



Supplementary Submission to Joint Standing Committee on Treaties Inquiry into Nuclear Non-proliferation and Disarmament

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QUESTIONS FOR ASNO

It would be appreciated if the Joint Standing Committee on Treaties (JSCT) could forward these questions to the Australian Safeguards and Non-proliferation Office (ASNO).

1. Is ASNO's proposal to allow the processing of Australian Obligated Nuclear Materials (AONM) in non-safeguards-eligible enrichment plant/s in Russia an isolated exception? If not, can ASNO provide a list of non-safeguards-eligible facilities which are permitted (under bilateral agreements) to process AONM?
 2. In its response to Questions of Notice from Senator Ludlam, ASNO notes that reprocessing plant/s at Sellafield, UK, and reprocessing plants at Tokai-mura, may hold separated Australian-obligated plutonium. Can it therefore be assumed that Australian-obligated plutonium was involved in MUF incidents at these facilities e.g. 200 kg discrepancy at Tokai-mura, 180-190 kgs of unaccounted plutonium at THORP? (Details of those MUF incidents in UCS, 2007, Nuclear Power in a Warming World, <www.ucsusa.org/nuclear_power/nuclear_power_and_global_warming/nuclearandclimate.html>.)
 3. ASNO states: "The actual quantities of AONM held in each country, and accounted for by that country pursuant to the relevant agreement with Australia, are considered by ASNO's counterparts to be confidential information."
<www.asno.dfat.gov.au/annual_report_0102/asno_annual_report_2001_2002.pdf>
- Why should AONM data be kept confidential? If the answer is 'commercial confidentiality', how could release of AONM data jeopardise commercial interests, and why does ASNO accept the view that questionable claims concerning commercial confidentiality should override transparency?
4. How frequently does ASNO formally re-evaluate decisions to grant programmatic consent to reprocess AONM and what process is involved in those evaluations?
 5. Does Australia now require all uranium customer countries, including nuclear weapons states, to have ratified an Additional Protocol as a condition of uranium exports?

NEED FOR A DEDICATED INQUIRY INTO SAFEGUARDS

Friends of the Earth, Australia (FoE) asks the Committee to consider recommending a separate inquiry dedicated to assessing the safeguards arrangements pertaining to Australia's uranium exports. The rationale is as follows:

- * WMD proliferation is an issue of major national and international importance.
- * The issue is all the more topical and important in Australia given plans to expand the uranium export industry.
- * The current JSCT inquiry is considering safeguards, but is doing so in conjunction with a wide range and large number of other issues, and within a tight timeframe. A separate inquiry is required to fully explore the issues.
- * A number of NGOs, including FoE, have repeatedly expressed concern about the Australian Safeguards and Non-proliferation Office (ASNO). The Australian Uranium Association also supports a review of ASNO's role - albeit for different reasons. The AUA submission states:

"The Association does not share the views of those NGOs that have recently been critical of ASNO. Nevertheless, there are challenges ahead and it would be wise to ensure the role of the Office is clear as it prepares to meet those challenges and that its resources are fit-for-its purpose. With that in mind, the Association considers that:

- * ASNO should provide a report to the Australian Government on the challenges ahead in its field. The Government would, naturally, also draw on the Committee's work and that of the International Commission on Non-proliferation and Disarmament to inform its views*
- * The Government should clarify the role it wants ASNO to play in light of the challenges identified."*

THE AUSTRALIAN URANIUM ASSOCIATION (AUA) SUBMISSION

The AUA states that "The evidence shows that nuclear power will expand by 50% to 100%, depending on the methodology used for projecting growth."

In fact, the nuclear industry has a long history of making absurdly optimistic projections. To give just one example (others are available on request), the IAEA estimated in 1974 that in the year 2000, nuclear output would be 4,450 GW. Output in the year 2000 was 352 GW. The IAEA estimate was out by a factor of 12.6 or 1260%.

Nuclear power has been nearly stagnant since the early 1990s. Its percentage contribution to global electricity supply has fallen from a peak of about 19% to the current figure of 14%. Schneider noted in the Bulletin of the Atomic Scientists in September 2008: "In 2007, nuclear power plants generated 2,600 terawatt hours, about 14 percent of the world's commercial electricity (down from 15 percent in 2006 and 16 percent in 2005), 6 percent of the commercial primary energy and on the order of 2 percent of final energy."

