off-target, but because there was no well in the off-setting Section 21 and there was no notable restriction of production, it assumed that there was no allowable restriction. Once it became aware of Northstar's concerns, Beau stated that it took action by filing the 22 June 1996 pressure test it had in its possession and Application No. 1033083 for off-target penalty relief.

With respect to the Board's letter dated 8 June 1995 concerning the requirement for annual pressure tests at the 12-22 well and the alleged contravention of the requirement by APL, Beau confirmed that a copy of this letter was in the files it received from APL. However, Beau argued that in its view, the letter was not clear and left the impression that a further order would be issued. Beau stated that a further order was never issued and that it was not clear as to which party, APL or Northstar, was responsible for filing the information. Beau further noted that the required pressure survey for 1997 was also not submitted by Northstar for approximately 10 months.

Beau submitted that the lack of the 22 June 1996 pressure test should not have a negative impact on the Board's allowable calculation. Beau argued that the pressure results from this test fall on the P/Z versus cumulative production line and served only to confirm the pressure trend in the Glauconitic D pool. However, Beau did acknowledge that had the pressure test been submitted, it would have likely been used by the Board in its allowable calculation. Beau also acknowledged that the five per cent pressure decline assumed by the Board in its allowable calculation for 1997 and 1998 was significantly less than what the pressure test demonstrated. Beau agreed that the actual pressure decline for the Glauconitic D pool was in the order of 25 per cent per year.

Beau argued that the Board has the authority to review and revise gas allowables at any time, but only on a go-forward basis. It noted that Northstar was asking for a retrospective order which would implicitly account for past historical considerations, yet the order would be effective the date the order is made or at some future date. Beau said that under such an order it is impossible to account for overproduction from the past without recalculating gas allowables. In its opinion, overproduction means the production of oil or gas in excess of the oil or gas allowable or control rate determined in accordance with an existing order or directive. In order to determine overproduction, the Board would be required to go back in time and effectively change historical gas allowable orders. Beau argued that this is retroactive in nature and that the Board does not have the legislative authority to make such an order.

5.2 Status of the Off-Target Penalty Factor

Beau stated the implication that the 12-22 well was drilled as a step-out or development well is incorrect. The 12-22 well, at the time of licencing, was classified by the Board as a “new pool wildcat” and was drilled as an exploratory well in June 1993. Beau also stated that when the 12-22 well was drilled, it was aware that Northstar’s 14-27 well had been tested as a gas well. However, the 14-27 well was on confidential status for a year, consequently, information on pressure tests, production rates, and well logs was not available. Beau believed that given the lack of information, the complex geology of the channel and the problems interpreting the seismic data, a well drilled 1900 m from a tight hole (14-27) or over 5000 m from the nearest producer was not, in its opinion, a step-out or a development well.

Beau submitted that its interpretation of the geologic anomaly stretched over to an on-target location in Section 22. However, the 12-22 well location was interpreted to be the optimum spot based on the available 2D seismic. An on-target location was possible, but less favourable than the one chosen. Beau also submitted that it did not interpret the anomaly to be present in Section 21.

Beau said that the new rules introduced by ID 94-2 were reasonable and equitable compared to the previous policy. Beau observed that an off-target penalty would not normally be applied unless an off-target well was encroaching on a drilling spacing unit containing a well producing from the same pool or if the off-target well had gained access to a reservoir by virtue of its off-target location. Beau also said that ID 94-2 clearly set out that an off-target well located away from a producer would not attract an off-target penalty.

Beau noted that ID 94-5 made the revised calculation procedure for off-target penalty factors introduced by ID 94-2 applicable to wells drilled prior to 1 April 1994, the effective date of ID 94-2. Beau further noted that ID 94-5 stated that “a well with an off-target penalty more severe than that determined by ID 94-2 would have its factor redetermined using the new method.” In effect, no operator would be placed in a worse position with respect to off-target penalties as a result of the ID 94-5.

