A CONFIDENTIAL REPORT

BY THE A.D.E. JOINT VENTURE PARTIES

IN SUPPORT OF THREE REQUESTS

Re Coanjula titles N.T.

Submitted to: Mr P. Le Messurier
Director of Mines
Department of Mines and Energy
Darwin N.T.

CR89/288

Ashton Mining Limited
Manager A.D.E. Joint Venture
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15 March, 1988
PREFACE

On 22nd December 1987, a submission was lodged with the Department of Mines and Energy Darwin in which the A.D.E. Joint Venture made three requests in relation to its Coanjula Exploration Licences 4342, 4352-53, 4359-61, 4372 and 4374. These requests were:

(1) that the joint venture could hold 3,650 blocks during 1988 provided it held no more than 2,150 blocks by 31st December, 1988.

(2) that for the purposes of reduction, the area as a whole to be reduced rather than on a licence by licence basis.

(3) that the expenditure commitments of individual licences be varied to allow consideration of the expenditure of the Coanjula area as a whole.

A reply to the submission was received on 25th January 1988 from Mr R.L. Adams, acting as a delegate of the Minister (refer to Appendix 1). Approval had been given to retain 3,650 blocks but reduction to 1,850 blocks by the year's end was indicated. The two remaining questions regarding reduction and expenditure on the area as a whole were not resolved.

The A.D.E. partners seek a review of its three initial requests and accordingly we have provided, in the form of this report, further supporting data for the Minister's consideration.
1.00 INTRODUCTION

The problems associated specifically with the search for diamonds as opposed to exploration for other commodities arise essentially from the fact that the quest for diamonds in Australia is only a very recent occurrence - we have witnessed more than a century and a half of gold exploration compared to a mere decade and a half of diamond exploration. Mining legislation has therefore historically been based on the traditions and needs of commodities other than diamonds. By working stringently within the current legislative framework the diamond explorer is seriously handicapped. Considering the potential value to the nation of finding a single diamondiferous pipe (e.g. Argyle), explorers need to be encouraged, not handicapped, in their endeavours.

In the case of the quoted example Argyle, this mine in Western Australia had an annual production last year in excess of 30 million carats which is more than the combined annual output of South Africa, Botswana and the USSR, the world's previous three leading producers until Argyle came fully on stream in 1986. As one of the two major owners of Argyle and as a founding member of the consortium which in 1972 commenced the exploration that ultimately lead to the discovery of Argyle, Ashton Mining is all too aware of the unique problems that diamond explorers encounter.
We seek, on behalf of the A.D.E. Joint Venture, the Department's favourable consideration of the difficulties the joint venture as diamond explorers face in our continued efforts to find Australia's next and the Territory's first major diamond mine.
2.00  EXPLORATION PROBLEMS

2.10  General

The problems with which diamond explorers contend are a consequence of the geologically unique nature of diamonds and their source rock kimberlite. They necessitate a three-fold commitment by the explorer to search vast areas, to have a very long term view and to expend many millions of dollars.

In order to see how these three requirements arise a brief review of geological factors is instructive.

Consider the following:

(i) Kimberlites are intrusive and therefore can be expected to occur in any geological setting. Unlike the case for some metalliferous commodities, no areas can be eliminated from a diamond search based solely on the rock type present.

(ii) Kimberlite is known to occur over a wide time range - from Proterozoic to Tertiary i.e. any time during a possible 1100 million year period. Unlike the search for placer deposits and coal, the age of rock types cannot be used to eliminate areas from a diamond search.