(Mykle Schneider, 2008 world nuclear industry status report: Global nuclear power, 16 September 2008, <www.thebulletin.org/web-edition/reports/2008-world-nuclear-industry-status-report/2008-world-nuclear-industry-status-rep>.)

The average age of operating reactors (24 years) is older than the average age of all closed reactors (22 years). In other words, most reactors are middle-aged or elderly, and many new reactors will be required over the coming decades just to maintain the current nuclear output. Schneider states:

"If one assumes an average lifetime of 40 years for all the world's operating reactors (with the exception of 17 remaining German units that, according to German legislation, will be shut down after an average operational lifetime of 32 years) and the 20 units that were under construction as of January 2008 that have an official start-up date (down from 24 units at the start of the year), one can calculate how many plants would be shut down year by year over the next 50 years

"The exercise enables an evaluation of the number of plants that would have to come online over the next several decades simply to maintain the same number of operating plants around the world. In addition to units under construction with a scheduled start-up date, 70 reactors (generating 40,000 megawatts) would have to be planned, completed and started up by 2015 -one every month and a half - and an additional 192 units (168,000 megawatts) over the subsequent decade - or one every 18 days."

The AUA's optimism about growth in the Australian uranium industry ought to be treated with scepticism. ABARE noted in early 2009 that: "World uranium oxide (U₃O₈) prices averaged US\$61.80 a pound in 2008, 38 per cent lower than the 2007 average of US\$99.30 a pound. Falling spot prices reflected an easing of the tight

supply-demand balance observed in 2007 where strong demand coincided with concerns about availability of future supply. Providing downward pressure on spot prices in 2008 was increased investor selling as hedge funds liquidated uranium stocks. Ux Consulting estimates the volume of uranium sold by traders in 2008 was nearly twice that traded in 2007. This increased liquidity resulted in the spot price falling from \$US64.50 a pound in August to US\$44 a pound in October."

(*ABARE, Australian Commodities, March quarter 09.1, Vol 16 No. 1, Uranium: Outlook to 2013-14*, <www.abare.gov.au/interactive/09ac_mar/hm/uranium.htm>.)

Both ABARE and the AUA predict growth in uranium exports, but as the above quote from ABARE indicates, the situation is fluid and uncertain.

In other developments:

- * South Africa has recently cancelled plans for three new reactors.

- * The development of Pebble Bed reactor technology is in jeopardy as a result of a series of safety, technical and economic concerns, as discussed in Nuclear Engineering International.

<www.neimagazine.com/story.asp?sectionCode=76&storyCode=2052590>

- * Yucca Mountain - previously the most advanced high-level nuclear waste repository project in the world - has been abandoned by the Obama administration. There is no permanent repository for high-level nuclear waste anywhere in the world.

The AUA states: "Weapons-grade plutonium is not produced in commercial power reactors but in a 'production' reactor ... The only use for 'reactor grade' plutonium is as a nuclear fuel, after it is separated from high level wastes by reprocessing. It is unlikely reactor grade plutonium has ever been used for weapons or would be."

Every one of those statements is demonstrably false. In fact:

- * weapon grade plutonium is routinely produced during the operation of reactors (though over time it becomes increasingly contaminated to become reactor grade plutonium)

- * producing large quantities of weapon grade plutonium in a power reactor could hardly be simpler - it just requires shortening the irradiation time from a period of years to a period of months.

- * reactor grade plutonium can be used in weapons and has been used in weapons e.g. by the USA.

Those issues are discussed in:

- * a paper posted at: <www.foe.org.au/anti-nuclear/issues/nfc/power-weapons/rgpu>.

- * Physicist Dr Alan Robert's contribution to Briefing Paper #19 at <www.energyscience.org.au>. Dr Roberts explicitly debunks ASNO's misinformation.

- * Submissions to this JSCT inquiry by Barnaby, Garwin and others.

