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SOUTH AUSTRALIA

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**1996 MESA PETROLEUM
INDUSTRY SURVEY**

by

J G G MORTON

Petroleum Division

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<u>CONTENTS</u>	<u>PAGE</u>
ABSTRACT	1
CONCLUSIONS AND RECOMMENDATIONS	1
SURVEY METHODOLOGY	2
SUMMARY OF MAIN CONCLUSIONS	2
CHARACTERISTICS OF RESPONDENTS (QUESTIONS 1,2,3)	5
OVERALL PERFORMANCE (QUESTIONS 4 AND 5)	6
PROMOTIONAL ROLE (QUESTIONS 6,13)	7
REGULATORY ROLE (QUESTIONS 7,12,13)	10
MESA APPROACHES TO REGULATION (QUESTIONS 8, 9, 10 ,11,)	12
SERVICE AND DATA QUALITY (QUESTIONS 15,16, 19)	15
LICENSING (QUESTIONS 14, 17,18,20)	17
MESA PRODUCTS (QUESTION 21)	20
FUTURE PROJECTS (QUESTION 22)	23
PROSPECTIVE BASINS (QUESTIONS 23, 24)	28
SUMMARY OF GENERAL COMMENTS	37
COMPARISON WITH 1994 SURVEY RESULTS	38
REFERENCES	39
APPENDIX	
1.Interview questionnaire	40

1996 MESA Petroleum Industry Survey

J G G MORTON

A consultant to MESA interviewed approximately 30 petroleum industry personnel throughout Australia from April to July, 1996. The aims of the survey were to measure the Petroleum Division's performance in promoting and regulating the petroleum exploration and production industry in South Australia, and to gather information that could be used to formulate new initiatives. In general, MESA appeared to rate very well, being perceived as among the best in Australia for regulation, data and advice, although the survey methodology may have caused a significant bias. The promotional approach could possibly be improved. Industry appeared to rely significantly on MESA data and advice in preparing licence applications and/or bids. Most of the data products had a high awareness and value with industry, and some marketing opportunities were identified. Perceptions of the prospectivity of South Australian basins were similar to MESA's view, but the Cambrian Basins appear to be poorly known among industry, although they are not necessarily perceived as unprospective. In these basins the negative economics of exploration and source rock are seen as the major impediments. The Cooper Basin elicited the most strongly worded comments, with access to infrastructure post 1999 and the attitude of the government to PEL 5 & 6 relinquishment major concerns of industry.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that:

- In general, MESA rates very well, being perceived as among the best in Australia for regulation, data and advice
- MESA's promotional approach could possibly be improved.
- Industry appears to rely significantly on MESA data and advice in preparing licence applications and or bids.
- Most of the data products had a high awareness and value with industry, but some marketing opportunities are apparent.
- Perceptions of the prospectivity of South Australian basins are generally similar to MESA's view,
- The Cambrian Basins appear to be poorly known among industry, although they are not necessarily perceived as unprospective. In these basins the economics of exploration and the unknown quality of source rocks is seen as the major impediments.
- The Cooper Basin elicited the most strongly worded comments, with access to infrastructure post 1999 and the attitude of the government to PEL 5 & 6 relinquishment major concerns of industry.

It is recommended that:

- To ensure balance, a survey is also conducted of non industry stakeholders (eg NGOs, etc). Where possible, comparable questions to this survey should be asked.

- This survey be repeated annually. Improvements to the questions can be made in light of the DGR report on KPIs, in particular, determine the expectations of industry in regard to licence approval times, and the industry satisfaction with data and MESA personnel.
- MESA develops marketing of products and services by direct industry meetings.
- MESA investigates and emulates where possible the previous promotional strategies of AGSO.
- Data on perceptions of prospectivity of SA basins be used to develop new research initiatives and to review current strategies.
- Develop marketing opportunities for the Petroleum Services Directory, Cooper Basin Gas Field Development Study Results and possibly the MESA Journal.

SURVEY METHODOLOGY

The survey was carried out between April and July, 1996, by an independent Adelaide based petroleum industry consultant, Mr G Carne. The aim of the survey was to interview between 30 and 40 industry personnel to gain some indication of the perception of the performance of the Petroleum Division of MESA, and to acquire information on perceptions on the prospectivity of the sedimentary basins in South Australia that may influence the industry to explore. All interviews were anonymous, (ie MESA did not know who were interviewed, or what responses were made by which company representative), as it was felt that this would elicit the most honest and candid responses. Particular note was made of any qualitative comments. However, it is probable that, as the interviewee was aware of the origin of the survey, there was significant positive bias towards SA.

The methodology of the survey is similar to the industry survey carried out by Mr P Austin in 1994, but the question format was changed slightly to attempt to gain more information that could be used by MESA to formulate strategies to attract petroleum exploration and to gain more information on industry's perspectives of SA sedimentary basins.

SUMMARY OF MAIN CONCLUSIONS

Overall Performance

MESA's assistance to the petroleum industry ranks first in Australia overall with the Commonwealth organisations (AGSO, BRS), Queensland and Western Australia rated slightly worse. The industry appears to have a particularly low appreciation of the Victorian department. The results for the Tasmania, New South Wales and Northern Territory are inconclusive, due to few respondents having experience with these organisations. Nearly all respondents (92%) believe that MESA's performance is above average.

Promotional Role Performance

MESA's performance in promoting exploration opportunities to the petroleum industry ranked second to AGSO which rated marginally better. The other commonwealth organisations (BRS, DPIE) also rated well. Western Australia rated slightly worse than MESA, but is also well regarded by industry. The poor industry view of the Victorian Mines and Energy department is again apparent. The results for the Tasmania, New South Wales and Northern Territory are inconclusive, due to few respondents having experience with these organisations. A large majority of respondents (85%) believe that our performance is above average.

Promotional activities of MESA

There is clear support for most of the promotional activities carried out by the Petroleum Division, with the exception of reserve estimates and large expenditure projects (e.g. seismic, drilling). The

former is probably due to commercial sensitivity about their own reserves, rather than a lack of interest in accessing independent estimates of other licensees reserves. There may also be other non-industry stakeholders who would like access to reserve estimates. The usefulness of publishing Petroleum Division reserve estimates for industry and the issue of whether the estimates are credible may need to be followed up in a future survey, after the 1997 Reserves Atlas is released.

Regulatory Role Performance

MESA's performance in regulating the petroleum industry ranks first, but most other states are only rated slightly worse. There are no obvious poor performers in regulation in Australia, although no respondents rated WA as better than MESA, a result that is surprising considering the high profile the industry has in that state compared to SA. A majority of respondents (76%) believe that our performance is above average.

Regulatory activities of MESA

There is clear support for MESA as a lead agency ("one window approvals"), and for most of the regulatory activities carried out by the Petroleum Division, with the exception of resource management regulation (ie ensuring production practices are not wasteful). The comments indicate that this should be adequately covered by normal commercial constraints, and that there is no need for the government to be involved. There was no clear support for the workplace safety aspects to be returned fully to MESA, rather industry favour both having a role, but with MESA as lead agency.

Objective Regulation

There is significant support from industry for objective based regulation, which most respondents believed will deliver significantly better outcomes for both the industry and the community than a prescriptive regulatory regime.

Public Consultation

Industry representatives clearly feel very uncomfortable with involving the general community in the regulatory process. Their concerns appear to be centred on specific groups in the community disrupting or manipulating the process. The question of an educated and informed public versus "apathetic" public was also raised.

Service and Data quality

In general there was a very low number of responses for these questions, and the results may be misleading. We appear to be ranked highly for our service and data quality, with the federal government agencies rated similar to MESA. Victoria and Western Australia rate worse than MESA. The WA result may reflect the dissatisfaction with the data brokers used by the Mines Dept in WA, although there was only one comment to this effect. Alternatively, the result may reflect the demand for consolidation of data into databases, rather than supply of raw data only. This issue should be followed up by more direct questions in the next survey. There is some differences with the ratings by South Australian licensees, they appear to rate the other state and commonwealth agencies better for service and data quality (with the exception of WA). Given the low number of respondents to these questions, it may be better in future to seek feedback on service and data directly from data sales.

Value of MESA data and advice

85% of the respondents who had previously applied for a licence in South Australia believed that they had relied on data and advice provided by MESA to a substantial or supporting degree.

Licence administration

There appears to be a reasonable satisfaction (75% better than average) with MESA procedures for licence processing and approvals. Most of the other states were perceived as similar, although it is difficult to compare due to the low level of experience of most of the respondents. It would perhaps be better to seek this information directly as licences are issued, and determine industry expectations (eg 1 or 2 months) in the next survey.

Data products

Awareness

Most of MESA publications and data products had somewhat low level of awareness among those interviewed, with only 6 publications having greater than 60% awareness (Holders of Petroleum Tenements Quarterly, PEPS-SA, Seismic Shot point database, Digital well logs, Otway Basin 1995 Exploration Opportunities and Petroleum Act Issues Paper). The low level of awareness for the Eringa Trough exploration opportunities Brochure is puzzling, as it appears to have a high level of unsatisfied demand and was promoted on a similar basis to the Otway Basin exploration opportunities Brochure. It is possible that either the APPEA, 1995 promotion of the Otway had a large impact (the Eringa Trough was only promoted in a general way, no brochure was available until the ASEG Conference, later in that year), or that the company personnel are filtering distribution of the brochures (the Eringa was perhaps not seen as an attractive opportunity by the targeted individual in most companies). The promotional brochures may not be the most effective way of promoting frontier areas, unless they are more accurately targeted to the relevant individuals in companies. Distributing brochures at APPEA seems to be more effective than at ASEG, reflecting the difference in audience.

