

PERSONAL SUBMISSION

TO THE PARLIAMENTARY COMMITTEE

INQUIRY INTO

RESOURCES EXPLORATION IMPEDIMENTS IN AUSTRALIA

BY

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Background

Terms of reference

Inquiry into resources exploration impediments

On 24 May 2002 the Minister for Industry, Tourism and Resources, the Hon Ian Macfarlane MP, referred the following inquiry to the committee.

That the committee inquire into and report on any impediments to increasing investment in mineral and petroleum exploration in Australia, including:

- * An assessment of Australia's resource endowment and the rates at which it is being drawn down;
- * The structure of the industry and role of small companies in resource exploration in Australia;
- * Impediments to accessing capital, particularly by small companies;
- * Access to land including Native Title and Cultural Heritage issues;
- * Environmental and other approval processes, including across jurisdictions;
- * Public provision of geoscientific data;
- * Relationships with indigenous communities; and
- * Contributions to regional development.

Submissions were sought by **Friday 19 July 2002**.

As a geoscience professional with thirty years experience in Norway, Africa, UK and Australia I am concerned about recent developments in the **hydrocarbon resources exploration** environment in Australia. Although the resource exploitation potential for the Australian economy remains extremely high, it needs continual nurturing. The political, investment and taxation climates within a country can make or break resource exploration and exploitation. I am sure that the Commonwealth Government wishes to support self sufficiency in energy and strategic minerals, as well as benefit from competitive exports, and I offer this submission as a contribution to the debate.

The topics that I wish to address concern hydrocarbon exploration, and specifically:

- An assessment of Australia's resource endowment and the rates at which it is being drawn down;
- The structure of the industry and role of small companies in resource exploration in Australia;
- Public provision of geoscientific data;

1. **An assessment of Australia's resource endowment and the rates at which it is being drawn down:**

My concerns relate to:

**Technology for Undiscovered Resources
EOR technology and federal promotion
Risk aversion
Near-field technologies
Low-cost exploration/appraisal drilling**

a. **Technology for Undiscovered Resources**

Although Geoscience Australia (GA) has struggled valiantly, within its funding allocation, with the issue of undiscovered hydrocarbon resources it is clear that the assessment by GA of Australian hydrocarbon resource endowment has fallen technically behind other countries. In fact the latest document from GA (Petrie, E. & others. 2001. *Oil and Gas Resources of Australia 2000*. Canberra: Geoscience Australia.) concerning Australia's resource endowment relies entirely on United States (USGS) estimates of our undiscovered resources, and only covers four offshore basins (Bonaparte, Browse, Carnarvon and Gippsland). I refer to "Assessments of Australia's undiscovered hydrocarbon resources for the four major offshore producing basins (USGS 2000)"

In GA's own estimation for the reserves (not resources) of other Australian Basins only a single figure is provided rather than the required P95, P50 and P05 values. The use of EDR and SDR McKelvey figures is presented without justification. The use of USGS figures instead of AUSTPLAY is not satisfactory. **I recommend that the Commonwealth Government fund the development of appropriate technology for realistic risk assessment for undiscovered resources in all Australian Basins, both deep water offshore (uncovered to date), immature (from an exploration point of view) onshore, and new offshore areas such as the Otway and GAB.** For GA to publish an appraisal of undiscovered hydrocarbon resources in Australia based on a USGS appraisal of four offshore basins presents an unduly pessimistic view of Australian resource potential, as does the unjustified Figure 6.2 which shows a crude oil production decline from August 1st 2000. In fact one could argue that the production of oil is likely to return to the pre-2000 level of around 400000 bbl/day for the next decade. The predicted levels of oil and condensate production fall-off are not justified by any scientific reasoning presented by GA. **I recommend that a detailed study be funded specifically on the issue of liquid hydrocarbon supply and the technology used for assessment.**

b. **EOR technology and federal promotion**

Linked to the issue of liquid hydrocarbon reserves is the possibility of improving the recovery efficiency for existing and new fields. This is an area where government can contribute in areas of both legislation and technical support (stick and carrot). Accepting a lower than necessary recovery from existing fields negatively impacts liquids sufficiency. The reasons why industry accepts lower recovery rates is often a function of investment returns on the research/development and infrastructure needed to squeeze an extra 5-10% out of the reservoir. **By offering penalties for early relinquishment of producing fields, tax incentives to invest in EOR technology and implementation, and federal support of research into EOR technology appropriate for and tailored to Australian fields then plateau production from many fields may be prolonged. The government may also consider offering production licences to tender with a new tax regime once a field comes off plateau – to stimulate the involvement of specialists in EOR.**

The use of CO₂ in miscible flood for some fields also helps in CO₂ reduction, and Commonwealth support for companies willing to invest in this type of EOR would be of benefit to several parties.