Beau argued that a reasonable interpretation of ID 94-5 must include complete removal of off-target penalty status as one point on the continuum of off-target penalties. In Beau’s view it made no sense for a party subject to an off-target penalty for a well spudded before 1 April 1994 to be entitled to the benefit of ID 94-2 if the calculation provisions result in a penalty half as severe, but not be entitled to the benefits of ID 94-2 if these would totally eradicate the off-target penalty.

Beau submitted that the 12-22 well met the requirements for no penalty since it is not off-target toward a spacing unit containing a producing well. Furthermore, current mapping of the pool clearly indicates that a successful well could have been drilled on target in Section 22. Beau acknowledged that the 12-22 well was off target towards Section 21, but that there was no producing well in Section 21, consequently, there is no drainage or equity issue.

6 VIEWS OF THE BOARD

6.1 Allowable Calculation

In its letter of 8 June 1995 to Northstar the EUB indicated that it “will require a stabilized reservoir pressure be obtained from the well annually so that the Q_{\max} can be adjusted for the next years expected annual average pressure drop.” The Board acknowledges that this letter is unclear as to whether a subsequent order was intended which would formalize the direction of future annual pressure tests. Further, although Farries Engineering (1997) Ltd. did provide a copy of the letter to APL, the Board believes that the letter should have been sent to both Northstar and APL with the requirements for both parties clearly set out. Having regard for these facts, the Board considers neither APL nor Beau can be held fully accountable for failing to obtain annual pressure tests at the 12-22 well. Furthermore, the absence of follow-up by either the EUB staff or the equity owners also contributed to the delay in addressing this issue.

The Board notes that the 22 June 1996 pressure test conducted by APL at the 12-22 well was not provided to the EUB until submitted by Beau in November 1998. Reservoir pressure data are critical to the evaluation and administration of off-target gas wells and must be submitted in accordance with Section 11.120 of the Oil and Gas Conservation Regulations (the Regulations). The Board is committed to ensuring that no operator gains a competitive advantage through failing to comply with its Regulations and considers failure to submit required data (in this case a well test) to be a serious breach of those Regulations. In this instance, the Board is satisfied that had the June 1996 pressure test been submitted on time, it would have been used in the 1997 allowable determination. The allowable would, in turn, have been considerably smaller, reflecting the actual pressure decline in the pool. In addition, the data would have confirmed the steeper decline in the Glauconitic D Pool and provided the Board staff an opportunity to either require further pressure tests or adjust the assumed rate of pressure decline.

The Board is satisfied that the 1996 pressure test is evidence that directly affects the allowable issued for 1997 and 1998. Furthermore, this is not new information acquired by the operators in the pool after the decisions were made on the 1997 and 1998 allowables that would permit a new interpretation. Rather it is data that should have been in the public domain at the time those decisions were made. The Board considers it appropriate in such circumstances to correct a previous calculation. The 1999 allowable should therefore be adjusted to reflect cumulative overproduction resulting from the steeper pressure decline trend confirmed by the June 1996 test. For this purpose the Board believes a pressure decline rate of 25 per cent per year is reasonable and notes that both parties acknowledged that this is representative of the decline rate over this time period.

The attached table shows the Board’s calculation of the allowable status for the well from 1996 to 30 April 1999. There is no basis to calculate overproduction prior to 1996.

6.2 Status of the Off-Target Penalty Factor

Under the procedures set out in ID 94-5, the off-target penalty factor applied to a well is to be the less severe of either the penalty determined in accordance with Appendix 3 of ID 94-2 or the penalty calculated under the rules in existence prior to 1 April 1994. In this case the penalty factor of 0.25, determined from ID 94-2, was utilized because it was less severe than the 0.2457 penalty calculated under the pre-April 1994 rules. ID 94-5 was not intended to deal with the issue of status of the off-target penalty factor, i.e., the question of whether the penalty factor is applied. ID 94-2 (Appendix 2) is intended for this purpose. Furthermore, it was intended that any off-target well would be evaluated against the guidelines presented in Appendix 2 regardless of the well's finished drilling date.