Demand

Demand for products (the sum of those who already had the product, plus those who did not, but would consider acquiring it), was over 80% for most of the products. Those with between 50 and 60% demand were Otway Basin specific products, and the level of demand for these is considered reasonable, given that not all of the companies would be interested in the Otway Basin. Some general digital data products appeared to have a surprisingly low level of demand (PEPS, Shot point database, digital well logs). Some comments noted that PEPS could not be considered for purchase now, but would be in the future, ie if the company took out a licence. This has implications for who are the target customers for these products. The marketing strategy should focus on new licensees, data providers consultants and banks, rather than the petroleum industry in general.

Usefulness

All the products listed were considered useful (>90% of respondents considered the product useful to them), with the exception of the Adelaide Plains Gas storage CD ROM. This indicates that the market for gas storage opportunities is either very limited, or is not the mainstream petroleum exploration industry. Alternatively, the respondents may have no experience of the economics of gas storage.

New products

The review of the Petroleum Act, Volume 2 (Eromanga Basin) of the Petroleum Geology of South Australia series and the revision of the Otway seismic datasets are all regarded as worthwhile. The Officer Basin and Cambrian basins projects in general were regarded as of very limited use. This may also be because the most prospective areas are fully under licence. The proposed reserves atlas appeared to have mixed support. Although the mode of responses indicated a high level of support (score 2), there were 3 responses at score level 10, indicating that possibly some companies felt it would not be in their interest if MESA were to make reserve estimates public.

Cooper 1999 data products

In general all of the products and projects were considered important for evaluating the Cooper Basin for the 1999 relinquishment. The most valued products (average score < 3.0) were interpreted seismic (C, P, and Z horizons and regional sections). The least valued (score >4.0) were Lineament analysis, Merrimelia diagenesis, source and maturity maps, Warburton Basin study, reserve estimates and

undiscovered reserve estimates where around 1/3 of respondents rated these as less than “reasonably worthwhile”. These latter projects, if they are to continue, may need considerable marketing effort to gain acceptance as being useful and relevant to industry, although none of these projects were clearly seen as a waste of effort - rather as not as useful as other products. SA licensees ranked some of these latter products as of lower value than non SA licensees, possibly indicating a lack of knowledge on the part of industry who are not current participants in the Cooper Basin.

CHARACTERISTICS OF RESPONDENTS (QUESTIONS 1,2,3)

In total 30 interviews were conducted. The respondents were asked to characterise their company position into one of the following categories

Responsibilities	Number	%
Senior Management (a reporting point for Middle Management or above: <i>at executive decision level</i>)	8	27%
Middle Management (eg Regional Manager; Engineering & Production; <i>a technical management reporting point; but non-executive</i>)	3	10%
Technical Management (eg Exploration Manager; Engineering Manager; <i>the first multidiscipline reporting level</i>)	10	33%
Senior Technical (eg Chief Geophysicist; Chief Petroleum Engineer; <i>a discipline leader, reporting to Technical Management</i>)	1	3%
Technical (eg Senior Geologist; Geophysicist; <i>reporting to a discipline leader</i>)	1	3%
Consultant	4	13%

A further 3 responses were from a combination of 2 interviewees, which were all middle and technical management

Previous South Australian experience

The proportion of respondents currently participating in South Australian petroleum activities was 50%.

Of those 73% (ie 37% of total respondents) are currently operators in South Australia, the remainder are currently partners only.

Of the remaining 50%, only 27% (ie only 14% of total respondents) had had previous involvement in SA licences)

In total, 64% had had some previous experience with South Australia

Approximate annual expenditure on petroleum exploration in Australia by respondents

The average estimated annual expenditure on petroleum exploration in Australia for all respondents was \$15 million. The average of current South Australian participants was significantly higher, at \$20 million per year. In total, the respondents spend \$334 million per year on Australian petroleum exploration

OVERALL PERFORMANCE (QUESTIONS 4 AND 5)

The interviewees were asked how they rated the overall performance of MESA in relating to the petroleum industry, and then how MESA compares to other similar state and government organisations.

For SA, a score of 1 = excellent performance, 5=average performance, 10=very poor performance

For the other organisations, a score of 1 = much better performance, 5=same performance, 10=much worse performance

Score	MESA	Other State and Commonwealth organisations								
	AGSO	BRS	DPIE	TAS	VIC	NSW	QLD	NT	WA	
	Score Frequency									
1	0	0	0	0	0	0	0	0	0	0
2	3	0	0	0	0	0	0	0	0	1
3	10	0	0	0	0	0	0	1	0	0
4	2	3	2	1	0	0	0	1	0	1
5	2	2	1	2	0	1	1	3	0	4
6	0	7	5	2	2	4	4	6	6	3
7	0	2	2	3	4	7	2	2	1	3
8	0	3	1	3	0	2	2	3	2	3
9	0	0	0	0	0	2	0	0	0	0
10	0	0	0	0	1	0	0	0	0	0
% < 5	92%	17%	17%	8%	0%	0%	0%	12%	0%	13%
Average score	3.0	6.1	6.0	6.5	7.1	7.0	6.6	6.0	6.6	5.9
Average of SA licensees	3.1	6.0	5.2	6.3	6.8	6.5	6.8	5.4	6.4	6.6
Rank	1	5	3	6	10	9	7	4	7	2

Conclusion:

MESA's assistance to the petroleum industry ranks first in Australia overall with the Commonwealth organisations (AGSO, BRS), Queensland and Western Australia rated slightly worse. The industry appears to have a particularly low appreciation of the Victorian department. The results for the Tasmania, New South Wales and Northern Territory are inconclusive, due to few respondents having experience with these organisations. Nearly all respondents (92%) believe that MESA's performance is above average.

PROMOTIONAL ROLE (QUESTIONS 6,13)

Approach to attracting petroleum exploration

The interviewees were asked how they rated the approach of MESA in promoting, facilitating and attracting petroleum exploration

For MESA a score of 1 = excellent performance, 5=average performance, 10=very poor performance

For the other organisations, a score of 1 = much better performance, 5=same performance, 10=much worse performance

Score	MESA	Other State and Commonwealth organisations								
		AGSO	BRS	DPIE	TAS	VIC	NSW	QLD	NT	WA
	Score Frequency									
1	2	0	0	0	0	0	0	0	0	0
2	1	1	0	0	0	0	0	0	0	0
3	11	2	2	1	0	0	0	2	1	0
4	2	4	2	1	0	2	0	2	0	4
5	1	2	2	3	1	1	1	0	4	4
6	1	3	4	1	0	4	3	4	0	1
7	2	0	1	1	2	5	3	4	3	1
8	0	1	0	1	2	2	0	0	1	2
9	0	0	0	0	1	0	1	1	0	0
10	0	0	0	0	0	0	0	0	0	0
% < 5	85%	50%	33%	22%	0%	13%	0%	29%	10%	31%
Average score	3.4	4.7	5.1	5.4	7.3	6.4	6.8	5.8	5.8	5.4
Average of SA licensees	3.5	4.5	5.6	5.5	6.8	6.4	7.3	6.1	6.3	6.0
Rank	2	1	3	5	10	8	9	6	7	4

Comments:

“as a small company we really don’t know what they are doing”

Conclusion:

MESA’s performance in promoting exploration opportunities to the petroleum industry ranked second to AGSO which rated marginally better. The other commonwealth organisations (BRS, DPIE) also rated well. Western Australia rated slightly worse than MESA, but is also well regarded by industry. The poor industry view of the Victorian Mines and Energy department is again apparent. The results for the Tasmania, New South Wales and Northern Territory are inconclusive, due to few respondents having experience with these organisations. A large majority of respondents (85%) believe that our performance is above average.

Appropriateness of MESA activities

Respondents were also asked if they approved of the following activities being carried out by MESA Petroleum Division:

If they responded no, they were asked to indicate who they think would be more appropriate to perform that service

	%
	responding Yes
(a) Archiving all industry exploration and production data (including samples)	100%

(b) Consolidating basic data into user friendly and accessible digital databases	89%
<i>(Including verifying and digitising well logs)</i>	

Alternative : “General Industry”

(c) Evaluating exploration and production economics in areas outside existing licences	78%
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Comments:

“companies should have info to do themselves”

“For certain areas with some infrastructure and therefore costs, but not for theoretical models”

“for specific problems to iron out monopoly system”

(d) Acquiring new data in SA basins that currently attract little or no industry exploration interest	
(eg Seismic, Aeromag, Source rock analyses)	93%

Comment:

“not seismic”

“limited expenditure. Aeromag and Source rock analyses, not seismic or drilling”

(e) Compiling regional interpretations (eg. seismic, stratigraphy, source rock, geological summaries) from industry and MESA derived data	93%
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Alternative : “supplemented by Consultant/ independent studies”

Comments:

“Nice that MESA do it , but, better to put more into acquiring data”

“to a point as long as purpose clear”

“ as long as other services do not suffer”

(f) Independently estimating reserves for discovered fields

56%

Alternatives : Operators, consultants

Comments:

“No need for this”

“Should be limited to audit, not grass roots studies”

“arguments for and against”

“internal use only”

“should quote operators reserves or consultants estimates rather than undertake own

“field descriptions of more value”

“do not believe should be in the public domain”

(There was no significant difference between SA licensees and non SA licensees in answering this question, in fact, SA licensees were slightly more in favour (66%)

In all cases where consultants were suggested as alternatives, the respondent was a consultant

Conclusion:

There is clear support for most of the promotional activities carried out by the Petroleum Division, with the exception of reserve estimates and large expenditure projects (e.g. seismic, drilling). The former is probably due to commercial sensitivity about their own reserves, rather than a lack of interest in accessing independent estimates of other licensees reserves. There may also be other non-industry stakeholders who would like access to reserve estimates. The usefulness of publishing Petroleum Division reserve estimates for industry and the issue of whether the estimates are credible may need to be followed up in a future survey, after the 1997 Reserves Atlas is released.

