28th Feb 2018

To: Committee Secretary

Joint Standing Committee on Treaties

Inquiry "*Reprocessing Nuclear fuel – France*"

jsct@aph.gov.au

Re Supplementary Submission: Public Interest Questions, Scenarios and Consequences of "*Reprocessing Nuclear fuel – France"* treaty actions & associated nuclear actions

Dear JSCT Secretary

Please accept this supplementary public submission to the JSCT Inquiry "*Reprocessing Nuclear fuel – France"* providing further input and evidence addressing three key aspects that I have raised.

ANSTO flouts International best practice and in so doing places OPAL reactor operations at risk.

1. Reprocessing is not International Best Practice, is in decline, and may leave ANSTO stranded:

Reprocessing, in the separation of radioactive isotopes and plutonium fissile materials from irradiated nuclear fuel, is not international best practice as claimed by ANSTO, and is in decline.

ANSTO's sole reliance on Reprocessing OPAL reactor nuclear fuel in France places continued OPAL reactor operations at risk - without an alternative nuclear fuel management pathway OR a required contingency option and capacity to manage OPAL nuclear fuel waste entirely within Australia.

The "*International Panel on Fissile Material*" (IPFM) reviewed Reprocessing in 2015. IPFM is an authoritative expert based group established in 2006, with a Mission*: "To provide the technical basis for policy initiatives to reduce global stocks of military and civilian fissile materials."*

IPFM has 29 members from 18 states and publishes Global Fissile Material Reports, research reports, and country studies, see: http://www.fissilematerials.org & www.fissilematerials.org/blog

A key Reprocessing review for consideration by JSCT is: *'Plutonium Separation in Nuclear Power Programs. Status, Problems, and Prospects of Civilian Reprocessing around the World'* (IPFM, July 2015), see: http://fissilematerials.org/library/2015/07/plutonium_separation_in_nuclea.html

The IPFM Report, at *Country Studies Chapter 3 France* (p.30), states:

> "***France is currently the only country in the world that operates a commercial-scale spent fuel reprocessing plant****."*

This Report makes evident the ongoing global decline of reprocessing, with the UK now to exit reprocessing by around 2020 and fewer countries left involved over time, and France under increasing pressure over economic, environmental, safety, security and fissile materials concerns.

> *"For a time, France offset the higher cost of the plutonium fuel by selling reprocessing services to other countries — notably Germany and Japan. The UK built a reprocessing plant*

> *for foreign customers, but virtually no customers renewed their contracts and the UK expects to end its reprocessing program as soon as its existing contracts are fulfilled − around 2020.*
>
> ***France is continuing to reprocess for the time being, but** its government-owned utility, Electricite de France (EDF), has been demanding cost reductions and this has made more gloomy the financial prospects of AREVA, the government-owned company that operates France's reprocessing plant."* (IPFM Report, *Summary*, p.3, bolding added)

The Report's *Introduction* shows "*the world is getting closer to the end of reprocessing",* stating:

> *"**Implications of reprocessing for international security***
> *The most important reason to be concerned about the practice of reprocessing is that plutonium can be used to make weapons. …*
> *The United States has not separated civilian plutonium since 1972. … In 1982, U.S. nuclear utilities concluded that direct disposal of spent fuel would be much less costly than reprocessing… Since that time, the U.S. government has worked to discourage additional countries from launching civilian reprocessing programs. …*
> *That policy has reinforced the economic arguments against reprocessing. No new country has begun reprocessing and, as already noted, three countries have stopped and a fourth (the United Kingdom) has decided to do so.*
>
> ***Reprocessing today***
> *Ten countries have built civilian reprocessing plants and a further ten have shipped their spent fuel to another country and had it separated. …*
> *Six countries currently operate reprocessing plants... There has been an even greater reduction in the number of countries that exported their spent fuel to other countries for reprocessing. The Netherlands is the only West European reprocessing customer country to renew its contract with France for reprocessing. …*
> *Only one new country has expressed an interest in reprocessing its spent fuel: South Korea. … The United Kingdom's shift, although belated, suggests that the combination of economic, environmental, and security related arguments can, over time, overcome institutional resistance. Similar processes are at play in other countries as well. Indeed, as this report shows, the world is getting closer to the end of reprocessing of spent fuel and separating plutonium."* (IPFM Report, *Introduction,* extracts p.13-16)

ANSTO is a small player left exposed to the long term challenged fate of Reprocessing in France.