The Board accepts that the 12-22 well was drilled off target towards Section 21 in order to access the channel sand in an optimum location. From testimony at the hearing, Northstar clearly considered the drainage of Section 21 reserves to be a compelling reason for the Board to apply an off-target penalty factor to the 12-22 well. Although the Board accepts that reserves underlie Section 21, in the absence of a wellbore in that Section, the Board is not prepared to accept that inequitable drainage of these reserves is occurring and so is not prepared to apply the off-target penalty to the 12-22 well.

The Board also notes that the 12-22 is not drilled off target towards either the 9-16 or 14-27 wells, and that interwell distances of some 1600 m and 1900 m, respectively, have been maintained. The Board notes that if wells are drilled to the centre of the target area under standard one section gas well spacing, interwell distances of 1600 m would be maintained, but that under standard one section spacing, gas wells drilled within their target areas can be as close as 600 m to each other. Having regard for the substantial interwell distances of the 12-22 well to these competitive lands containing a wellbore, the Board considers that the off-target penalty factor should not be applied.

Finally, the Board does not believe that the 12-22 well gained access to the Glauconitic D Pool as a result of its off-target location. The well was clearly drilled in a location intended to encounter the optimum pay as identified from seismic. However, from the evidence provided, the Board considers it highly likely that the well would also have encountered favorable pay had it been drilled in the western portion of its target area. Although there may be some advantage in terms of net pay and reservoir quality at the off-target location in Lsd 12-22, the Board does not consider the potential difference significant enough to warrant application of the off-target penalty.

In that the Board sees no reason to apply the off-target penalty factor, production rates from the 12-22 well will not be restricted after the overproduction, to the date of this order, is retired.

7 OTHER MATTERS

7.1 Industry Responsibilities

The Board views its 8 June 1995 letter as incomplete but believes that it was sufficient to alert the parties to the linkage between reservoir pressures and Q_{\max} calculations. While the EUB has the regulatory obligation to manage its approvals and orders, offset equity owners should also plan to conduct sufficient surveillance to satisfy themselves that controls are being applied as expected and are effective. In this case, Northstar, as the pool's coordinating pressure test operator had a dual responsibility. The Board believes that additional diligence by Beau was likely also warranted when acquiring property that was subject to equity controls in order to both understand its potential impact and to ensure that compliance had and was continuing to occur.

Dated at Calgary, Alberta on 28 September 1999.

ALBERTA ENERGY AND UTILITIES BOARD

[Original signed by]

Brian F. Bietz, Ph.D., P.Biol.
Board Member

[Original signed by]

Robert J. Willard, P.Eng.
Acting Board Member

[Original signed by]

