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Cooper No.1
Oil Exploration Permit EP 325
Exmouth Gulf, Western Australia

Minora Resources NL

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 382 April 1989

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COOPER NO. 1

OIL EXPLORATION PERMIT EP 325

EXMOUTH GULF

WESTERN AUSTRALIA

MINORA RESOURCES NL

Report and Recommendations
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i. SUMMARY AND RECOMMENDATIONS

Minora Resources NL has submitted a proposal to drill a third exploration oil well in its lease, EP 325, Exmouth Gulf. The well is located 13 km south east of the town of Exmouth. Minora propose to use a jack-up rig and drilling would take about 24 days to complete. Drilling is proposed during the winter of 1989.

In its assessment of this proposal, the Authority recognised that the drilling of the Cooper exploration well was a further incremental development of Oil Exploration Permit 325. The first well in EP 325, Rivoli 1, was approved in December 1988, while assessment of a second Whalebone 1, was deferred by the EPA until after the current review of petroleum drilling in National Parks is concluded.

The environmental issues associated with the Cooper proposal are comparable with those of Rivoli. The only difference between the two projects is considered to be the time of drilling. Whereas the drilling of Rivoli 1 was proposed between November and February, the drilling of the Cooper well is proposed for the winter months. Prawns have their most sensitive stages of their life cycle in the November to February period. In addition, by late autumn, pearl oyster spawning is complete and spat fall has mostly taken place. An extremely high percentage of the surface winds during late autumn and winter are from the southern and eastern quarters and so in the unlikely event of oil being spilled, it would not be transported towards either the major prawn habitats or the oyster licence areas in Gales Bay.

Upon assessment of the Notice of Intent that was submitted by Minora, the Authority has determined that the proposal to drill Cooper 1 exploration oil well within EP 325, during the winter months of 1989, would be environmentally acceptable and makes the following recommendations.

RECOMMENDATION 1.

The Environmental Protection Authority concludes that the Cooper 1 proposal described in the Notice of Intent is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this Assessment Report and the environmental management commitments made by the proponent.

RECOMMENDATION 2.

The Environmental Protection Authority recommends that the proposal be subject to the following conditions:

1. The proponent shall adhere to the proposal as assessed by the Environmental Protection Authority and shall fulfil the commitments made in the Notice of Intent which are that the proponent will:
 - (1) comply with all legislative requirements pertaining to this project;
 - (2) adopt industry and government standards and guidelines for safe exploration drilling practices;
 - (3) implement the environmental management programme documented in the NOI;
 - (4) comply with guidelines provided in the oil spill contingency plan; and

- (5) implement the monitoring programme outlined in the environmental management programme.
2. The proponent shall include in the Oil Spill Contingency Plan, the capability for containment of oil spillages of up to 20 m³ on or adjacent to the rig. A suitable boom and skimmer device shall be installed on the rig prior to the commencement of drilling and shall remain there permanently until decommissioning and there shall always be available an operator skilled in their deployment.
 3. In order to minimise the likelihood of failure of the well casing, the proponent shall, prior to drilling ahead, pressure test each string of casing to the satisfaction of the Director, Petroleum Division, Department of Mines.
 4. The proponent shall ensure that drill cuttings and fluid are disposed of to the satisfaction of the Environmental Protection Authority.
 5. Before approval is given for drilling the Cooper 1 well, the proponent shall provide an undertaking to accept responsibility for any adverse environmental impacts which may occur as a consequence of the proposal. The arrangements for meeting this condition shall be to the satisfaction of the Minister for Environment after consultation with the Minister for Mines and the Minister for Fisheries.
 6. The proponent shall refer any further drilling or development plans resulting from this exploration drilling proposal to the Environmental Protection Authority for assessment.
 7. The proponent shall be responsible for decommissioning the rig and the well, and rehabilitating the site and its environs to the satisfaction of the Director, Petroleum Division, Department of Mines.
 8. No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

1. BACKGROUND

Minora Resources NL (Minora) is the operator for a joint venture comprising Minora, Metana Energy Ltd, Tepstew Pty Ltd and Barrack Energy Limited. The joint venture was granted Exploration Permit 325 (EP 325) in November 1987. In its application, the consortium identified potential exploration prospects and made a commitment to conducting a minimum work programme which involved acquiring seismic data and drilling three exploration wells within the first two years. Subsequently, the permit has been varied, and two wells are now proposed to be drilled within EP 325 during the first two years.