Yet another factual error is contained in the AUA's statement that: "To be useable in weapons, uranium must be enriched to over 90% U-235." The statement is false. In fact:

- * South Africa used a lower enrichment level (about 80%)

- * Theoretically, uranium enriched to as little as 6% U-235 could be used in weapons. The definitional cut-off between low- and highly-enriched uranium is 20% U-235. About 400 kgs of 20% enriched HEU could be used for a weapons. (Details: IPFM, 'Global Fissile Material Report 2006', <www.ipfmlibrary.org/gfmr06.pdf>, p.9.)

The AUA is heavily reliant on ASNO to reach its optimistic conclusions about the use of Australian-obligated nuclear materials (AONM): "In short, the Committee has evidence, on the record, by Australia's principal policy adviser and regulator in this area, of the successful performance of Australia's bi-lateral treaties."

Unsubstantiated assertions by ASNO (i.e. its claim that AONM is 'satisfactorily' accounted for) do not constitute evidence. The JSCT knows from its own experience during the Howard/Putin inquiry that ASNO is not a trustworthy organisation.

The AUA states: "On the evidence, Australia's bilateral treaties support the overall objective of a 'framework of control' by ensuring that Australia's uranium is not diverted away from peaceful purposes." Safeguards do not and can not 'ensure' peaceful use. The AUA is not privy to confidential information held by ASNO (e.g. concerning Material Unaccounted For), and in any case some or most of ASNO's information is supplied by customer countries themselves with no independent IAEA verification.

The AUA states: "Yet it is equally clear that a country cannot illicitly acquire and operate the technology needed to produce nuclear weapons without eventually being detected either by safeguards arrangements or by other means."

The argument is false (or at best circular in that we do not know about weapons programs which have not yet been revealed one way or another). To give just a few examples:

- * Safeguards conspicuously failed to detect Iraq's multiple violations during its weapons program from the late 1970s to the 1991.
- * Safeguards were of little or no value in uncovering Libya's WMD program (eventually revealed by Libya itself).
- * The IAEA appeared to know little about Syria's alleged nuclear reactor site, bombed by Israel last year.
- * The IAEA appeared to have little knowledge of the major global illicit nuclear smuggling network involving Pakistani scientist A.Q. Khan.

The AUA states: "A country that did do so would be in breach of its NPT obligations; and would (and does) suffer a range of consequences including global disapprobation, diplomatic pressure, loss of prestige and potentially even more serious consequences, such as UN Security Council-sanctioned corrective and punitive action." However, responses to actual or suspected proliferation have been highly variable and are often protracted.

The AUA states: "Given the near-certainty of exposure and the seriousness of the consequences, it is no surprise that illicit behaviour of this kind has been rare and has been exposed." However, exposure is not a near-certainty and the consequences may or may not be serious. For example, South Korea was not formally breached despite ongoing weapons-related research over two decades. The use of 'civil' nuclear facilities for WMD research is not rare, it has taken place in 20+ countries. Of the 10 states to have produced nuclear weapons, five did so using technology and expertise ostensibly acquired for a civil program.

The AUA states that: "Life cycle GHG emission analyses of power plants show that, over its whole life cycle, nuclear power emits between 3 and 40 grams of carbon dioxide-equivalent per kilowatt-hour (gCO₂-eq/kWh) of electricity produced." However, the Switkowski report concluded that the figure is 60 grams for nuclear compare to just 22 grams for wind power.

MATERIAL UNACCOUNTED FOR

The AUA states:

"The [AUA] has examined those [ASNO] reports, which have taken a different form over the years. However, the key conclusion of the Office has been consistent: 'All Australian Obligated Nuclear Material was satisfactorily accounted for'.

ASNO's stewardship and reporting show that Australia's uranium has not been diverted from peaceful purposes.

Moreover, there is no evidence to the contrary that would justify a conclusion different from the one that ASNO has reached consistently."

In fact, ASNO acknowledges that accounting discrepancies (Material Unaccounted For - MUF) are common. As ASNO stated during a previous parliamentary inquiry: "Every year inventory reports involving bulk material will include a component of MUF."

ASNO refuses to reveal how frequently MUF discrepancies exceed predicted margins of error or which countries are involved. ASNO refuses to reveal what explanations are given when discrepancies exceed the margin of error. It would be difficult or impossible to determine to what extent ASNO's evaluations are based on independent verification by the IAEA, and conversely, to what extent ASNO is reliant on customer countries for the information (which raises the obvious dilemma that a country diverting AONM is hardly likely to acknowledge that diversion).