REGULATORY ROLE (QUESTIONS 7,12,13)

Approach to petroleum regulation

The interviewees were asked how they rated the approach of MESA in regulating petroleum exploration and development activities

For MESA a score of 1 = excellent performance, 5=average performance, 10=very poor performance

For the other organisations, a score of 1 = much better performance, 5=same performance, 10=much worse performance

Score	MESA	Other State and Commonwealth organisations						
	DPIE	TAS	VIC	NSW	QLD	NT	WA	
	Score Frequency							
1	0	0	0	0	0	0	0	0
2	3	0	0	0	0	0	0	0
3	4	1	0	1	0	2	0	0
4	7	0	0	1	1	0	0	0
5	4	1	1	2	1	5	1	5
6	0	0	0	5	2	3	1	3
7	0	2	2	1	0	0	2	1
8	0	0	1	2	0	1	0	1
9	0	0	0	1	0	0	0	0
10	0	0	0	0	0	0	0	0
% < 5	76%	20%	0%	14%	20%	17%	0%	0%
Average score	3.8	5.6	6.8	6.2	5.8	5.3	6.2	5.7
Average of SA licensees	3.8	6.0	6.3	6.1	5.5	5.3	6.0	5.8
Rank	1	3	8	6	5	2	7	4

Conclusion:

MESA's performance in regulating the petroleum industry ranks first, but most other states are only rated slightly worse. There are no obvious poor performers in regulation in Australia, although no respondents rated WA as better than MESA, a result that is surprising considering the high profile the industry has in that state compared to SA. A majority of respondents (76%) believe that our performance is above average.

Appropriateness of MESA activities

Respondents were also asked if they approved of the following activities being carried out by MESA Petroleum Division:

If they responded no, they were asked to indicate who they think would be more appropriate to perform that service

%
responding Yes

(a) Regulating environmental aspects of exploration and development activities
89%

Alternative "MESA and Federal body"

Comments:

"yes, assuming expertise within the department"
" Important that industry is seen to be monitored by completely independent organisation, but MESA should act as intermediary"

(b) Regulating workplace safety aspects of exploration and development activities

78%

(Currently carried out by the Department of Industrial Affairs)

Alternative: "MESA and Federal body"

Comments:

"yes, assuming expertise within the department"
"Need someone in tune with safety and the industry"
"yes, providing that skilled people are on hand"
" Important that industry is seen to be monitored by completely independent organisation, but MESA should act as intermediary"

"MESA should have some input as aware of ???? requirements. Dept of Industrial Affairs should be advising MESA rather than other way around"
"MESA and Dept of Industrial Affairs should work closely together"

(c) Regulating public safety aspects of exploration and development activities **85%**

Alternative: "MESA and Federal body"

Comment:

" Important that industry is seen to be monitored by completely independent organisation, but MESA should act as intermediary"

(d) Regulating resource management aspects of exploration and development activities

63%

Alternative: "MESA and Federal body"

Comments:

“monitor but not regulate”

“overall responsibility”

“explorers/developers should meet basic demands within guidelines, but MESA should not be too stringent and demanding. Companies have profit motive and will work to maximise economics as long as safe”

“ MESA in part. Want guidelines. Need a mix”

“ a commercial decision, if something happens, MESA should interfere”

(e) Facilitating public consultation and dialogue on regulation 96%

(f) Facilitating consultation with aboriginal groups for site clearances 96%

Comments:

“maintain own pipelines as well, communicators”

“yes, providing they have skilled personnel”

Question 12 asked if industry thought MESA should continue to be the lead SA government agency for all petroleum exploration and development matters (ie the only industry contact required for all relevant environmental and health and safety issues)

92% responded “yes”

Conclusions:

There is clear support for MESA as a lead agency (“one window approvals”), and for most of the regulatory activities carried out by the Petroleum Division, with the exception of resource management regulation (ie ensuring production practices are not wasteful). The comments indicate that this should be adequately covered by normal commercial constraints, and that there is no need for the government to be involved. There was no clear support for the workplace safety aspects to be returned fully to MESA, rather industry favour both having a role, but with MESA as lead agency.

MESA APPROACHES TO REGULATION (QUESTIONS 8, 9, 10 ,11, 12)

Several questions were asked to measure the attitudes of industry to new regulatory approaches recently initiated by the department.

Objective based regulation

Question 8 asked if the respondent felt that a regulatory regime which focuses on the achievement of measurable objectives by the industry (and less on approving individual operations ,or policing processes and procedures of the industry) would deliver better or worse outcomes for both industry and the community at large?

A score of 1 = much better outcomes, 5=same outcomes, 10=much worse outcomes

Objective regulation will deliver better outcomes for:

The Industry The Community

<i>Score</i>	<i>Score Frequency</i>	
1	3	1
2	2	3
3	9	8
4	3	5
5	1	3
6	1	0
7	0	0
8	3	2
9	0	0
10	0	0
% less than 5	76%	76%
Average Score	3.7	3.8

Comments:

“not possible to answer, would vary from operator to operator”
 “for small company could slow down process”

Conclusion:

There is significant support from industry for objective based regulation, which most respondents believed will deliver significantly better outcomes for both the industry and the community than a prescriptive regulatory regime.

Industry approaches to environmental and safety issues

Question 9 asked if the industry felt it needed to be more proactive in addressing environmental and safety issues rather than reactive to addressing issues as problems arise.

88% responded “yes”.

Comments:

“ yes, if the word “more” is dropped” (x2)
 “most industry already proactive enough” (x4)
 “ more proactive as is now the case”

If respondents answered “yes” to question 9 they were then asked if they thought that it is an appropriate role for government to facilitate a more proactive stance by industry in addressing environmental and safety issues.

87% responded “yes”

Comments:

“globally rather than specifically ie. in smaller companies”
 “no. Self regulation”
 “public perception poor for no valid reason, government should work on PR”

Conclusions

This question caused some difficulties with respondents, in particular they felt that industry was doing enough now, and appeared to object to the implications of the word “more” in both parts of question 9. Most “yes” answers were with the “more” deleted.

Involvement by community at large in regulation

Question 10 asked industry personnel if they felt that the community at large should have an involvement in the regulatory process to ensure that regulatory objectives are consistent with society’s expectations rather than representation by government alone.

19% responded “yes”

Comments:

“nothing ongoing (committees etc). People should have chance to have quiet say if sincere”

“selective community consultation OK”

“Govt should listen to and indeed invite comment from those with expertise, but not community at large *per se*”

“yes, but only in a balanced approach”

“no, except for certain issues where major environmental impact on community, then community

“community at large not representative, some active harmful groups, mainly apathetic, public elects

Conclusion:

Industry representatives clearly feel very uncomfortable with involving the general community in the regulatory process. Their concerns appear to be centred on specific groups in the community disrupting or manipulating the process. The question of an educated and informed public versus “apathetic” public was also raised.

How responsibility for regulation is shared between government and industry

Question 11 asked how industry felt that the responsibility for achieving regulatory objectives be shared between government and industry

A score of 1=Industry responsibility, 5=Equally shared between government and industry, and 10=Government Responsibility

Score	Score frequency
1	0
2	1
3	4
4	2
5	11
6	3
7	2
8	0
9	1
10	0
Average score	4.8

Comments:

One respondent rated “2 to 3 for achieving the outcomes, but 5 for writing the objectives”

Conclusion:

Industry clearly favours an equally shared responsibility between government and itself for achieving regulatory objectives, but most respondents appear to have misunderstood the question, as the emphasis was on achieving objectives, not setting objectives. This question will need to be restructured in future surveys.

SERVICE AND DATA QUALITY (QUESTIONS 15,16, 19)

The interviewees were asked to rate and separate our service quality and data quality.

For MESA a score of 1 = excellent performance, 5=average performance, 10=very poor performance

For the other organisations, a score of 1 = much better performance, 5=same performance, 10=much worse performance

Results for service quality:

Score	MESA	Other State and Commonwealth organisations								
	AGSO	BRS	DPIE	TAS	VIC	NSW	QLD	NT	WA	
	Score Frequency									
1	1	0	0	0	0	0	0	0	0	0
2	6	0	0	0	0	0	0	0	0	0
3	7	0	0	0	0	1	0	0	1	0
4	3	3	1	1	1	0	0	1	0	1
5	2	4	3	1	0	0	1	4	1	4
6	0	4	2	1	2	6	3	5	1	3
7	0	0	0	2	0	3	1	3	2	2
8	0	0	0	1	0	0	0	0	1	0
9	0	1	1	0	1	0	0	0	0	1
10	0	0	0	0	0	0	0	0	0	0
% < 5	90%	23%	13%	14%	25%	10%	0%	8%	14%	9%
Average score	2.8	5.6	5.9	6.2	6.3	6.0	6.0	5.8	6.1	5.9
Average of SA licensees	3.2	5.1	5.0	5.3	5.3	5.9	5.7	5.4	4.7	6.3
Rank	1	2	4	9	10	6	7	3	8	5

Results for data quality:

Score	MESA	Other State and Commonwealth organisations								
	AGSO	BRS	DPIE	TAS	VIC	NSW	QLD	NT	WA	
	Score Frequency									
1	1	0	0	0	0	0	0	0	0	0
2	3	0	0	0	0	0	0	0	0	0
3	8	0	0	0	0	0	0	0	0	0
4	2	1	4	0	0	0	0	1	0	2
5	2	6	2	2	1	1	2	3	1	5
6	0	3	0	2	0	3	1	4	0	1
7	0	1	0	0	0	5	1	2	2	1
8	0	1	0	0	1	0	2	1	1	0
9	0	0	0	0	1	0	0	0	1	1
10	0	0	1	0	0	0	0	0	0	0
% < 5	90%	8%	0%	0%	25%	0%	0%	9%	0%	18%
Average score	2.9	5.6	6.0	5.5	6.3	6.4	6.5	5.9	7.1	5.7
Average of SA licensees	3.1	5.9	5.0	5.0	5.3	6.3	6.0	5.7	6.5	5.7
Rank	1	2	4	2	10	7	8	5	9	4

Comments:

“PEPS”

“Need more comprehensive archiving of old data”

“WA - data brokers not a good system”

Conclusions:

In general there was a very low number of responses for these questions, and the results may be misleading. We appear to be ranked highly for our service and data quality, with the federal government agencies rated similar to MESA. Victoria and Western Australia rate worse than MESA. The WA result may reflect the dissatisfaction with the data brokers used by the Mines Dept in WA, although there was only one comment to this effect. Alternatively, the result may reflect the demand for consolidation of data into databases, rather than supply of raw data only. This issue should be followed up by more direct questions in the next survey. There is some differences with the ratings by South Australian licensees, they appear to rate the other state and commonwealth agencies better for service and data quality (with the exception of WA). Given the low number of respondents to these questions, it may be better in future to seek feedback on service and data directly from data sales.