Terry M. Hurst
Acting Board Member

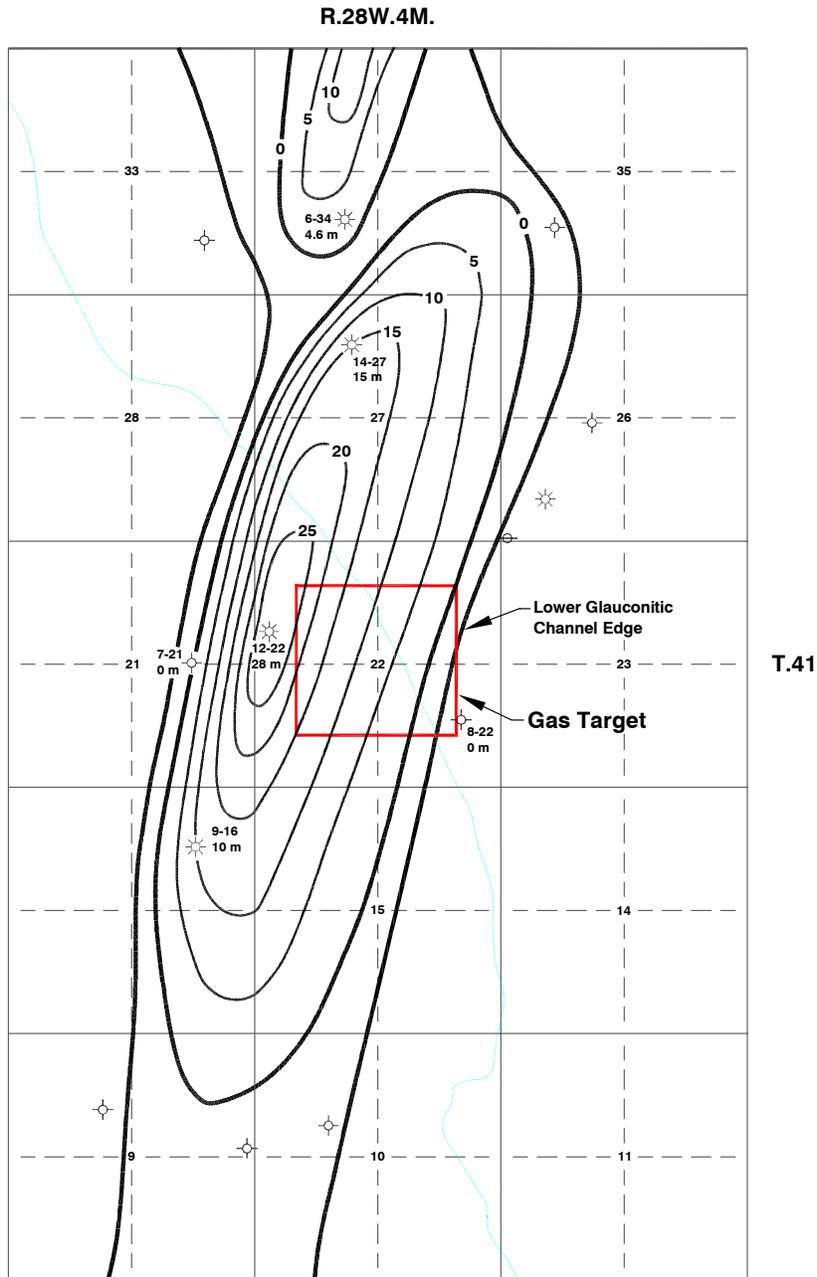


Figure 1
Net Gas Pay
Morningside Glauconitic D Pool
As Interpreted by Northstar
Applications No. 1030981 & 1033083
Northstar Energy Corporation, and Beau Canada Exploration Limited

Decision 99-21



ALLOWABLE CALCULATIONS
APL ET AL GULL 12-22-41-28 W4M

Year	1996 (10³m³)	1997 (10³m³)	1998 (10³m³)	1999 (10³m³)
Estimated Reservoir Pressure	6579*	4028**	3021***	2010****
Q _{max} (10 ³ m ³ /day)	1204.3	737.3	553.0	367.9
Days in Year	366	365	365	365
Allowable ¹	110190.7	67280.4	50461.2	33573.6
Overproduction From Previous Year	11838.3	9057.1	19240.7	25356.7
Adjusted Allowable	98352.4	58223.3	31220.5	8216.9
Annual Production	107409.5	73293.1	49807.0	9648.7 ²
Overproduction	9057.1	15069.8	18586.5	
Less 10 % of Allowable	11019.1	6728.0	5046.1	
Overproduction Subject To 50 % Penalty	0	8341.8	13540.4	
50 % Penalty	No penalty	4170.9	6770.2	
Overproduction Carried Forwarded to Next Allowable Period	9057.1	19240.7	25356.7	

¹ allowable after application of 0.25 off target penalty

² production from January to 30 April 1999

* November 1995 build up test.

** Estimated pressure based on June 1996 test and a 12.5 per cent adjustment for pressure decline from June to December 1996.

*** Estimated pressure based on a 25 per cent decline from 1996.

**** December 1998 build up test.