In July 1988, Minora submitted a Public Environmental Report (PER) to the Environmental Protection Authority (EPA) for a project involving the drilling of the Rivoli I and Whalebone 1 offshore exploration wells in Exmouth Gulf between November 1988 and February 1989.

The Whalebone Prospect lies within the Ningaloo Marine Park and as such, the Authority has determined that the assessment of that prospect would be inappropriate until after the completion of the current independent review of petroleum exploration drilling in National Parks.

The Rivoli Prospect is located approximately 8.5 km east of the town of Exmouth, about 4 km south of the Ningaloo Marine Park and within the Exmouth Gulf.

Exmouth Gulf is identified in Department of Conservation and Environment (now EPA) Bulletin 104 (1984) as an Environmentally Sensitive Locality (ESL) as is the Ningaloo Marine Park. Bundegi Reef, which forms part of the Ningaloo Marine Park, is defined as a "Sanctuary Zone".

A number of commercial fisheries exist in the Gulf region. These include a prawn fishery, beach seine fishery, wet line fishery, rock lobster fishery and two pearl culture leases. In addition, there is an extensive tourism industry in the area.

The Environmental Protection Authority noted that the proposed Minora exploration programme would occur in an environmentally sensitive location and, without appropriate management, any environmental disturbance could be of consequence to the marine resources of Exmouth Gulf. However, it has been demonstrated that the risks of an oil spill event are small. There has never been a significant oil spill from an oil exploration drilling operation since the first such well was drilled off Australia in 1964.

In its report, the Environmental Protection Authority concluded that the Rivoli 1 drilling proposal described in the PER was environmentally acceptable and recommended that it could proceed, subject to the Joint Venturers adhering to the commitments made in their PER and subsequent submissions and compliance with five specific recommendations.

In December 1988, the drilling of the Rivoli 1 exploration well within EP325 was approved. The proposal, as it related to Rivoli prospect only, could be implemented subject to the following Ministerial conditions set under the Environmental Protection Act (1986).

"1. The proponent shall adhere to the proposal as assessed by the Environmental Protection Authority and shall fulfil the commitments made in the Public Environmental Report which are that the proponent will:

- (1) comply with all legislative requirements pertaining to this project;
 - (2) adopt industry and government standards and guidelines for safe exploration drilling practices;
 - (3) implement the environmental management programme documented in the PER;
 - (4) comply with guidelines provided in the oil spill contingency plan; and
 - (5) implement the monitoring programme outlined in the environmental management programme.
2. The proponent shall include in the Oil Spill Contingency Plan, the capability for containment of oil spillages of up to 20 m³ on or adjacent to the rig. A suitable boom and skimmer device, together with an operator skilled in their deployment, shall be installed on the rig prior to the commencement of drilling and shall remain there permanently until decommissioning.
 3. In order to minimise the likelihood of failure of the well casing, the proponent shall, prior to drilling ahead, pressure test each string of casing to the satisfaction of the Director, Petroleum Division, Department of Mines.
 4. The proponent shall ensure that drill cuttings and fluid are disposed of, to the satisfaction of the Environmental Protection Authority.
 5. Before approval is given for drilling the Rivoli 1 well, the proponent shall provide an undertaking to accept responsibility for any adverse environmental impacts which may occur as a consequence of the proposal. The arrangements for meeting this condition shall be to the satisfaction of the Minister for Environment after consultation with the Minister for Mines and the Minister for Fisheries.
 6. The proponent shall refer any further drilling or development plans resulting from this exploration drilling proposal to the Environmental Protection Authority for assessment.
 7. The proponent shall be responsible for decommissioning the rig and the well, and rehabilitating the site and its environs to the satisfaction of the Director, Petroleum Division, Department of Mines.
 8. Prior to any transfer of ownership of the proposal or other action which would give rise to a need to change the nominated proponent, the proponent shall advise the Minister for Environment so that a new proponent, who shall assume responsibility for the conditions contained in this statement, can be nominated. Any such advice shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