LICENSING (QUESTIONS 14, 17,18,20)

Question14 asked how the respondents would rate the success or otherwise of the various State government approaches to the Commonwealth Native Title Legislation compared to the approach taken in South Australia

A score of 1 = much better approach, 5=same approach, 10=much worse approach

Score	Other State organisations				
	VIC	NSW	QLD	NT	WA
1	0	0	0	0	1
2	0	0	0	0	0
3	0	1	2	0	1
4	0	0	0	0	0
5	2	2	2	2	2
6	1	1	1	0	0
7	1	1	2	2	1
8	1	1	1	0	2
9	0	0	0	0	0
10	0	1	0	1	0
% < 5	0%	14%	22%	0%	29%
Average score	6.2	6.3	5.4	6.8	5.3
Average of SA licensees	6.3	7.3	6.2	7.3	6.3

Conclusions:

As there were a very low number of respondents to this question, no conclusions can be made concerning the merits of the South Australian approach to Native Title. The reasons for the low response are probably due to minimal experience by those interviewed.

Use of MESA data and advice for licence applications

Question 17 asked respondents who had applied for an exploration licence in South Australia, how much they believed that their application relied on data and advice supplied by MESA.

Substantial	5 respondents (38%)
Substantial and Supporting	1 respondent (8%)
Supporting	4 respondents (31%)
Supporting and Not at all	1 respondent (8%)
“Not much”	1 respondent (8%)
Not at all	1 respondent (8%)

Comments:

“Varies, depends on involvement with other companies”
“Supporting with respect to data offshore, not at all for advice”

Conclusions:

85% of the respondents who had previously applied for a licence in South Australia believed that they had relied on data and advice provided by MESA to a substantial or supporting degree.

Processing licence applications and approvals

Question 18 asked how the industry rated the efficiency and effectiveness of MESA for processing licence applications and approving operations

For MESA a score of 1 = excellent performance, 5=average performance, 10=very poor performance

MESA

Score	Score Frequency
1	0
2	5
3	3
4	1
5	4
6	0
7	0
8	0
9	0
10	0
% < 5	75%
Average score	3.3
Average of SA licensees	3.3

Comments:

“rating 2 for onshore, less efficient for offshore”

Respondents were then asked to rate the other states on the effectiveness and efficiency of licensing and approval procedures and security of title compared with MESA.

A score of 1 = much better performance, 5=same performance, 10=much worse performance

Licensing procedures:

Score	Other State organisations					
	TAS	VIC	NSW	QLD	NT	WA
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	1	0	0
5	0	2	1	4	1	3
6	1	4	0	1	1	1
7	1	2	2	1	0	1
8	0	0	1	0	0	0
9	0	0	0	1	0	0
10	0	0	1	0	0	0
% < 5	0%	0%	0%	11%	0%	0%
Average score	6.5	6.0	6.3	5.7	5.5	5.7
Average of SA licensees	6.5	5.7	6.0	5.7	5.0	6.0

Approval procedures:

Score	Other State organisations					
	TAS	VICT	NSW	QLD	NT	WA
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	1	0	0
5	0	2	1	4	0	4
6	1	3	0	1	2	1
7	1	2	2	2	0	1
8	0	0	0	0	0	0
9	0	1	0	0	0	0
10	0	0	0	0	0	0
% < 5	0%	0%	0%	11%	0%	0%
Average score	6.5	6.4	6.3	5.4	6.0	5.6
Average of SA licensees	6.5	6.7	6.0	5.3	6.0	6.0

Conclusions:

There appears to be a reasonable satisfaction (75% better than average) with MESA procedures for licence processing and approvals. Most of the other states were perceived as similar, although it is difficult to compare due to the low level of experience of most of the respondents. It would perhaps be better to seek this information directly as licences are issued, and determine industry expectations (eg 1 or 2 months) in the next survey.

MESA PRODUCTS (QUESTION 21)

Question 21 attempted to gauge the awareness, usage, and potential areas where marketing could be targeted for a range of Petroleum Division data products. Products are listed below and ranked by Awareness.

	Awareness	Demand	Usefulness
Petroleum Act Issues Paper	73%	96%	96%
PEPS-SA	73%	54%	96%
Digital well logs	73%	36%	96%
Holder of Petroleum Tenements Quarterly	62%	96%	96%
Otway Basin 1995 Exploration Opportunities	62%	88%	96%
Seismic Shot point database	62%	32%	93%
Petroleum Exploration and Development in SA	50%	100%	100%
Codes of Environmental Practice	46%	88%	100%
Pet. Geol. of SA Vol 1 Otway Basin	42%	58%	96%
Regional Otway Basin Seismic datasets	38%	54%	96%
MESA Journal (previously MIQ)	35%	100%	100%
Regional Eromanga/Cooper C and Z Horizon datasets	35%	48%	96%
STRZELECKI 1:250 000 Map and notes	31%	25%	93%
Geol. Of SA Vol 2 The Phanerozoic	27%	71%	100%
Officer Basin data package (3 reports)	23%	24%	93%
Eringa Trough 1996 Exploration Opportunities	23%	83%	93%
Adelaide Plains Gas Storage CD-ROM Data package	23%	16%	54%
Cooper Basin Gas Field Development Study - Results	15%	96%	100%
Petroleum Services Directory	15%	96%	100%

Comments:

Petroleum Services Directory

“Should be updated and reissued”

“Should be a way to vet skills indicated”

PEPS-SA

“Extremely useful”

“had it but disk crashed or virus”

“limited use as not interactive”

Many comments that industry would not consider buying it now, but may be useful in the future

Codes of Environmental Practice

“APPEA should be the umbrella, MESA should collaborate with them”

Seismic Shot point database

“Use Petroleum Information”

“all data not just open file”

Digital well logs

“Prefer raw curves than fiddled with data”

Pet. Geol. of SA Vol 1 Otway Basin

“Better done by consultants with experience in basin” (Consultant respondent)

Regional Otway Basin Seismic datasets

“too general”

“useful for new areas”

Otway Basin 1995 Exploration Opportunities

“PEL 66 already in hands of Beach [BORAL] - MESA Journal ”

Regional Eromanga/Cooper C and Z Horizon datasets

“would consider if interested in Cooper 1999”

Officer Basin data package (3 reports)

“Competing with 1999 Cooper”

“Economics, pipeline?”

STRZELECKI 1:250 000 Map and notes

“Map sheet and subsurface may not really go together”

“A bit more limited than other products”

Cooper Basin Gas Field Development Study - Results

“EXCEL disk would be useful”

Adelaide Plains Gas Storage CD-ROM Data package

“More useful to MESA than industry perhaps”

“May be one day will be useful”

There were many requests for further information on some of the products; respondents appeared to react well to the personal approach.

Awareness of data products:

Most of MESA publications and data products had somewhat low level of awareness among those interviewed, with only 6 publications having greater than 60% awareness (Holders of Petroleum Tenements Quarterly, PEPS-SA, Seismic Shot point database, Digital well logs, Otway Basin 1995 Exploration Opportunities and Petroleum Act Issues Paper). The low level of awareness for the Eringa Trough exploration opportunities Brochure is puzzling, as it appears to have a high level of unsatisfied demand and was promoted on a similar basis to the Otway Basin exploration opportunities Brochure. It is possible that either the APPEA, 1995 promotion of the Otway had a large impact (the Eringa Trough was only promoted in a general way, no brochure was available until the ASEG Conference, later in that year), or that the company personnel are filtering distribution of the brochures (the Eringa was perhaps not seen as an attractive opportunity by the targeted individual in most companies). The promotional brochures may not be the most effective way of promoting frontier areas, unless they are more accurately targeted to the relevant individuals in companies. Distributing brochures at APPEA seems to be more effective than at ASEG, reflecting the difference in audience.

Considering the level of awareness versus demand for some of the products, there are clear marketing opportunities for the Petroleum Services Directory, Cooper Basin Gas Field Development Study Results and possibly the MESA Journal.

Demand:

Demand for products (the sum of those who already had the product, plus those who did not, but would consider acquiring it), was over 80% for most of the products. Those with between 50 and 60% demand were Otway Basin specific products, and the level of demand for these is considered reasonable, given that not all of the companies would be interested in the Otway Basin. Some general digital data products appeared to have a surprisingly low level of demand (PEPS, Shot point database, digital well logs). Some comments noted that PEPS could not be considered for purchase now, but would be in the future, ie if the company took out a licence. This has implications for who are the target customers for these products. The marketing strategy should focus on new licensees, data providers consultants and banks, rather than the petroleum industry in general.

Usefulness

All the products listed were considered useful (>90% of respondents considered the product useful to them), with the exception of the Adelaide Plains Gas storage CD ROM. This indicates that the market for gas storage opportunities is either very limited, or is not the mainstream petroleum exploration industry. Alternatively, the respondents may have no experience of the economics of gas storage.

FUTURE PROJECTS (QUESTION 22 and 23)

Respondents were asked about projects MESA is undertaking over the next few years, and the respondents were asked how useful these were to their company.