ANSTO should disclose the additional cost in Reprocessing compared to dry-cask storage:

ANSTO should also have to explain the additional significant cost to taxpayers in Reprocessing in France compared to the option of dry-cask spent fuel storage in Australia (up to eventual disposal).

The IPFM Report, *Introduction*, p.11, cites this cost differential and references (Introduction Note Number 17) actual spent fuel dry-cask storage costs from experience at a major facility in Japan:

> ***"The cost of spent-fuel reprocessing also is about ten times the cost of the alternative option for managing spent fuel, dry-cask spent-fuel storage."***

2. Evidence the Extended Storage of ANSTO nuclear fuel waste at Lucas Heights is a viable option:

In 2015 ANSTO purpose-built an "*Interim Waste Store*" (IWS) at Lucas Heights with a conservative design operating life of 40 yrs to take reprocessed nuclear fuel waste shipments from France & from the UK originating from the previous HIFAR reactor. **ANSTO can equally do so for OPAL fuel waste.**

This Store is operating at Lucas Heights having received the French reprocessed waste late in 2015, has a plan for its operations to accommodate the waste intended to be returned from UK circa 2020.

This *Interim Waste Store* at Lucas Heights has **an ARPANSA Operating License that "*is not time-limited"*** AND an ANSTO Contingency Plan to retain the HIFAR reprocessed fuel waste at Lucas Heights "***until the availability of a final disposal option".***

The ARPANSA "***Regulatory Assessment Report – Operating***" (May 2015) for the IWS states at p.43:

> "***ANSTO's application is predicated on a 40 year operating life for the IWS****. …*
>
> *If the NRWMF were to be delayed beyond the 40 years, ANSTO would undertake actions to support an extension of the facility and container, or the safe transfer to another approved dual usage container.*
>
> ***… Conclusion:***
>
> *It appears there are some uncertainties regarding establishment of the NRWMF. …*
>
> ***The ARPANSA assessor notes that though the (IWS) facility is for interim storage, the licence is not time-limited****."*

The ARPANSA ***"CEO's Statement of Reasons for the IWS operating licence"*** (May 2015) states:

> *"3.1.1* ***Purpose of the facility***
>
> *The purpose of the IWS Facility is to store radioactive waste resulting from reprocessing of fuel that has been used in the now permanently shut down High Flux Australian Reactor (HIFAR).* ***The application concerns spent fuel that was shipped to France (La Hague) and to the UK (Dounreay)*** *under agreements with AREVA and UKAEA to reprocess the fuel and to return the radioactive waste resulting from the reprocessing…*
>
> ***General characteristics of the returned waste***
>
> *… In addition,* ***the waste to be returned from the UK may be required to be stored temporarily at the IWS Facility.*** *This will only happen if the NRWMF is not available when the waste is returned. The return of the waste from the UK is planned to take place around the year 2020.*
>
> *…* ***I consider it appropriate that ANSTO dimension the IWS Facility and plan for its operations so that it may accommodate the waste returned from the UK.***

Further, the ARPANSA "***Regulatory Assessment Report – Operating***" (May 2015) considered ANSTO Contingency Planning for the IWS to operate for longer than 40 yrs and importantly to potentially store reprocessed nuclear fuel waste on-site "***until the availability of a final disposal option***":

> "***3.2 ANSTO Contingency Plan 3.2.1 Lifetime and future use of the IWS Facility***
>
> *… The* ***conservative design life considered is 40 years****. …*

3.2.2 Long term storage of waste and final disposal

ANSTO considers that in the unlikely event that the NRWMF is not built within 40 years, ANSTO would make a submission to ARPANSA to amend the licence to extend it for a defined period of time. … ANSTO also considered reloading the waste into a new TN81 cask, and the reloading operation will be undertaken in a purpose-built facility subject to regulatory approval.