In March 1989, Minora Resources NL submitted a further proposal to drill a third exploration well in EP 325, Exmouth Gulf. The proposed well, Cooper 1, is located 13 km south east of the town of Exmouth (see Figure 1).

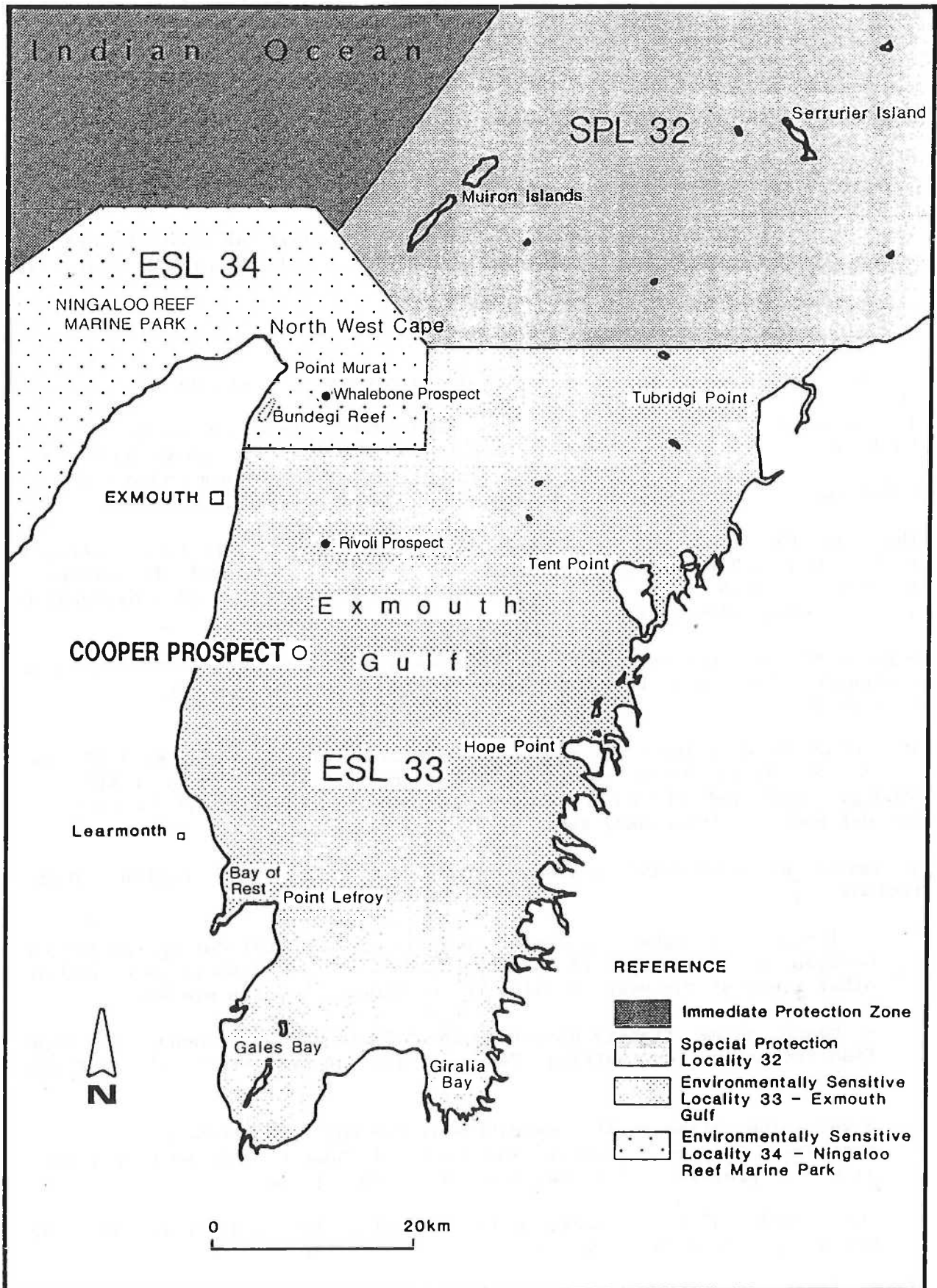


Figure 1. Locality diagram (from PER, Minora Resources NL)

In considering Minora's proposal to drill the Cooper exploration well within EP 325, the Authority determined that the proposal would require formal assessment under Part IV of the Environmental Protection Authority Act, 1986 and that the level of assessment would be Notice of Intent.

2. PROPOSAL

Minora proposes to drill a third exploration well to test the petroleum potential of the Cooper Prospect.

The well would take approximately 24 days to complete and would be drilled by a jack-up rig. It is proposed to drill the well during the winter of 1989.

3. EXISTING ENVIRONMENT AND USE

As with the Rivoli well, the Cooper well lies within Exmouth Gulf.

The eastern shore of the Gulf is comprised largely of extensive areas of shallow mud flats and mangrove habitats, while the western or North West Cape side of the Gulf contains beach, intertidal platform and coral reef habitats.

There are three major conservation areas in the region - Cape Range National Park, Ningaloo Marine Park and the islands within Exmouth Gulf. The offshore islands, Exmouth Gulf and the Ningaloo Reef tract are also designated special protection status.

Department of Conservation and Environment (EPA) Bulletin 104 (1984) has designated these areas Environmentally Sensitive Localities (ESLs) (Figure 2).

The Ningaloo Reef Tract was proclaimed a Marine Park in September 1987 and is managed by the Department of Conservation and Land Management (CALM). Bundegi Reef and the marine environment between the reef and the coast are defined as a "sanctuary zone".