A score of 1 = extremely useful, 5=reasonably worth while, 10=waste of effort

Score	New Projects					
	1 Petroleum Act review	2 Eromanga Basin review & publication	3 Officer Basin review & publication	4 Cambrian Basin studies	5 Update of Otway Basin seismic	6 Review of reserves
1	3	3	2	1	2	2
2	7	7	2	2	4	5
3	4	2	1	4	5	3
4	4	4	3	4	6	3
5	6	5	7	4	5	3
6	0	0	3	3	2	2
7	0	2	3	3	0	1
8	1	3	4	3	2	2
9	0	0	0	0	0	0
10	0	0	0	0	0	3
% < 5	73%	65%	36%	46%	64%	56%
Average score	3.3	3.7	4.9	4.9	3.9	4.7
Average of SA licensees	3.4	3.4	4.9	4.4	4.3	4.8

Project

1. Review of Petroleum Act and Regulations
2. Pet Geol of SA Vol 2 Western Eromanga Basin
3. Pet Geol of SA Vol 3 Officer Basin
4. Source Rock, biostratigraphy and reservoir studies of Cambrian Basins
5. Update of regional seismic datasets, Otway Basin
6. Review of reserves of all fields in SA

Comments

Review of Petroleum Act

“Too short a time frame, timing inadequate”

Cambrian Basin studies

“Stepping outside of MESA’s area” (the respondent was a consultant)

Conclusions

The review of the Petroleum Act, Volume 2 (Eromanga Basin) of the Petroleum Geology of South Australia series and the revision of the Otway seismic datasets are all regarded as worthwhile. The Officer Basin and Cambrian basins projects in general were regarded as of very limited use. This may also be because the most prospective areas are fully under licence. The proposed reserves atlas appeared to have mixed support. Although the mode of responses indicated a high level of support (score 2), there were 3 responses at score level 10, indicating that possibly some companies felt it would not be in their interest if MESA were to make reserve estimates public.

In February 1999, PELs 5 & 6 (Cooper Basin) will expire, and Question 23 asked what information companies would like to access to prior to 1999 to fully evaluate exploration opportunities in the Cooper Basin.

A score of 1 = extremely useful, 5=reasonably worth while, 10=waste of effort

Product

1. Top Cadna-owie (C) regional depth seismic horizon
2. Top Permian (P) regional depth seismic horizon
3. Top Daralingie regional depth seismic horizon
4. Top Patchawarra (V) regional depth seismic horizon
5. Top Basement (Z) regional depth seismic horizon
6. Prospect scale seismic interpretations
7. Regional seismic cross sections
8. Database of MESA interpreted Formation tops
9. Burial history of Cooper/Eromanga/Lake Eyre Basin
10. Cooper Basin Source rock/biomarker study
11. MESA interpreted reserves for all Cooper and Eromanga oil and gas fields
12. Diagenesis of Merrimelia Formation
13. Cost of production, processing and transportation from Cooper oil and gas fields assuming no access to existing infrastructure
14. Pet Geol of SA Vol 4 Cooper Basin
15. Digital well logs
16. Production data from all fields
17. Digital seismic sections - workstation compatible
18. Digital seismic sections - raw/processed tapes
19. Seismic Shot point location maps (digital or hard copy)
20. Regional reservoir characteristic maps
21. Regional source and maturity maps
22. Warburton Basin Study
23. Cooper Basin Lineament analysis
24. Estimates of undiscovered reserves
25. Hard copy data (well completion reports, seismic sections, well logs)

Seismic Products

	1 Top "C" horizon	2 Top "P" horizon	3 Top Daralingie Horizon	4 Top "V" Horizon	5 Top "Z" horizon	6 Prospect scale seismic
Score	Score Frequency					
1	6	9	1	3	6	3
2	10	9	10	13	10	9
3	0	0	7	2	1	4
4	2	1	1	1	2	1
5	2	2	2	2	3	3
6	0	0	0	0	0	1
7	1	1	1	1	0	0
8	2	2	2	2	2	2
9	0	0	0	0	0	0
10	0	0	0	0	0	0
% < 5	77%	77%	77%	77%	77%	73%
Average score	3.0	2.8	3.4	3.1	3.0	3.3
Average of SA licensees	3.0	2.6	3.5	3.2	2.9	3.5

Other studies

	7 Regional seismic cross sections	11 Reserves	13 Costs of production	14 Cooper Basin publication	23 Lineament analysis	24 Undiscovered reserves
Score	Score Frequency					
1	3	2	6	2	1	1
2	11	4	4	7	3	4
3	5	5	8	8	2	2
4	3	2	3	0	6	4
5	0	5	1	5	7	4
6	1	0	1	1	3	2
7	0	1	0	0	2	3
8	1	2	1	1	1	3
9	0	0	0	0	0	1
10	0	3	1	0	0	1
% < 5	88%	54%	81%	69%	46%	42%
Average score	2.9	4.6	3.2	3.3	4.6	5.1
Average of SA licensees	3.0	5.4	3.5	3.4	4.4	4.9

“ Consistent and updated palynology database”
 “Hydrocarbon shows”
 “Not interested in Cooper relinquishment. No [Focus?]”

Conclusions

In general all of the products and projects were considered important for evaluating the Cooper Basin for the 1999 relinquishment. The most valued products (average score < 3.0) were interpreted seismic (C, P, and Z horizons and regional sections). The least valued (score >4.0) were Lineament analysis, Merrimelia diagenesis, source and maturity maps, Warburton Basin study, reserve estimates and undiscovered reserve estimates where around 1/3 of respondents rated these as less than “reasonably worthwhile”. These latter projects, if they are to continue, may need considerable marketing effort to gain acceptance as being useful and relevant to industry, although none of these projects were clearly seen as a waste of effort - rather as not as useful as other products. SA licensees ranked some of these latter products as of lower value than non SA licensees, possibly indicating a lack of knowledge on the part of industry who are not current participants in the Cooper Basin.

Prospective Basins (Question 24)

Respondents were asked about each South Australian basin. Firstly, if they thought it was prospective, (ie. they seriously consider applying for an exploration licence if vacant acreage were available), and secondly what they saw as the risk factors for economic discoveries.

Summary of industry views of prospectivity and awareness of basins (highest rank at top):

Prospectivity rank is based on the % of respondents who believe the basin is prospective
 Awareness/knowledge rank is based on the % of respondents who could make some judgement (either positive or negative) on the prospectivity

Prospectivity Rank	Awareness/Knowledge Rank
Cooper	Cooper
Bight-Dunroon	Otway
Otway	Western Eromanga
Western Eromanga	Murray
Officer	Bight - Dunroon
Stansbury	Officer
Arrowie	Stansbury
Murray	Arrowie

Summary of MESA views of prospectivity (highest rank at top):

(based on 5 Petroleum Division geologists’ views)

Prospectivity Rank
Cooper
Otway
Officer
Western Eromanga
Bight - Dunroon
=Arrowie, Stansbury
Murray

The views of industry on prospectivity generally compared well with MESA views, with the exception of the Bight - Duntroon, which industry rates higher than MESA.

COOPER BASIN		
	number	%
Prospectivity		
Not sure	5	19%
Not prospective	0	0%
Prospective	21	100%
Reasons		
lack of infrastructure or access	11	37%
land access	6	20%
Targets too small	3	10%
Immature source	2	7%
Poor timing of migration	2	7%
Poor source/reservoir communication	2	7%
Too remote from markets	2	7%
Poor reservoir	1	3%
"Quantification of what's left"	1	3%

Comments

Land access - "depends what happens with Lake Eyre Basin and world heritage"

"Cooper may be of interest if SANTOS not given special treatment"

"Depends on Government decisions re SANTOS"

"MESA needs to sort out position re 1999 as soon as possible - availability of retention licences,

"What happens if gas discovery re pipeline tolling, SANTOS facilities - economics could prove

"Not interested until SANTOS relinquishment defined and also use of infrastructure sorted out"

"Survey party interested in Cooper but can't see how they can compete with SANTOS. Afraid SANTOS will hold some of better acreage to be relinquished"

"Make sure SANTOS relinquishment enforced in full. Access to liquids pipelines"

"Lots of American companies in particular would like to become involved in the basin but not willing to go against favouritism to SANTOS. If relinquishment intentions are real, then a real goer for 1999"

"No favours to SANTOS. Could be interested in Cooper at later date but no technical staff available to look at it at this time - concentrating on WA offshore"

"Should do some work on Triassic. May be interested in Cooper"

"Industry will look questionably at the situation if SANTOS is able to hold or preserve with retention licences any acreage. Blocks must be small, say Otway size. Any perception of advantages to SANTOS will do a lot of harm to the state"

"Possible favouritism to SANTOS a worry"

"Interested in Cooper 1999" x 2

“Under another hat may be interested in Cooper but SANTOS and relinquishment/tolling etc must be sorted out first - as soon as possible to allow time to evaluate. As long as favouritism may be shown to SANTOS - not interested

Conclusions

As expected there is a high degree of awareness of the basin in SA, and all respondents viewed it as prospective. The major problems with the basin after 1999 are the access to infrastructure (pipelines, Moomba Plant, gathering system) and uncertainty over any “deals” re relinquishment by SANTOS. The access to infrastructure issue is of considerable concern to the industry, 37% of respondents quoted this as a problem for the Cooper Basin after 1999, in all other basins in SA the highest response was only 10%. These concerns were known to MESA, and negotiations are currently underway to reach a satisfactory outcome. From a geological point of view, the targets may be seen as too small to warrant significant interest. This is being addressed by MESA projects on new play types in the basin (eg Warburton Basin reservoirs).