(iii) Diamond, contrary to popular belief is not an abundant commodity. In the first case kimberlite is an extremely rare rock type, in the second, the majority of kimberlites are non-diamondiferous anyway, and of those that carry diamonds only a small percentage are economic. In low grade deposits, the abundance of diamonds may be as little as one part per million. The chance of finding an economic diamond deposit is even more remote than for metalliferous commodities.
the characteristic hardness of diamonds ensures their survival and widespread dispersal through geological time. Precambrian diamonds (older than 600 million years) could survive several erosional cycles, and the presence of diamonds in modern drainages cannot be automatically sourced by walking upstream of a positive drainage site. This means in the case of old kimberlite pipes, that the intervening geological history has to be carefully reconstructed if the source of diamonds surviving in the present drainage system is to be retraced through successive geological events and erosional cycles. This can involve painstaking, time consuming work unravelling the puzzling and multilayered effects of intervening geological events and erosional cycles.

Having illustrated that searching vast regions over long periods of time (with concomitant high expenditures) are unique features of diamond exploration arising from the geological characteristics of diamond and kimberlites, three examples are given below to further emphasize the need to apply these principles if a successful outcome is to ensue.

**Orapa, Botswana**

Three diamonds were discovered in the Motloutse River in Botswana in 1950. Intensive and successive exploration followed upstream of the drainage occurrence, always with negative results. Seventeen years later the source was located when it was realized that an intervening upwarp had cut the Motloutse River and isolated it from its original source. This is a classical example of the necessity for long term commitment.
Venezia Deposit, South Africa

Conceptually based exploration programs are not always successful in diamond exploration. The method of classical regional gravel sampling had to be applied on three separate occasions at Venezia over the same ground before one single positive result was obtained.

Argyle, Western Australia

The prolonged and wide-ranging nature of diamond exploration is amply illustrated by the case of the Argyle diamond discovery in W.A. Here, after systematic regional work over 300,000 odd square kilometres (93,000 blocks), and after eight years of endeavour, a major resource was discovered. Some of the original participants were unable to sustain the long term commitment and faith that was required; one notable case being Sibeka (an internationally-known Belgian diamond explorer and marketer) which sold out after seven years of exploration, but only seven months before Argyle was found.

Even though a major source has been discovered, the partners in the Argyle operation remain committed to further regional exploration over ground they have searched previously. Such is the nature of diamond exploration that more pipes could remain to be discovered even after sixteen years of continuous diamond exploration.
FIGURE 1
TITLE SITUATION - COANJULA AREA
EXPLORATION LICENCES REFERRED TO
IN THIS SUBMISSION
2.20 **Specific Problems Coanjula N.T.**

The difficulties outlined in the previous section are all relevant to A.D.E.'s current search at Coanjula and provide strong arguments to support the joint venture's recent requests to the Department.

Of particular significance at Coanjula is the failure (as has been recorded elsewhere in the world i.e. Venezia) of conceptually based exploration techniques. Large scale and extensive programs have been carried out at Coanjula such as:-

- airborne magnetics: 107,500 line km.
- airborne thematic mapping (11 channel): 52,330 km²
- airborne INPUT EM: 4,000 line km.
- photogeological interpretation: 65,300 km²
- gravel and loam sampling: 3,000 samples
- diamond drilling: 13,000 metres
- RAB drilling: 22,500 metres
- drill spoil samples: 4,000

Although Kimberlite related pipes were discovered as a consequence of this work, the source for the extremely high concentrations of microdiamonds in sedimentary rocks at Coanjula has not yet been located. The fact that many and varied techniques have been applied does not mean that a source or sources cannot or will not be located. It just serves to underscore the vagaries
associated with diamond exploration that ground, which to all intent has been thoroughly explored (even several times over) can still harbour a diamond source.