A number of commercial fisheries operate in the Gulf region. These include:

- . a large prawn fishery operating trawlers in the Gulf during the period between 1 March and 15 November each year. The fishery is closed at other times of the year to allow replenishment of prawn stocks;
- . a beach seine fishery operating in the Gulf all year round, supplying fish such as mullet, whiting, Perth herring and bream to local and Perth markets;
- . a wet line fishery also operating in the Gulf and offshore waters for northwest snapper, emperor and mackerel. Some charter boat operators also hold professional licences in this fishery; and
- . two pearl culture leases, held in Gales Bay and Giralia Bay, and operating mainly during winter.

There is an established tourism industry in the area with the region becoming a major winter tourist destination. There is also a United States Naval Communications Station and the Royal Australian Air Force base at Learmonth.

4. ENVIRONMENTAL ASSESSMENT

In its assessment of this proposal, the Authority recognised that the drilling of the Cooper exploration well was a further incremental development of Oil Exploration Permit 325. The first well in EP 325, Rivoli 1, was approved in December 1988. The environmental impacts associated with oil exploration drilling in Exmouth Gulf were extensively examined by the Authority as part of that proposal and are detailed in the Authority's Bulletin 366, Oil Exploration Permit EP 325 Exmouth Gulf, Western Australia.

The environmental issues associated with the Cooper proposal are seen by the EPA as comparable with those of Rivoli. The only difference between the two projects is seen as the season in which drilling is to take place.

Whereas the drilling of Rivoli was proposed between November and February, the drilling of the Cooper well is proposed for the winter months.