OTWAY BASIN		
Prospectivity	number	%
Not sure	6	24%
Not prospective	3	16%
Prospective	16	84%
Reasons		
Poor seal/structural integrity	10	27%
Poor timing of migration	4	11%
Poor source/reservoir communication	4	11%
Targets too small	4	11%
data density	4	11%
land access	3	8%
Poor source quality	2	5%
lack of knowledge	2	5%
Immature source	1	3%
Poor reservoir	1	3%
Gas prone	1	3%
lack of infrastructure	1	3%

Comments

“Been there, done that”

“Land access problem national parks”

“Much of the seismic data is very old and well data very poor”

“Poorly prospective”

Conclusions

The basin appears to be well known (only 24% were “not sure” about prospectivity), and a large majority (84%) view the basin as prospective, a result that is confirmed by the recent high interest shown in the basin by industry. The major problem is seen as fault leakage, a view shared by MESA. There is limited scope for addressing this problem, although MESA is supporting a project looking at fault leakage in the Otway Basin with National Centre for Petroleum Geology and Geophysics. An earlier survey specifically on the Otway Basin has given some more detail on industry perceptions of this Basin (Austin, 1994 C).

WESTERN EROMANGA BASIN		
Prospectivity	number	%
Not sure	13	52%
Not prospective	7	58%
Prospective	5	42%
Reasons		
Immature source	11	18%
Too remote from markets	9	15%
Poor timing of migration	7	12%
lack of infrastructure	6	10%
land access	6	10%
Poor source quality	5	8%
lack of knowledge	4	7%
Poor seal/structural integrity	3	5%
Targets too small	3	5%
Data density	3	5%
Poor reservoir	1	2%
Poor source/reservoir communication	1	2%
Seismic resolution	1	2%

Comments

Lack of knowledge - “in particular, structuring”
“Seismic not fully resolving structures in terms of depth”
“Relies on long range migration”
“Poorly prospective”

Conclusions

Industry participants appear to be polarised in their view of the prospectivity of the Western Eromanga Basin, although there is a significant proportion (52%) of respondents who are “not sure”. Source appears to be the major problem, and this issue has been addressed with new source rock data acquired in the last year and publicity through Volume 2 of the Petroleum Geology of South Australia series.

Volume 2 also addresses possible ignorance of the potential of the basin among the industry reflected in the high proportion of “Not sure” responses. The responses from this survey and a follow up survey in the future will be used to evaluate the success of these initiatives. The problems of remoteness and lack of infrastructure are not so readily addressed; perhaps investigation and publicity on the minimum economic field sizes and identification of large prospects may help. In 1994, following the Inland oil discovery in Queensland, Mr Peter Austin (Austin, 1994 b) surveyed 11 industry representatives, from companies currently or recently active in the Queensland Eromanga Basin. The responses to that survey indicated that:

- several were extremely negative about the economic worth of discoveries in Queensland or South Australia due to the lack of access to open markets (prohibitive tariffs on pipelines) and small local markets.
- Several participants knew nothing or very little about the Eromanga Basin in South Australia, relative to Queensland.
- Some participants thought Santos held all the Eromanga Basin.
- Perception existed that Santos holds “the best” Eromanga Basin acreage.

Some of these issues were also raised in the current survey.

OFFICER BASIN		
Prospectivity	number	%
Not sure	17	68%
Not prospective	5	63%
Prospective	3	38%
Reasons		
Too remote from markets	9	15%
lack of knowledge	7	11%
data density	6	10%
lack of infrastructure	6	10%
land access	6	10%
Poor source quality	6	10%
Poor reservoir	6	10%
Poor timing of migration	5	8%
source maturity	3	5%
poor source/reservoir	2	3%
communication		
"HC Charge"	1	2%
"High risk"	1	2%
"Palaeontology updated"	1	2%
poor seal struct integrity	1	2%
gas prone	1	2%
targets too small	1	2%

Conclusions

There is a high proportion (68%) of respondents who could not make a definite decision as to the prospectivity of the Officer Basin, either through a lack of available geological knowledge or ignorance of information provided by MESA. Of the respondents who did make a judgement of the prospectivity, a slight majority (63%) saw the basin as unprospective, in contrast to many in MESA whose view is that the basin is the most prospective in South Australia after the Cooper/Eromanga and Otway. The major non-geological problems with the basin appear to be remoteness, lack of infrastructure and land access. In common with the other Cambrian basins, a lack of knowledge among industry of the potential and perceived source rock problems are also important issues. A study to determine the minimum economic field size in the Officer Basin and another to further refine source potential are currently underway. The poor source perception may be also based on ignorance, as there are clear indications that oil has been sourced in the basin (eg. oil in core from Byilkaora 1). MESA's marketing strategy may need a change from that used previously (papers and displays at APPEA conferences, workshops, papers in academic journals, MESA data packages) to less specialised publications and presentations that do not presume prior knowledge of the basin. Volume 3 of the Petroleum Geology of South Australia series to be released in 1997, and more personal technical presentations to industry are examples of the approach that could be taken.

ARROWIE BASIN		
Prospectivity	number	%
Not sure	21	84%
Not prospective	3	75%
Prospective	1	25%
Reasons		
Poor source quality	5	25%
lack of knowledge	4	20%
Too remote from markets	3	15%
Immature source	2	10%
Poor reservoir	2	10%
Poor seal/structural integrity	1	5%
Poor timing of migration	1	5%
data density	1	5%
lack of infrastructure	1	5%

Conclusions

Perceptions by industry appear to echo those for the other Cambrian basins; lack of knowledge, poor source and remoteness, and may need to be addressed as noted under the Officer Basin. These perceptions are not shared by all the industry however, as the basin is currently held almost entirely under exploration licence. It may be that industry perceives the Arrowie Basin as mainly composed of outcrops in the Flinders Ranges, and is unaware of the subsurface extent of the basin.

STANSBURY BASIN		
Prospectivity	number	%
Not sure	18	72%
Not prospective	5	71%
Prospective	2	29%
Reasons		
Poor source quality	4	22%
Poor reservoir	4	22%
lack of knowledge	3	17%
data density	3	17%
Too remote from markets	1	6%
"Too old"	1	6%
"offshore"	1	6%
"lack of basin"	1	6%

Comments

“Not interested in offshore SA - high risk”

“Moderately prospective”

Conclusions

Perceptions by industry appear to similar to those for the other Cambrian basins., although remoteness is not a problem (in spite of one respondent noting that “too remote from markets” was a problem), as the basin is within a few kilometres of Adelaide and the Port Stanvac refinery. Source is again seen as a major problem, and will be addressed in the general Cambrian Basins source rock studies currently underway. Reservoir is also seen as a major problem in this basin, even though porous dolomites up to 300m thick have been proved by drilling in the late 1960’s. As with the Arrowie Basin, these perceptions are not universal among industry, with active exploration occuring at present in the basin.

MURRAY BASIN		
	number	%
Prospectivity		
Not sure	14	56%
Not prospective	10	91%
Prospective	1	9%
Reasons		
Immature source	10	29%
Poor source quality	7	21%
data density	5	15%
lack of knowledge	3	9%
Poor seal/structural integrity	2	6%
lack of infrastructure	2	6%
Poor timing of migration	1	3%
Targets too small	1	3%
land access	1	3%
"Unknown fill of infrabasins"	1	3%
Poor reservoir	1	3%

Conclusions

The industry view of this basin is similar to MESA's; that the basin is of low prospectivity with source a major problem. Given the low prospectivity, the high proportion of "not sure" responses is not a problem that needs addressing at this time. Nevertheless, one licence covers all of the Devonian and Mesozoic beneath the Murray Basin.

BIGHT/DUNTROON BASIN		
Prospectivity	number	%
Not sure	15	63%
Not prospective	1	11%
Prospective	8	89%
Reasons		
Poor source quality	4	14%
data density	3	11%
Too remote from markets	3	11%
Water Depth	3	11%
Poor reservoir	2	7%
lack of knowledge	2	7%
lack of infrastructure	2	7%
"Offshore - high risk"	2	7%
Immature source	2	7%
Poor seal/structural integrity	1	4%
Poor timing of migration	1	4%
Poor source/reservoir	1	4%
communication		
Gas prone	1	4%
Targets too small	1	4%

Comments

“Not interested in offshore SA - high risk”

Conclusions

Industry has a surprisingly positive view of the prospectivity of this basin, and ranked this higher than most in MESA. There is also a high proportion of “not sure” responses that may indicate a lack of knowledge. Source, remoteness, water depth and low data density are seen as the major problems with the basin.

SUMMARY OF GENERAL COMMENTS

“Overall MESA doing a good job, these days people can be obsessed with satisfying minority groups and miss main objective of promoting hydrocarbon exploration. Prefer MESA not to change too much”

“MESA are doing a very good job and are one of best such bodies in Australia”

“In general MESA doing a pretty good job. Digital database important MESA doing the right things.”

“Clear that MESA working hard to encourage exploration etc. To be complimented on current survey initiative. PEPS excellent lead - digital data basis excellent way to go. Digital data very, very important. Compatibility required with other states organisations. If working with digital data should be easy dial up service; order through computer. Coordinate with federal bodies, so that can dial one number and access all data relevant to petroleum industry.”

“Surveyed party very pleased to be shown MESA reports etc first hand and that survey was conducted

“MESA appear to be [????] and willing to help but preconceived notions of what is reasonable and tend to make decisions which are contrary to what industry expects. Sometimes work from one model or concept or idea when perhaps there might be several alternatives. Should put alternatives up front and check reactions [rather] than adopting a model which may be their own but which may not be the most ideal model. MESA wants to help but sometimes may become over zealous. Need to have checks and balances to justify expenditures on certain projects against risk payoff”

“In short experience with SA government very good at looking after clients needs. Have been flexible with work programs which is excellent. Very helpful with provision of requested data. Not a lot of exposure was only new to current position”

“Impressed with the way SA has handled multiple land use”

“MESA by far the most competent (technically) Mines Department in Australia (petroleum wise at least), - MESA doing all the right things.”

“Perception very professional, user friendly, make sure that taxpayer gets what they need”

“Have consulted for client on SA opportunities, accessed PEPS, first class”

“Experience with MESA personnel are where surveyed. Very pleased with survey - integrate well

“More work to consultants in areas of specific expertise and basin knowledge. Continued emphasis on facilitating exploration, particularly in early stages of data gathering and tenement application and access.