In the case of Coanjula this source may be delineated either close to the anomalous diamondiferous rocks or far removed, the latter scenario being a classical case of the problem outline under item (iv) on page 4, namely the ability of diamonds to survive long periods and in several subsequent erosional cycles. This will indeed involve painstaking, time consuming work to unravel the intervening geological history stretching back many hundreds of million years. **Investigations will of necessity be initially centred near the anomalous diamond rocks and consequently the major proportion of expenditure will be spent in a limited number of the exploration licences.** Hence the joint venture's request to be allowed to vary the expenditure as a whole rather than on a licence by licence basis. To divert resources initially to areas removed from the anomalous rock occurrences before the complexities of the situation there are understood is not, in our estimation, the most efficient use of exploration staff and funds. This is not to say, as has been stressed previously, that those licences further removed are not prospective. The source could well be contained within their boundaries.
Figure 2 - Expenditure Levels

- Cumulative statutory expenditures
  Coanjula area, 1983 - 1987
- Actual cumulative expenditure
  Coanjula area, 1983 - 1987
3.00 THE JOINT VENTURE'S REQUESTS

3.10 Introduction

The A.D.E. Joint Venture readily acknowledges that Northern Territory mining legislation provisions are more conducive to diamond exploration than elsewhere in Australia. The larger areas per tenement which can be held, the longer tenure available and reasonable rentals are all attractive elements. The Department's approach and willingness to help explorers is appreciated as are the concessions which the Minister has previously afforded the joint venture parties.

We would like to think that the A.D.E. Joint Venture has also played its part. The joint venture has made and demonstrated a long term commitment to diamond exploration in the Territory. It has operated in the Northern Territory for eight years, the last four of which have been concentrated in the Coanjula area where alone in excess of $7 million has been spent. This compares more than favourably with corresponding statutory requirements for this period (refer to Figure 2). Approximately $16 million has been spent by the A.D.E. Joint Venture on its diamond exploration in the Northern Territory since 1980.
3.20 Deferral of Reduction

The inherent difficulties for diamond explorers in surrendering ground once a diamond province has been discovered have been mentioned already in section 2.00, namely repeated programs failing to give results over areas later proved diamondiferous, the unravelling of complex, multi-cycle geological histories possibly over long time spans (up to 1100 million years) and the failure of classical techniques to Australian conditions.

Although the Joint Venture has previously been granted deferrals with regard to statutory reduction requirements, an examination of the records shows that the levels of reduction achieved by A.D.E. are closely comparable to those which would have been attained had all statutory reductions been strictly adhered to (refer to Figure 3). We would stress this point. We believe the joint venture is not seeking an extreme or unreasonable concession and in the light of this and the problems associated with diamond exploration outlined previously, we request that the Department reconsider its position that reduction to 1,850 blocks, rather than the 2,150 blocks requested, is to be achieved by 31st December, 1988.
3.30 Reduction of Area as a Whole

It is important to the Joint Venture and its search for the source(s) of diamonds in the anomalous sedimentary rocks at Coanjula, that a coherent exploration area be maintained. It is for this reason that we previously asked to be allowed to reduce the overall area without the restriction of reducing in each and every licence held; the latter scenario giving rise to a very disjointed exploration area - akin to a jigsaw puzzle with many of the pieces missing.

We therefore ask that, whatever reductions are to be effected at 31st December, 1988 (with written advice lodged one month prior), the A.D.E. Joint Venture be permitted to meet the relinquishment requirements by reducing the area as a whole rather than on a licence by licence basis.

3.40 Expenditure Commitment

Due to the current stage of exploration at Coanjula where a concentrated effort must be expended in the immediate vicinity of the anomalous sedimentary rocks in order to unravel the complexities associated with secondary as opposed to primary diamonds (refer also section 2.20), it is our belief that exploration would be best served by
initially focussing resources on a limited number of licences rather than spreading funds evenly over the entire target area.