c. Risk aversion

Oil companies operating in Australia are relatively risk-averse. The success rate for drilling in Australia is around 1:3 to 1:4 on average which suggests that industry is only prepared to invest in relatively safe bets. This is detrimental to exploration for hydrocarbons. The worldwide level of risk is around 1:10. The reasons for the risk-aversion are probably related to small local markets, harsh tax regime, high drilling costs, high infrastructure costs. Statistics on well numbers and drilling depths also show that the average drilling target depth has not changed significantly in 25 years, suggesting that play concepts are relatively static in Australia. New (deeper) play concepts can only be tested by drilling and if it is too expensive to drill then they are not tested. An injection of new blood – small companies – higher risk profile – new concepts – is desperately needed in Australia. Technological support, legal, taxation and investment climate needs to be adjusted to stimulate investment by smaller independent companies. A few deeper-water wells have been drilled in recent years, but considering Australia's island nature and the size of the economic zone these numbers have been insignificant to date. Technological and infrastructure support for deep marine exploration is a matter of urgency. Any Commonwealth money used for metocean support would aid deep water exploration.

d. Near-field technologies

Exploration around existing oil and gas fields that are approaching plateau and have excess capacity is very cost-effective and to Australia's advantage in terms of prolonging supply. Federal investment in technology specifically related to near-field exploration would assist such exploration. Increased tax benefits against production for near-field exploration would also help stimulate this activity. Specific technologies that could be supported include OBC seismic, multilateral exploration drilling, subsea EM etc.

e. Low-cost exploration/appraisal drilling

Commonwealth investment in developing and proving low-cost safe technologies for exploration drilling onshore and offshore would benefit both Australian exploration and provide a potential export market. There are many areas of the world where an Australian designed rig could be used cost-effectively. Slim-hole technology, automation, continuous coring, light-weight, sea-bed rigs, composites/epoxy casing, high-tech pressure control, advanced muds are all technologies where Australia could both gain an international competitive advantage as well as stimulate exploration in relatively poorly-explored areas. Low-cost/environmentally friendly seismic technology for 3D land seismic is badly needed for onshore Australian basins. This is an area where research dollars could pay significant dividends. Norway adapted marine seismic streamer technology for glacier use – can a similar approach be used for sand deserts ?

2. The structure of the industry and role of small companies in resource exploration in Australia

My concerns relate to:

**Technical/research/development support for small operators
Dominance by multinationals**

a. Technical/research/development support for small operators

Tax and technology support mechanisms need to be improved to provide support for small local operators in the oil industry. The tendency of the large multinational operators to rely on and fund overseas research and development is depriving the local small operator of access to local competence. Strategic alliances between small companies and technology providers need to be encouraged through schemes such as START, CRC's etc.. I suggest the initiation of an **Exploration Start** program to complement the existing **R&D Start** program to provide Commonwealth support for technology provision for smaller Australian operators.

b. Dominance by multinationals

Dominance by multinationals is not healthy for the development of new exploration concepts and technology in Australia. The low rates of return available to multinational oil companies, and their successive mergers, has seen the market implode over the past decade. ExxonMobil has a limited exploration portfolio in Australia, Shell is showing signs of preferring NE Asian opportunities, Chevron is not expanding here, BPAmoco has no exploration activity, etc.. Woodside is technologically supported for the time being by Shell, but this may not last much longer. The future of innovative exploration in Australia must rest with local technical competence and support for local companies.

3. **Public provision of geoscientific data**

My concerns relate to:

Consistency in open access and pricing policy
All publicly funded (and partially publicly funded) data should be publicly available
100% Company funded raw data available after 2 years.
Need for all federal/state agencies to be treated as internal customers
Quality control

a. Consistency in open access and pricing policy

I would like to emphasise the need for continuing open public access to archival data, and the continuing need to make such data freely available (at cost of copying and media) to the scientific and exploration community in Australia and overseas. Open access after a max of 2 years is essential to enable effective research and testing of concepts – and to provide a platform for further research

b. All publicly funded (and partially publicly funded) data should be publicly available at cost of media duplication.

As practiced in the USGS. This has stimulated a huge body of research and new play concepts. A two year confidentiality period for raw data that may lead to significant IP may be warranted, and could be built into all contracts where partial industry funding is obtained.

c. 100% Company funded raw data available after 2 years

As is the position today, raw exploration data which have been paid for by industry should be held confidential for a period of two years, whereafter they should be made available to the public.

d. Need for all federal/state agencies to be treated as internal customers not competitors/external clients

There is a need to develop inter-agency collaboration rather than competition.
The goal is to ensure that the whole of government is working together to ensure the energy sufficiency of Australia rather than claim external earnings by charging other Commonwealth agencies for data.

e. Quality control is essential (processing audit trail for submitted numerical data)

Quality Control is vital in the submission, acceptance and archival of geoscientific data. Unreliable data are worse than no data at all. Funds should be made available to GA or put out to tender for a geoscientific quality control program for archive submissions.