Conclusions

The comments on MESA reinforced the conclusions from other parts of the survey; that MESA is technically competent and has a good service culture. Contrary to MESA perceptions, the survey interview was seen not as an imposition on industry personnel time, but as a useful form of contact with the department. The interviewer also gathered many requests for MESA data, brochures etc as followup. This suggests that future surveys could be conducted at least annually, without the risk of

alienating industry, that surveys could at least give the respondent the option of giving their name and company, to facilitate followup. As a marketing and communication strategy, regular personal meetings with target industry personnel, in their offices, would be likely to be well received and successful.

COMPARISON WITH 1994 SURVEY RESULTS

Most of the questions asked in this survey were not directly comparable with those asked in the 1994 industry survey conducted by Peter Austin (Austin, 1994 a). Those that could be compared are as follows:

MESA's overall performance, Question 4

Average scores, (1 = excellent performance, 5=average performance, 10=very poor performance)

1994	1996
3.1	3.0

Conclusion:

No significant change

Performance of similar state and commonwealth agencies, Question 5

Average scores, score of 1 = much better performance, 5=same performance, 10=much worse performance

“Commonwealth” score for the 1996 survey was averaged from DPIE, BRS, AGSO scores

	1994	1996	Improvement/[Deterioration]
Commonwealth	6.6	6.2	+0.6
Tasmania	7.5	7.1	+0.4
Victoria	6.6	7.0	[-0.4]
New South Wales	7.2	6.6	+0.6
Queensland	5.5	6.0	[-0.5]
Northern Territory	5.6	6.6	[-1.0]
Western Australia	4.7	5.9	[-1.2]

Conclusion:

New South Wales and the Commonwealth have shown significant improvement, but Western Australia, Northern Territory and Queensland have shown a significant deterioration

Roles of MESA, Questions 6 and 7

The 1994 survey scored responses on a 1 (essential) to 10 (not appropriate) scale; the 1996 survey asked for yes/no answers. The 1994 results have been converted to % responding yes as the % scoring 5 or less. Some of the categories in the 1994 survey had to be combined to make them comparable with the 1996 categories.

	1994	1996
Archiving data	100%	100%
New data in areas outside licensed areas	79%	93%
Regional interpretations	64%	93%

Conclusion:

There is still no change in industry views on the archiving data role, which is seen as essential. Given the differences in the questions between the 1994 and 1996 surveys, it is difficult draw any conclusions.

Awareness of MESA products, Question 21

	Awareness	
	1994	1996
PEPS-SA	75%	73%
Holders of Petroleum Tenements Quarterly	82%	62%
Exploration Opportunities	89%	42%
Petroleum Exploration and Development in SA	86%	50%
Codes of Environmental Practice	61%	46%
MESA Journal (previously MIQ)	71%	35%

Conclusion:

With the exception of PEPS-SA, nearly all other products showed a decrease in awareness. The reasons for this are not clear, but may be related to knowledge of the respondent rather than the respondent's company.

REFERENCES

- Austin, P.M. 1994 a. MESA Petroleum Industry Survey, 1994. Report prepared for MESA.
- Austin, P.M. 1994 b. The Eromanga Basin in South Australia: Industry Interest and Future Action. Report prepared for MESA.
- Austin, P.M., 1994 c. The Otway Basin in South Australia: Industry and MESA Perceptions.

APPENDIX 1 INTERVIEW QUESTIONNAIRE

MESA INDUSTRY SURVEY 1996

DATE: _____ PARTICIPANT NUMBER

(1) Which of the Code Numbers best describes your present responsibilities?
(Attachment 1)

(2) Is your Company currently participating in South Australian petroleum activities?
Y/N

If YES, in what capacity? **Operator/Nonop**
If NO, has your company previously participated? **Y/N/Not sure**

(3) What is your Company's approximate annual expenditure on petroleum exploration in Australia?
\$ _____

(4) How would you subjectively rate MESA's overall performance relating to the petroleum industry?

1 2 3 4 5 6 7 8 9 10
Excellent Average Very poor

(5) How would you rate the same overall role performance of similar State & Commonwealth organisations with whom you have experience (no score if no experience)

1 2 3 4 5 6 7 8 9 10
Much Better Same Much Worse

- AGSO
- BRS
- DPIE
- Tasmania
- Victoria
- NSW
- Queensland
- NT
- WA

(6) In general, how do you rate the approach of MESA in promoting, facilitating and attracting petroleum exploration?

1 2 3 4 5 6 7 8 9 10
Excellent Average Very poor

In particular do you approve of the following services to industry being carried out by **MESA Petroleum Division**?:

If you respond No to any of these, please indicate who you think should carry out that service. (Eg operator, service company, consultant or other government department) (no response if Don't know)

(a) Archiving all industry exploration and production data (including samples) **Y/N**

Alternative _____

(b) Consolidating basic data into user friendly and accessible digital databases **Y/N**
(Including verifying and digitising well logs)

Alternative _____

(c) Evaluating exploration and production economics in areas outside existing licences **Y/N**

Alternative _____

(d) Acquiring new data in SA basins that currently attract little or no industry exploration interest (eg Seismic, Aeromag, Source rock analyses) **Y/N**

Alternative _____

(e) Compiling regional interpretations (eg. seismic, stratigraphy, source rock, geological summaries) from industry and MESA derived data **Y/N**

Alternative _____

(f) Independently estimating reserves for discovered fields **Y/N**

Alternative _____

(7) In general, how do you rate the approach of MESA in regulating petroleum exploration and development activities?

1 2 3 4 5 6 7 8 9 10
Excellent Average Very poor

In particular do you approve of the following regulatory functions being carried out by **MESA Petroleum Division**?:

If you respond No to any of these, please indicate who do you think should carry out that function. (Eg other government department) (no response if Don't know)

(a) Regulating environmental aspects of exploration and development activities **Y/N**

Alternative _____

(b) Regulating workplace safety aspects of exploration and development activities **Y/N**
(Currently carried out by the Department of Industrial Affairs)

Alternative _____

(c) Regulating public safety aspects of exploration and development activities **Y/N**

Alternative _____

(d) Regulating resource management aspects of exploration and development activities **Y/N**

Alternative _____

(e) Facilitating public consultation and dialogue on regulation **Y/N**

Alternative _____

(f) Facilitating consultation with aboriginal groups for site clearances **Y/N**

Alternative _____

(8) Do you feel that a regulatory regime which focuses on the achievement of measurable objectives by the industry (and less on approving individual operations ,or policing processes and procedures of the industry) will deliver better or worse outcomes for both industry and the community at large? *For more information on objective regulation see attachment 2*

1 2 3 4 5 6 7 8 9 10
Much Better Same Much Worse

For the industry
For the community

(9) Do you feel that industry needs to be more proactive in addressing environmental and safety issues rather than reactive to addressing issues as problems arise? **Y/N/Not sure**

If your answer is YES, do you think that it is an appropriate role for government to facilitate a more proactive stance by industry in addressing environmental and safety issues? **Y/N/Not sure**

(10) Do you feel that the community at large should have an involvement in the regulatory process to ensure that regulatory objectives are consistent with society’s expectations rather than representation by government alone? **Y/N/Not sure**

(11) How do you feel that the responsibility for achieving regulatory objectives be shared between government and industry?

1 2 3 4 5 6 7 8 9 10
Industry Equally shared Government
Responsibility Responsibility Responsibility

(12) Do you believe that MESA should continue to be the lead SA government agency for all petroleum exploration and development matters? (ie the only industry contact required for all relevant environmental and health and safety issues) **Y/N/Not sure**

(13) Overall how would you compare the performance of the regulatory and promotional functions of similar State & Commonwealth organisations with whom you have experience (no score if no experience)

1 2 3 4 5 6 7 8 9 10
 Much Better Same Much Worse

	<i>Regulation</i>	<i>Promotion</i>
AGSO	N/A	
BRS	N/A	

Commonwealth Department of Primary Industries and Energy

Tasmania
 Victoria
 NSW
 Queensland
 NT
 WA

(14) Overall how would you compare the success or otherwise of the various State government approaches to the Commonwealth Native Title Legislation compared to the approach taken in South Australia

1 2 3 4 5 6 7 8 9 10
 Much Better Same Much Worse

Victoria
 NSW
 Queensland
 NT
 WA

(15) How do you rate the service quality provided by MESA’s Petroleum Division for access to SA petroleum data and advice :

1 2 3 4 5 6 7 8 9 10
 Excellent Average Very poor

(16) How do you rate the data quality provided by MESA’s Petroleum Division for SA:

1 2 3 4 5 6 7 8 9 10
 Excellent Average Very poor

(17) If you have previously applied for an exploration licence in South Australia, how much would you say that your application relied on data and advice supplied by MESA?

