

# TENTATIVE FINDINGS SUBMISSION

## EXPLORATION, EXTRACTION AND MILLING

**Paragraph 18 c.** Many submissions referred to the massive regulatory hurdles placed in the way of exploration and mining activities. These are summarized in the paragraph.

*(See SA Chamber Of Mines And Energy submission. Section 1.9.)* Currently, mining companies face huge obstacles in attempting to negotiate with leaseholders and traditional owners, sometimes finding that the negotiations involve entities who are not even stakeholders in the process.

*(See TORO Energy submission. 1.5. ii-ix Also Appendix 2.)* The final paragraph on page 38 suggests not only lack of regulatory function, but sometimes a process of subtle intimidation.

The 'one stop shop' concept seems to be needed. The need for a single regulator using a cohesive legal framework with which all stakeholders can liaise in order to resolve regulatory matters and approvals. This organization would facilitate claims and disputes with the object of avoiding bureaucratic intransigence. Possible provision could be made for stakeholder agreements independent of regulator involvement provided legislation has not been disregarded.

Separate Federal and State regulations are unworkable in this environment.

**Paragraph 21.** The Commission points to the relatively low contribution that uranium mining makes to the SA economy. Nevertheless, it does contribute, and more to the point, the contribution to reduction in world greenhouse gases due to the product of this mining is highly significant. If it is not mined in SA it will be mined elsewhere in the world. (We only have a large part of the world's **known** usable deposits. There are likely to be many other deposits worldwide which are being kept under wraps.)

Additionally, if generation 4 reactors become a reality, uranium could become a low value commodity. Therefore, it should be exploited while it still has value.

## ELECTRICITY GENERATION

The Commission's finding about the economic viability of nuclear power in Australia over the next 20 years may have inadvertently undersold the nuclear power argument among some observers.

1. From Australia's present position it will take at least 20 years to get power from a nuclear generator. This will be dictated by the need for massive regulatory framework changes, large skills base training programmes, major engineering preparations and (historically), a slow build time for a first of type power plant. Subsequent reactors could follow much more quickly with the correct processes in place.

2. The argument is not whether SA should have nuclear power but whether the National Electricity Market (NEM) should have nuclear power. Whether the power originates in SA and is transferred east or the other way round is irrelevant. The future NEM with its associated power distribution system is the issue under consideration for economic low emissions power.
3. Reactors are expensive to build partly because they are not being built. If worldwide reactor build increased significantly, the cost and construction times of reactors would fall dramatically, as has been the case with intermittent technologies. This would reflect in greatly reduced reactor costs as Australia moves into a build phase.
4. **Paragraph 45** refers to using a 'proven design'. See *ANSTO (4d) submission* on the dangers of first of a kind technologies. The type of reactor technology suitable for Australia needs careful analysis and time is currently available to do this. However, given the time frame involved, technologies which are untried at present may be in service by the time Australia is ready to tender. A number of manufacturers and proponents of innovative solutions took the opportunity to parade their wares at the Commission. Analysis needs to span all proposals
5. If the gods of promise for intermittents mega scale storage systems and fossil fuel sequestration techniques don't find solutions within this time frame, nuclear will remain the only source of low emissions dispatchable electricity where there is no large hydro power available.
6. **Paragraph 9** makes the point that if specific emissions targets were set by International regulators in the future, Australia could face economic penalties for non compliance. Progress in nuclear power introduction could help alleviate this situation.
7. The process of laying the groundwork for nuclear power would become a 'Virtual Reactor.' Such a radical departure from long held attitudes in this country could send a strong signal to the world and encourage expansion of nuclear power on a scale that would make an impact on global warming. This consequence should not be underestimated. Furthermore, Australia would no longer be in the curious position of being a supplier of uranium but a denier of the nuclear industry.  
This process would have to be a Federal undertaking.

## **MANAGEMENT STORAGE AND DISPOSAL OF WASTE**

The Commission has presented a golden goose under this heading. This Royal Commission is not about 'last one out turns out the lights', although that is a Royal Commission the State probably needs to have. However, in offering such a carrot to the State, the Commission, in its final recommendations, might be

wise to raise the prospect of Generation 4 reactors. Although only concept reactors at the moment, (although GE-Hitachi has a unit ready to undergo certification. *See GE-Hitachi submission sections dealing with Gen 4 reactors*) these reactors can be fuelled with spent nuclear fuel currently treated as waste. If Generation 4 reactors become functioning technology, they have the potential to radically reduce the need to store spent fuel in the coming decades. Of course, any waste already stored at the repository could be sold as fuel, but countries may decide to retain their used fuel if Gen 4 reactors look like becoming viable.