… ANSTO states that a final disposal strategy will be subject to Australian Government policy including monitoring of best practice disposal for such waste worldwide.

3.2.3 Contingency options

***In the scenario of the unavailability of the NRWMF**, ANSTO has identified the following options for contingency. …*

3.2.3.2 Retention of the returned residues at ANSTO until the availability of a final disposal option

… This (NRWMF) plan will have the provision for ILW storage above ground for approximately 100 years. The Government will continue to explore final disposal options including geological disposal over this period taking into account international best practice of disposal of such waste."

The ARPANSA "***CEO's Decision - ANSTO Interim Waste Store*"** (May 2015) imposes a relevant Condition (see http://www.arpansa.gov.au/pubs/regulatory/ansto/SOR-IWS.doc p.25) that:

*"**The licence is not limited in time**; however, the purpose of the facility is temporary storage of the waste, pending solution for its final management. **The length of storage is contingent on the establishment of the NRWMF, or any alternative final management solution that may be considered in the future**. It is therefore reasonable to request, at appropriate times, updated information as regards the performance of the IWS Facility, and projections for the future. I have therefore included the following licence condition:*

***The licence holder must submit to the CEO, no later than 30 June 2020 and in a form acceptable to the CEO, plans for the removal of waste stored in the facility**."*

This ARPANSA CEO's Condition does NOT require removal of the waste by June 2020 (a fact which ANSTO should be called to acknowledge to the JSCT) only *projections* of future plans for removal.

This Condition is open to non-NRWMF outcomes, citing "*any alternative final management solution*" - such as required future Disposal which is cited in the relevant ANSTO Contingency Plan.

Equally, ANSTO can manage OPAL reactor nuclear fuel wastes in Extended Storage at Lucas Heights rather than Federal gov imposition of these wastes onto un-willing communities in SA.

See relevant ARPANSA public documentation and information available at: "***Interim Waste Store***" http://www.arpansa.gov.au/regulation/ReturnofWaste/index.cfm

And at: "***CEO's Decision - ANSTO Interim Waste Store*"**
http://www.arpansa.gov.au/regulation/ReturnofWaste/iwsdecision.cfm

Contingency to return OPAL reactor Reprocessed fuel waste to Storage at Lucas Heights:

ANSTO's preferred plan for the OPAL reactor is premised on Reprocessing of OPAL nuclear fuel waste in France AND on proposed return of these wastes to a NRWMF storage site in SA.

Arguably either or both of these agency preferences may fail to eventuate and leave OPAL stranded.

The Federal Department of Industry in consultation with ANSTO & ARPANSA in 2014 set out two Contingency options for return of OPAL reactor Reprocessed fuel wastes to Lucas Heights.

In the eventuality the NRWMF remote Store is not developed OR the NRWMF only takes LL waste.

> *"**Table 14 List of options to meet the criteria:***
> ***Option 1 Business as Usual ("Do nothing")**:*
> *Continue as at present without long term radioactive waste management arrangements in place and operate via a series of interim storage measures for both the Commonwealth and the States and Territories (**via ARPANSA-approved "contingency measures**").*
>
> ***Propose separate ILW stores to be delivered at ANSTO prior to each separate delivery of OPAL Spent Fuel (to the design of the current IWS with a delivery cost of $8M each)** and a 1,000 m^3 capacity LLW store to be constructed in 2016 and each decade thereafter ($1M each) with associated operating expenses.*
>
> *Notable possibility that ARPANSA may intervene to prevent further contingency arrangements as inappropriate and interrupt or halt operation of OPAL research reactor and associated nuclear facilities. Significant Risk Cost of this option related to the above as well as other foreseeable events (See Risk Analysis)."*

Further, "***Option 2 b**"* also has OPAL Reprocessed nuclear fuel wastes returned to Lucas Heights in (an arguably likely) Contingency that if the NRWMF proceeds it will only provide for Low Level (LL) waste Disposal in a Spanish style engineered above ground *El Cabil* design basis:

> *"Construct NRWMF with 100 years capacity for both legacy and future LLW at (remote) site in accordance with the NRWM Act 2012 and ARPANSA Guidance.*
>
> ***ILW to remain at ANSTO until policy and technological solution for permanent disposal of ILW are determined**. … **ILW storage to continue at ANSTO with foreseeable capital and operating costs as for the ILW element of the BAU."***
>
> In: *Long Term Management of Australia's Radioactive Waste, Initial Business Case (REVISED),* Jacobs SKM report to the Federal Department of Industry, April 2014, Table 14, p.34.
> http://www.radioactivewaste.gov.au/files/files/IBC%20revised%20FINAL.pdf

ANSTO compounds risks to OPAL operations through over reliance on Reprocessing in France without any credible overseas alternative; failure to provide any plan for management of OPAL nuclear fuel wastes entirely in Australia; an unfounded expectation of *indefinite storage* eventuating in SA - when previous attempts have failed and this attempt is flawed and failing; and ANSTO flouts best practice though failure to provide a waste disposal strategy and capacity.

3. ANSTO failure to provide a disposal strategy for OPAL nuclear fuel wastes flouts best practice:

The ARPANSA Radiation Health and Safety Advisory Council (RHSC, April 2010) have provided advice to the CEO that International best practice should have a strategy for ultimate disposal of waste and concludes that Australia's policy for *indefinite storage* of waste is not consistent, stating:

> *"Hence, the overall picture of international best practice is that countries should have a policy and strategy for management of radioactive waste, in which storage has a legitimate temporary role* ***provided there is a further strategy for ultimate disposal of the waste.***
>
> ***This also leads to the conclusion that Australia's current policy of indefinite storage for intermediate level waste does not appear to be consistent with international best practice****.*
>
> *In developing a national strategy it is necessary to ensure an appropriate infrastructure is in place to manage radioactive waste."*
>
> In: *"COUNCIL ADVICE TO CEO REGARDING A REVIEW OF ISSUES RELATED TO THE MANAGEMENT OF INTERMEDIATE LEVEL RADIOACTIVE WASTE IN AUSTRALIA - APRIL 2010"* (p.22) http://www.arpansa.gov.au/pubs/rhsac/waste_report_RHSAC.pdf

This RHSC advice contradicts ANSTO evidence to the JSCT Hearing on 12th Feb which anticipated a '*final repository over the next 60 years'* for nuclear fuel waste and acknowledged that there is no final pathway for the ongoing production of OPAL fuel waste & Intermediate level reactor wastes.

With ANSTO indicating to '*hold back'* and await international developments such that any potential final pathway may not be realised until after expiry of OPAL reactor licensed operations up to 2057.

Note: **The RHSC advice is effectively a rejection of *both* proposed NRWMF *indefinite storage* of nuclear fuel wastes in SA, and of ANSTO waste production without a waste disposal strategy.**

The ARPANSA Nuclear Safety Committee has also provided similar more recent advice to the CEO:

> *2. Final Waste Management Prior to Activities Commencing*
> ***International best practice points to the need to have in place a policy and infrastructure for final management and ultimate disposal of waste before activities generating waste commence****. Currently, there is no infrastructure for final disposal within Australia. New facilities ANSTO proposes to construct at its LHSTC will generate additional waste requiring long-term storage or disposal.* ***Approval may be granted to conduct activities generating waste provided adequate contingencies are in place****. …*
>
> ***The Committee, therefore, recommends that establishing a long-term storage and disposal facility prior to waste-generating activities commencing continues to be considered the preferred option*** *for any licence application.*
>
> In: "*Nuclear Safety Committee advice to CEO of ARPANSA regarding safety implications of waste stored in interim storage*, *22 Nov 2013,* http://www.arpansa.gov.au/pubs/nsc/nsc_iwsadvice.rtf

ANSTO evidence to the JSCT Hearing on 12th Feb is contrary to both ARPANSA Nuclear Safety Committee advice & Nuclear Safety Committee advice on International best practice to the CEO.