In their submissions regarding the Rivoli prospect, Kailis Gulf Fisheries (prawns) and Morgan and Co (pearls) both suggested that environmental impacts could be lessened if the drilling was carried out in late autumn or winter. Prawns have their most sensitive stages of their life cycle in the November to February period. In addition, by late autumn or winter, pearl oyster spawning is complete and spat fall has mostly taken place. In addition, an extremely high percentage of the surface winds during late autumn and winter are from the southern and eastern quarters and so would not transport spilled oil towards either the major prawn habitats or the oyster licence areas in Gales Bay. It is noted however, that the change in drilling time would result in an increase in potential impact to Bundegi Reef.

5. CONCLUSION

In its assessment of this proposal, the Authority recognised that the drilling of the Cooper well was a further incremental development of the previous exploration drilling proposals in EP 325.

The only difference between the Rivoli and Cooper wells was that of drilling time, with Rivoli proposed for November - February and Cooper for the winter months.

Consequently, the Environmental Protection Authority concludes that the proposed Cooper I exploration well within EP 325, Exmouth Gulf, would be environmentally acceptable provided that the drilling is carried out in accordance with the conditions listed in the "Statement That a Proposal May Be Implemented (Pursuant to the provisions of the Environmental Protection Act 1986) for Oil Exploration Permit EP 325, Exmouth Gulf", dated December 1988.

Consequently, the Authority's recommendations are as follows:-

RECOMMENDATION 1.

The Environmental Protection Authority concludes that the Cooper 1 proposal described in the Notice of Intent is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this Assessment Report and the environmental commitments made by the proponent.

RECOMMENDATION 2.

The Environmental Protection Authority recommends that the proposal be subject to the following conditions:

1. The proponent shall adhere to the proposal as assessed by the Environmental Protection Authority and shall fulfil the commitments made in the Notice of Intent which are that the proponent will:
 - (1) comply with all legislative requirements pertaining to this project;
 - (2) adopt industry and government standards and guidelines for safe exploration drilling practices;
 - (3) implement the environmental management programme documented in the NOI;
 - (4) comply with guidelines provided in the oil spill contingency plan; and
 - (5) implement the monitoring programme outlined in the environmental management programme.
2. The proponent shall include in the Oil Spill Contingency Plan, the capability for containment of oil spillages of up to 20 m³ on or adjacent to the rig. A suitable boom and skimmer device shall be installed on the rig prior to the commencement of drilling and shall remain there permanently until decommissioning and there shall always be available an operator skilled in their deployment.
3. In order to minimise the likelihood of failure of the well casing, the proponent shall, prior to drilling ahead, pressure test each string of casing to the satisfaction of the Director, Petroleum Division, Department of Mines.
4. The proponent shall ensure that drill cuttings and fluid are disposed of to the satisfaction of the Environmental Protection Authority.
5. Before approval is given for drilling the Cooper 1 well, the proponent shall provide an undertaking to accept responsibility for any adverse environmental impacts which may occur as a consequence of the proposal. The arrangements for meeting this condition shall be to the satisfaction of the Minister for Environment after consultation with the Minister for Mines and the Minister for Fisheries.
6. The proponent shall refer any further drilling or development plans resulting from this exploration drilling proposal to the Environmental Protection Authority for assessment.
7. The proponent shall be responsible for decommissioning the rig and the well, and rehabilitating the site and its environs to the satisfaction of the Director, Petroleum Division, Department of Mines.

8. No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

QUESTIONS ASKED OF THE PROPONENT

1. VOLUME I - TEXT

Page 10, Sect 5.2. What is the basis for the claim that the site occurs within an area which is believed to be biologically homogenised as a result of trawling? References?

Pages 13, line 9: there no is data cited or reference cited to support the idea that reserves in the region recover rapidly after a spill.

Page 13: comments on risks to resources are unsupported and too general.