The economics of a nuclear waste repository would have to be assessed on this basis. Planning may involve a repository that expands in stages.

Extreme clarity and transparency is needed regarding the economics of the repository. The anti-nuclear element will be attacking the validity of these economics fiercely, because the financial gains available to the State from this project places them on the back foot. They will have to put up 'false economics' arguments along with the fear factor if they are to retain control of public opinion.

The Commission has confirmed, through submissions, that SA is one of the best locations in the world for a nuclear repository. Alongside uranium mining, it is the best contribution SA (and Australia) can make to the nuclear power cycle. SA has a natural advantage in both of these activities. Each is a major contributor to the nuclear fuel cycle and therefore to emission reductions. Large emissions reductions in Australian electricity generation will not cause significant reductions in global emissions because our contribution to greenhouse gases is only about 1%. Mining and used fuel storage, as part of the nuclear power cycle, will make significant contributions to emissions control when viewed globally.

It may be possible to persuade International environmental agencies that these activities could generate credits to offset against fossil fuel emissions. This could add considerable value to the economics of the operations in that it may not be necessary to invest in expensive but marginally effective (on a global scale) lower emissions technologies in the near term. Time is then available to prepare for an optimum low emissions grid, whether it is powered by improved nuclear economics or partly by intermittents (if quantum advances are made in storage technologies.)

## **SOCIAL AND COMMUNITY CONSENT**

This is the big one. The Commission has pointed out that without these consents, most contentious projects fail. Why is nuclear so ultra contentious and how can this be overcome?

### **Anti-nuclear propaganda**

There has been a stream of anti-nuclear sentiment projected through media outlets for decades. Claims made by anti-nuclear proponents are seldom questioned, and alternative arguments are rarely provided. This has left a lasting background impression in many people's minds that the anti nuclear position has

some merit. The main anti-nuclear theme is radiation danger, a strong play on basic fear of the unknown and unseen. This is a fear that reaches deep into the minds of many people, especially when they know little about the nuclear cycle.

The efforts of the anti-nuclear movement have been extremely successful in this regard.

The role of the radical green movement and its politics

The 'high church' of radical environmentalism is the anti nuclear manifesto. Any weakening of that stance would essentially lead to the collapse of the entire movement. Green political parties must remain strongly anti nuclear for fear of losing supporter base. Clearly, the radical green movement must stage a ferocious anti-nuclear fight if it is to survive.

With these two elephants in the room, the legacy of anti-nuclear propaganda and the theological fight for survival of the radical green movement, the task of public education on the nuclear industry has to commence.

1. The days of allowing anti-nuclear comment to appear in media outlets with no rebuttal must come to a rapid end. A good start has been made off the back of the Commission's tentative findings, with media coverage actually presenting both sides of the story. This momentum must continue and increase. I contacted a member of the Advertiser editorial staff with the idea that any view for or against can be put, provided that an opportunity to express the alternative position is offered on the same page. In this format, any anti-nuclear view is acceptable, because its merits or otherwise will be immediately questioned by professionals in the area. Over time, readers may come to see that there is more to the nuclear picture that has been painted by the anti-nuclear movement.
2. Some people feel that it is impossible to re-inform public opinion after such a long period of exposure to anti-nuclear rhetoric. However, an attempt must be made given the importance of the situation. Other countries have apparently succeeded in changing public perception of the nuclear industry, but I understand that money may have been involved in achieving this in some circumstances. Money appears to be playing a role in changed perceptions in this State at the moment, but something stronger than financial gain is needed. If public understanding of the nature of nuclear was stronger, a nuclear incident, invariably wildly over-played by the anti-nuclear lobby, would not sway public opinion back towards anti-nuclear. People would be more inclined to treat a nuclear event like any other industrial incident, seeking investigation and correction, not shutdown of the whole industry.
3. *See the submission by Malcolm Wedd 'expertise in outrage management'*. These techniques could be very valuable.