As has been illustrated previously in Figure 2, the Joint Venture has spent far in excess of statutory requirements in the Coanjula area and has in its total efforts in the Territory spent approximately $16 million. Accordingly we submit that, in requesting to treat the expenditure of the area as a whole rather than on a licence by licence basis, we are not seeking to avoid our expenditure commitments - indeed projected expenditure for 1988 is at least one million dollars - but to make the most efficient use of resources in solving the problems at hand with the ultimate aim of finding an economic deposit to the mutual benefit of the A.D.E. Joint Venture and all Territorians. We would ask therefore that the Department review and clarify its decision that "there must be active exploration and, appropriate expenditure undertaken during the current year of the existing title".
4.00 CONCLUSION

We thank you for your careful consideration of the proposals contained herein and look forward to the Minister's response in due course.
APPENDIX 1 - Correspondence from Mr R.L. Adams
Mr H E Zeissink  
Exploration Manager  
Ashton Mining Ltd  
20th Floor  
444 Queen Street  
BRISBANE QLD 4000  

Dear Mr Zeissink  

DEFERRAL OF REDUCTION OF EXPLORATION LICENCES 4342, 4372, 4374 - ABERFOYLE EXPLORATION PTY LTD AND EXPLORATION LICENCES 4352, 4363, 4359, 4360 & 4361 - ASHTON MINING LIMITED  

Please be advised that as delegate of the Minister, I have deferred the following until 31 December 1988 and that written advice is to be lodged one month prior to this date regarding a 50% reduction of the overall licence area.  

EL 4342 150 blocks  
EL 4352 500 blocks  
EL 4353 500 blocks  
EL 4359 500 blocks  
EL 4360 500 blocks  
EL 4361 500 blocks  
EL 4372 500 blocks  
EL 4374 500 blocks  

It has been noted that there has been no work undertaken during year four in respect of Exploration Licences 4361 & 4372 and in addition, that there was nil expenditure recorded for the final year(s) in respect of the recently surrendered Exploration Licences 4334, 4335, 4351, 4358 and 4373.
The Department's expectation is that there be active exploration and, appropriate expenditure undertaken during the current year of the existing titles.

Yours sincerely

[Signature]

R L ADAMS 22/1/88
APPENDIX 2 - Review of 1987 Coanjula Program
REVIEW OF 1987 PROGRAM

Work on the A.D.E. Coanjula project during 1987 comprised:

(a) processing of outstanding 1986 samples

(b) reconnaissance RAB drilling to locate additional diamondiferous horizons within the sediments and follow-up RAB drilling to further define known occurrences in the Line E and Line W areas: 15,679 metres drill in 630 holes on eighteen lines

(c) drilling to investigate diamond bearing sediments: 210 metres of diamond drilling in two holes located on RAB Lines 87/13 and 87/15 with the recovery of 236 diamonds from rock chip/drill spoil material

(d) diamond drilling of an igneous body located in the Line W area: approximately 700 metres of drilling in three holes - this program ceased in December and results are still to be assessed

(e) limited follow-up diamond and RAB drilling on magnetic anomaly C8/9 to define structural relationships: three RAB holes and 396 metres of diamond drilling; three discrete bodies of lamproitic affinity are now apparent

(f) follow-up RAB drilling of syenogabbro complexes intersected by previous diamond drilling of holes CJ 54 and CJ 110: twenty-one RAB holes drilled on three lines.

(g) expenditure for 1987 exceeded one million dollars.
APPENDIX 3 - Program for 1988
PROGRAM FOR 1988

The emphasis of A.D.E's field program during the first half of 1988 will be two fold. An extensive program of ground geophysics and RAB drilling in the anomalous sedimentary rock areas will be undertaken to help elucidate the relationship of volcanic units to, and the extent and stratigraphic positioning of, the anomalous diamond zones. In addition a bulk sampling program is planned.

Provision for processing a total of 6,000 tonnes of gravel through an on-site heavy media separator ("HMS") plant with observation of the sample concentrate in the Ashton Mining Limited laboratory in Perth has been allowed for in the first half year budget. Cost of the six month program is estimated at $500,000. At this stage it is envisaged that a further $500,000 will be spent in bulk sampling and drilling follow-up programs during the final six months of 1988, bringing the overall budget for 1988, to at least one million dollars.