Page 19, Legislative Requirements, are incorrect. The Environmental Protection Act (1986) relates to the environmental impacts of the proposal as a whole. The fact that part of the permit area falls within the Ningaloo Marine Park is of interest to the Authority, but is not the reason for the involvement. The Petroleum Act (1967) does not take precedence over the Environmental Protection Act (1986).

Page 70: Are there any comments on prawn breeding cycles and the anticipated time of exploratory drilling given that toxicity to animals depends on oil type?

Page 77, paragraph 1. See comments regarding the Oil Spill Contingency Plan. The decision to use dispersants will need to be made when all factors have been considered during a spill.

Page 87: There are no statutory time restraints for the review of the Notice of Intent. The EPA will review the report, seek clarification of issues identified during review of the document and then recommend to the Minister for the Environment whether the proposal should proceed, and under what conditions.

2. VOLUME 3 - OIL SPILL TRAJECTORY ANALYSIS

The Authority requires written assurance that the differences in location between Rivoli and Cooper are insignificant and with respect to oil trajectory envelopes, could not be meaningfully interpreted given the precision of the model being used. Assurance should also be provided that the envelopes shown are relevant to the time of year required for the Cooper exploration.

3. OIL SPILL CONTINGENCY PLAN

Several issues require attention in the contingency plan for the Carnarvon Basin, EP325, used to support Cooper No. 1.

Page 1 - no comments on Cooper prospect in plan.

Page 2 - priority 3 and 4 can be done together.

Page 3 - Government departments, especially EPA, should be notified of an oil spill irrespective of its size. 4000 litres is too large a quantity to use as a threshold for deciding on reporting outside agencies!

Page 7 - are helicopter flight times available to and from site?

Page 8 - include the type of oil. A copy of this report should go to the EPA for their information also.

Page 9 - surveys may be required if the spills move out to sea. 'Out to sea' in this region means that the oil passes through a Marine Park and near sensitive turtle breeding grounds (eg Muiron Island).

Page 11 - insertion of phone numbers on the sheet would be beneficial to the plan user.

- who is the environmental adviser?
- mobilizing equipment and decisions on its necessity may require outside advice
- the decision to mobilize should be made in conjunction with State/Federal agencies available to help.

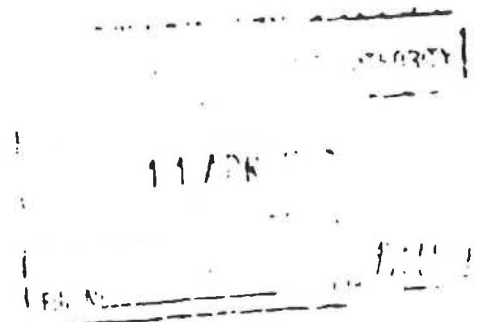
Page 12 - how is this flow co-ordinated with the actions of the State Combat Committee.

In addition, there is no comment in the plan on the means and methods of disposing of oil wastes following the spill. How is this to be done? Where will it be stored or dumped? Is the authority already in place for a location to do this? This point is especially important given EPA recommendation two for Rivoli.

11 April 1989



Assistant Director
 Evaluation Department
 Environmental Protection Authority
 1 Mount St
 PERTH WA 6000



Att: Mr R A D Sippe

Dear Sir,

Notice Of Intent: Cooper-1, EP 325

Thank you for your letter of 5 April 1989 responding to the Cooper-1 Notice Of Intent (NOI), and for the opportunity to reply to issues raised in your correspondence.

1. VOLUME 1. - TEXT:

Page 10, Section 5.2.

Our consultants have inspected the seafloor at the Whalebone-1 and Rivoli-1 locations and have reported that the sea floor in the area has been flattened and homogenized by the action of Prawn Trawlers trawling the sea floor since the early 1960's. Although they have not physically inspected the actual Cooper-1 location discussions with local fisherman George King suggest the sea floor will be similar throughout the trawled areas. Please refer to section 3.2.4. of the NOI.

Page 13, Line 9.