4. See *Uranium Council submission DVD. Attachment B page 13*) used in indigenous communities to explain uranium mining. If this type of presentation is kept simple and accurate, it could be useful throughout the whole community, possibly made available through well publicised websites.
5. Education through schools is a long term project. Anti-nuclear elements within the Teacher's Federation may present obstacles.
6. A travelling exhibition which uses models, video and interactive techniques could be useful in communities which have the potential to become involved in aspects of the nuclear industry.
7. I am planning to Email the more extreme exponents of the anti-nuclear establishment, politely but firmly questioning their more bizarre views. (eg *Nuclear will destroy the 'purity' of SA's agricultural industries*. Please explain France?) If enough people challenge their attitudes they may come to realize that the anti-nuclear chorus will now be met with a critical response.
8. The most significant point that must be presented in any pro-nuclear message is that the electricity storage systems needed to make intermittents viable do not currently exist as a scientific theory, let alone a technology. Some simple hard facts need to be given explaining the Gigawatt hours of storage needed versus the Megawatt hours available from current systems. The prosaic claims of intermittent supporters which have seeped into public perception, can then be bluntly shown to belong to the 'tell 'em their dreamin' school of thought. Arguments that huge resources should be given to research for intermittent storage technologies do not stack up when nuclear is already available, and science is saying that global warming should have been dealt with yesterday, not at some point in the future.

#### **OTHER COMMENTS.**

1. **Paragraph 4.** Slow action now means greater action is needed in the future.  
The momentum generated by this Royal Commission cannot be lost. The UMPTEP report is now ten years old. This report appears to have covered essentially the same ground, but it was mothballed.
2. South Australia has to press ahead as best it can with these proposals, but many of the matters raised at the Commission can only be dealt with at Federal level. There is little point in taking State initiatives only to have them stymied by Federal regulations. State and Federal ministries need to be established to deal exclusively with the nuclear industry.
3. Aboriginal communities have expressed almost unanimous opposition to nuclear waste repositories on land over which they have legal rights. They feel that they are being sidelined in the discussion, and the Commission's attempts to seek their views have not persuaded them otherwise. Many hark back to

Maralinga and the traumas of that period. Aboriginals were not the only ones caught up in the loose standards of the time of course. I had a colleague whose father, an RAAF pilot, was instructed to fly his Canberra bomber through the mushroom cloud at the Montebello Island tests.

Agreements have been previously reached between individual Indigenous communities and uranium mining companies. Perhaps this process will be possible in the case of a repository. The key will lie in direct and honest dealings with the aboriginal community, no necessarily with individuals or organizations who claim to speak for them.

If this process fails, site selection will have to focus on places which are not heritage listed.

4. **Paragraph 61.** Apparently, there has been no total system cost analysis of the future NEM. This seems to be the situation worldwide. <http://www.world-nuclear-news.org/EE-EDF-calls-for-urgent-EU-electricity-market-reform-2402164.html> This analysis is necessary to determine the viability of any low emissions technology in the Australian electricity market.

5. A starting point for this analysis could be the *submission by Associate Professor Mark Diesendorf*. This proposal claims that nuclear power is not needed and that a combination of wind and solar can easily meet Australia's electrical energy requirements in most States of Australia, including considerations of economics and dispatchability. If the EMD concept is correct there would be no point in Australia pursuing other options. However, a scheme of this magnitude would obviously require intensive professional analysis to determine its viability. The consequences of failure due to optimistic assumptions built into the model are obvious.

Should the model be found to be flawed, and public perception sees this to be so, a strong base line is laid to proceed with nuclear power.

Hybrid Fossil fuel/solar thermal storage has been proposed in a *submission by the Centre For Energy Technology, Schools Of Mechanical And Chemical Engineering, University Of Adelaide*.

The cost and emissions profile of these systems is greater than pure solar thermal because of the fossil fuel component needed to achieve dispatchability. Their relative **long term** merits in terms of economics/emissions measured against competing technologies would have to be quantified.

6. The economic analysis of a low emissions national grid system is clearly an enormously complex task and not a subject for light bedtime reading. There are many models attempting to quantify the cost of fossil fuels in a low emissions framework. A similar model attempting to quantify the cost of variable dispatchability from intermittent power sources would be useful for cost comparisons.

(Submitted by Robert Hinds.)