Substantial/supporting/not at all/not sure/not previously applied for licence

(18) How do you rate the efficiency and effectiveness of MESA for processing licence applications and approving operations

1 2 3 4 5 6 7 8 9 10
 Excellent Average Very poor

(19) Overall how would you compare the service and data quality of similar State & Commonwealth organisations with whom you have experience (no score if no experience)

1 2 3 4 5 6 7 8 9 10
 Much Better Same Much Worse

Service

Data

- AGSO
- BRS
- DPIE
- Tasmania
- Victoria
- NSW
- Queensland
- NT
- WA

(20) Overall how would you compare the effectiveness and efficiency of licensing and approval procedures and security of title of SA to other State organisations with whom you have experience (no score if no experience)

1 2 3 4 5 6 7 8 9 10
 Much Better Same Much Worse

Licensing

Approvals

- Tasmania
- Victoria
- NSW
- Queensland
- NT
- WA

(21) MESA has a range of products available for use by the petroleum industry. Please look at the following selection, and say whether or not you were previously aware of the product and whether you have a copy in your company or would consider acquiring a copy, and if you consider it useful to you

<i>Product</i>	<i>Cost</i>	<i>Aware? Y or N</i>	<i>Have Consider</i>	<i>Useful Not useful</i>
Holdings of Petroleum Tenements Quarterly	Free			
MESA Journal (previously MIQ)	Free			
Petroleum Services Directory	Free			
PEPS-SA	\$500-\$4000			
Petroleum Exploration and Development in SA	Free			
Codes of Environmental Practice	Free			
Seismic Shot point database	\$500-\$2000			
Digital well logs	\$100-\$1000 each			
Pet. Geol. of SA Vol 1 Otway Basin	\$175			
Regional Otway Basin Seismic datasets	\$200-\$5000			
Regional Eromanga/Cooper C and Z Horizon datasets	\$250-\$4000			
Officer Basin data package (3 reports)	\$300			
Otway Basin 1995 Exploration Opportunities	Free			
Eringa Trough 1996 Exploration Opportunities	Free			
Geol. Of SA Vol 2 The Phanerozoic	\$75			
STRZELECKI 1:250 000 Map and notes	\$20			
Cooper Basin Gas Field Development Study - Results	Free			
Petroleum Act Issues Paper	Free			
Adelaide Plains Gas Storage CD-ROM Data package	\$100			

(22) MESA is undertaking the following projects over the next few years. How useful do you think these are TO YOUR COMPANY?

1 2 3 4 5 6 7 8 9 10
 Extremely Reasonably Waste
 Useful Worthwhile of effort

Project	When available	Usefulness
Review of Petroleum Act and Regulations	1996	
Pet Geol of SA Vol 2 Western Eromanga Basin	1996	
Pet Geol of SA Vol 3 Officer Basin	1997	
Source Rock, biostratigraphy and reservoir studies of Cambrian Basins	1997	
Update of regional seismic datasets, Otway Basin	1997	
Review of reserves of all fields in SA	1997	

(23) In February 1999, PELs 5 & 6 (Cooper Basin) will expire, and it is government policy that after that time previous exploration acreage will be opened for competitive exploration work program bids. If you were to bid for these areas, what information would you like to access to prior to 1999 to fully evaluate exploration opportunities in the Cooper Basin?

1 2 3 4 5 6 7 8 9 10
 Extremely Reasonably Waste
 Useful Worthwhile of effort

Product	When available	Usefulness
Top Cadna-owie (C) regional depth seismic horizon	Now	
Top Permian (P) regional depth seismic horizon	Now	
Top Daralingie regional depth seismic horizon	1997	
Top Patchawarra (V) regional depth seismic horizon	1997	
Top Basement (Z) regional depth seismic horizon	1996	
Prospect scale seismic interpretations	1999	
Regional seismic cross sections	1997	
Database of MESA interpreted Formation tops	1998	
Burial history of Cooper/Eromanga/Lake Eyre Basin	Now	
Cooper Basin Source rock/biomaker study	1996	
MESA interpreted reserves for all Cooper and Eromanga oil and gas fields	1997	
Diagenesis of Merrimelia Formation	1998	
Cost of production, processing and transportation from Cooper oil and gas fields assuming no access to existing infrastructure	1996	
Pet Geol of SA Vol 4 Cooper Basin	1998	
Digital well logs	Now	
Production data from all fields	Now	
Digital seismic sections - workstation compatible	T.B.A.	
Digital seismic sections - raw/processed tapes	Now	
Seismic Shot point location maps (digital or hard copy)	Now	
Regional reservoir characteristic maps	1998	
Regional source and maturity maps	1998	
Warburton Basin Study	1998	
Cooper Basin Lineament analysis	1996	
Estimates of undiscovered reserves	1996	
Hardcopy data (well completion reports, seismic sections, well logs)	Now	

Other (please specify) _____

(24) Does your company consider the following South Australian basins to be prospective? (ie. would you seriously consider applying for an exploration licence if vacant acreage were available)

(a) **Otway Basin** (onshore part only)

Y/N/Not Sure

If No, what would you say is the MAIN reason that you do not consider it worthwhile for your company to apply for vacant acreage, or if yes, what do you consider to be the greatest risk factor for economic discoveries?

Poor source quality
Immature source
Poor reservoir
Poor seal / structural integrity
Poor timing of migration and structuring
Poor communication of source and reservoir
Gas prone
Targets too small
Data density (lack of previous drilling or seismic)
Lack of knowledge of basin in SA
Lack of, or access to infrastructure
Too remote from markets
Land access problems (eg Aboriginal lands, Native Title, National Parks)

Other specify _____

(b) **Western Eromanga**, including Pedirka, Simpson, Eringa, and Arckaringa Basins

Y/N/Not Sure

If No, what would you say is the MAIN reason that you do not consider it worthwhile for your company to apply for vacant acreage, or if yes, what do you consider to be the greatest risk factor for economic discoveries?

Poor source quality
Immature source
Poor reservoir
Poor seal / structural integrity
Poor timing of migration and structuring
Poor communication of source and reservoir
Gas prone
Targets too small
Data density (lack of previous drilling or seismic)
Lack of knowledge of basin in SA
Lack of, or access to infrastructure
Too remote from markets
Land access problems (eg Aboriginal lands, Native Title, National Parks)

Other specify _____

(c) *Officer Basin*

Y/N/Not Sure

If No, what would you say is the MAIN reason that you do not consider it worthwhile for your company to apply for vacant acreage, or if yes, what do you consider to be the greatest risk factor for economic discoveries?

- Poor source quality
- Immature source
- Poor reservoir
- Poor seal / structural integrity
- Poor timing of migration and structuring
- Poor communication of source and reservoir
- Gas prone
- Targets too small
- Data density (lack of previous drilling or seismic)
- Lack of knowledge of basin in SA
- Lack of, or access to infrastructure
- Too remote from markets
- Land access problems (eg Aboriginal lands, Native Title, National Parks)

Other specify _____

(d) *Arrowie Basin*

Y/N/Not Sure

If No, what would you say is the MAIN reason that you do not consider it worthwhile for your company to apply for vacant acreage, or if yes, what do you consider to be the greatest risk factor for economic discoveries?

- Poor source quality
- Immature source
- Poor reservoir
- Poor seal / structural integrity
- Poor timing of migration and structuring
- Poor communication of source and reservoir
- Gas prone
- Targets too small
- Data density (lack of previous drilling or seismic)
- Lack of knowledge of basin in SA
- Lack of, or access to infrastructure
- Too remote from markets
- Land access problems (eg Aboriginal lands, Native Title, National Parks)

Other specify _____

e) *Stansbury Basin* (offshore- state legislation)

Y/N/Not Sure

If No, what would you say is the MAIN reason that you do not consider it worthwhile for your company to apply for vacant acreage, or if yes, what do you consider to be the greatest risk factor for economic discoveries?

Poor source quality
Immature source
Poor reservoir
Poor seal / structural integrity
Poor timing of migration and structuring
Poor communication of source and reservoir
Gas prone
Targets too small
Data density (lack of previous drilling or seismic)
Lack of knowledge of basin in SA
Lack of, or access to infrastructure
Too remote from markets

Other specify _____

(f) *Murray Basin*, including Permian Nadda Basin and Devonian Darling Basin **Y/N/Not Sure**

If No, what would you say is the MAIN reason that you do not consider it worthwhile for your company to apply for vacant acreage, or if yes, what do you consider to be the greatest risk factor for economic discoveries?

Poor source quality
Immature source
Poor reservoir
Poor seal / structural integrity
Poor timing of migration and structuring
Poor communication of source and reservoir
Gas prone
Targets too small
Data density (lack of previous drilling or seismic)
Lack of knowledge of basin in SA
Lack of, or access to infrastructure
Too remote from markets
Land access problems (eg Aboriginal lands, Native Title, National Parks)

Other specify _____

(g) ***Bight-Duntroon Basins*** (Offshore - Federal legislation)

Y/N/Not Sure

If No, what would you say is the MAIN reason that you do not consider it worthwhile for your company to apply for vacant acreage, or if yes, what do you consider to be the greatest risk factor for economic discoveries?

Poor source quality
Immature source
Poor reservoir
Poor seal / structural integrity
Poor timing of migration and structuring
Poor communication of source and reservoir
Gas prone
Targets too small
Data density (lack of previous drilling or seismic)
Lack of knowledge of basin in SA
Lack of, or access to infrastructure
Too remote from markets
Water depth

Other specify _____

(h) ***Cooper Basin*** (after PELs 5 and 6 expire in 1999)

Y/N/Not Sure

If No, what would you say is the MAIN reason that you would not consider it worthwhile for your company to apply for vacant acreage, or if yes, what would you consider to be the greatest risk factor for economic discoveries?

Poor source quality
Immature source
Poor reservoir
Poor seal / structural integrity
Poor timing of migration and structuring
Poor communication of source and reservoir
Gas prone
Targets too small
Data density (lack of previous drilling or seismic)
Lack of knowledge of basin in SA
Lack of, or access to infrastructure
Too remote from markets
Land access problems (eg Aboriginal lands, Native Title, National Parks)

Other specify _____

(25) Do you have any other comments to make?

ATTACHMENT 1:

JOB CODES

<i>Responsibilities</i>	<i>Code Number</i>
Senior Management (a reporting point for Middle Management or above: <i>at executive decision level</i>)	1
Middle Management (eg Regional Manager; Engineering & Production; <i>a technical management reporting point; but non-executive</i>)	2
Technical Management (eg Exploration Manager; Engineering Manager; <i>the first multidiscipline reporting level</i>)	3
Senior Technical (eg Chief Geophysicist; Chief Petroleum Engineer; <i>a discipline leader, reporting to Technical Management</i>)	4
Technical (eg Senior Geologist; Geophysicist; <i>reporting to a discipline leader</i>)	5
<hr/>	
Consultant	6
<hr/>	