The remarks appearing in this summary section are given more detailed treatment in section 4.4, page 53, Effect Of Potential Oil Spill On The Marine Ecosystem. Various contingencies are examined and their effects considered between pages 53 and 72, as well as in other sections (for example section 5 dealing with drill cuttings).

Page 13:

Again we have not provided specific detail regarding risks to resources in the summary. Please refer to section 4.4 on page 53.

Page 19:

We acknowledge the EPA's involvement because the proposal is in an Environmentally Sensitive Location.

The reference to the Petroleum Act taking precedence over other State Legislation came from the Department of Conservation and Land Management's Draft Management Plan for the Ningaloo Marine Park, May 1988, page 45.

Page 70:

Detailed comments on prawn breeding cycles at the anticipated time of drilling are located in section 4.4.7.3, Effect On Commercial Fisheries.

- 2 -

Page 77, Paragraph 1:

We agree the decision to use dispersants would only be made when all factors concerning the spill had been evaluated.

Page 87.

There is no page 87. Perhaps this point refers to page 81. The writer has read the first paragraph out of context. The report referred to is not this NOI but other reports prepared by the proponent assessing the monitoring programme to be undertaken.

We note your remarks concerning the timing implications and hope that the outcome would enable the Joint Venture to proceed with its own decisions bearing in mind commercial and environmental constraints beyond its control.

2. VOLUME 3 - OIL SPILL TRAJECTORY ANALYSIS:

Please refer to the attached letter from Steedman Limited.

3. OIL SPILL CONTINGENCY PLAN:

Page 1.

The proponent decided not to modify the Oil Spill Contingency Plan specifically for Cooper-1 as the plan is considered appropriate for wells drilled in the area.

A paragraph along the following lines will be inserted into the Plan:

Cooper Prospect: (ESL 33) is an area which is considered to have international, national and state ecological significance, high economic importance, high recreation utilizations a major tourist destination and high scientific research and educational values.

Page 2.

The list of priority actions is a list of objectives which would be undertaken simultaneously if at all possible. The list is not intended as an order of steps to be taken.

Page 3.

We confirm Government Departments would be notified in the event of a spill of 80 litres or more as per Clause 285(i)(b) of the Petroleum Submerged Lands Act.

Page 7.

Helicopter flight time to the Cooper-1 location is about eight (8) minutes.

Page 8.

The type of oil will be added to the written report requirements.

- 3 -

Page 9.

Surveys would be undertaken if oil went ashore anywhere in the Gulf including the offshore islands. If the oil passed out to sea without going ashore no surveying would be considered appropriate, bearing in mind the oil floats on the surface and would not damage seafloor below.

Page 11

Details required noted and added to the list (attached).

Page 12

The State Combat Committee would be notified and liaised with as shown in the flow chart. The chart has been made more specific (attached).


Disposal Of Recovered Oil:

Any waste oils recovered would be either burnt on the rig using the rig's flare booms or taken to an existing crude oil stock point at Airlie Island and discharged into the crude oil collection system.

We hope this information clarifies the issues raised and that you are now in a position to submit a favourable report and recommendations to the Minister. We would be pleased to provide further information should you require it.

We look forward to your report and recommendations.

Yours faithfully
For MINORA RESOURCES NL


George M. Edmond
Managing Director.

PROPONENT'S COMMITMENTS TO ENVIRONMENTAL MANAGEMENT

Minora Resources NL hereby commit themselves to comply with commitments made in this NOI. Specifically this means that Minora will:

- (i) comply with all legislative requirements pertaining to this project;
- (ii) adopt industry and government standards and guidelines for safe exploration drilling practices;
- (iii) implement the environmental management programme documented in this report;
- (iv) comply with guidelines provided in the Oil Spill Contingency Plan;
- (v) should Cooper-1 be the first well drilled by Minora, in EP 325, implement the monitoring programme outlined in the environmental management programme.

**ENVIRONMENTAL PROTECTION AUTHORITY
1 MOUNT STREET, PERTH**