FoEA supports the recommendation in JSCT report #94 that: "Further consideration is given to the justification for secrecy of Material Unaccounted For." FoEA also supports that JSCT's statement that "assurances of safety must override commercial interests". However FoEA asks the JSCT to make a stronger recommendation; namely, that all MUF information, past, present and future, is promptly reported publicly and that this is done on

a country-by-country and facility-by-facility basis. FoEA understands that other countries (e.g. Japan) release MUF data. There is no legitimate justification for the secrecy surrounding MUF. ASNO has done no better than to cite 'commercial confidentiality'.

The Union of Concerned Scientists provides some examples of serious accounting discrepancies in countries which Australia exports uranium to:

"For example, in 1994 Japan revealed that during five years of operation, the total amount of plutonium unaccounted for at its Plutonium Fuel Production Facility in Tokai-mura had grown to 70 kilograms—enough for some 10 nuclear weapons. Japan insisted the missing material was “holdup”—dust that accumulates on equipment inside a facility. However, this could not be verified until the plant was shut down and “flushed out,” which did not occur until 1996.

"Similar problems occurred at the reprocessing plant in Tokai-mura, which started operating in 1977. Japanese officials acknowledged in January 2003 that accounting for a more than 200-kilogram shortfall in plutonium at the plant had required a 15-year investigation. This amount was about 3 percent of the total plutonium separated by the plant during its 25 years of operation.

"In 2005, a large leak of dissolved spent fuel at the Thorp reprocessing plant in the United Kingdom went undetected for more than eight months. The leaked solution contained some 19 metric tons of uranium and 190 kilograms of plutonium. The fact that a shortfall in the amount of plutonium produced at the plant - enough for some 30 nuclear bombs - did not arouse concern for many months suggests that the theft of a significant amount could also go undetected."

(UCS, 2007, Nuclear Power in a Warming World,

<www.ucsusa.org/nuclear_power/nuclear_power_and_global_warming/nuclearandclimate.html>.)

ASNO'S SUBMISSION

The ASNO submission states: "The non-proliferation regime is also strengthened through Australia's requirement that recipients of Australian obligated nuclear material adhere to the Additional Protocol."

Australia does not require that nuclear weapons states ratify an Additional Protocol as a condition of uranium sales. Or if there has been a change of policy, there appears to be no mention of it on the ASNO website.

Policy regarding Additional Protocols (AP) illustrates the realpolitik of safeguards. Australia could have insisted years ago that AP ratification would be a precondition for uranium exports. All of Australia's uranium customer countries would have had to make a decision - ratify an AP or forego Australian uranium exports. Australia would have used uranium export policy to drive a worthwhile non-proliferation outcome. In reality, Australia waited until all of Australia's non-nuclear-weapons uranium customer countries had ratified an AP before announcing that an AP would henceforth be a precondition for uranium exports to non-nuclear-weapons states. In other words, the policy was a retrospective PR exercise and did nothing to drive non-proliferation outcomes. The government (and DFAT and ASNO) had no logical explanation for continuing to allow exports to nuclear weapons states without an AP; the real reason was that to extend the policy to nuclear weapons states would have jeopardised some uranium exports. Now that all the nuclear weapons states with a bilateral uranium agreement with Australia have an AP in place, the government can indulge itself in another retrospective PR exercise by extending the policy to nuclear weapons states.

ASNO acknowledges that: "Preventing States Party from being able to withdraw from the NPT with impunity, particularly if treaty violations are uncovered, is a longstanding concern."

ASNO ignores some inconvenient truths:

- * key provisions in bilateral agreements (e.g. the right to refuse consent to reprocess AONM) have never once been invoked.
- * Australia allows AONM to be processed in unsafeguarded and non-safeguards-eligible facilities.
- * Australia allows uranium sales to nuclear weapons states; states with a history of weapons-related research based on their civil nuclear programs; states blocking progress on the Comprehensive Test Ban Treaty and the proposed Fissile Material Cut-Off Treaty; and to undemocratic, repressive, secretive states with appalling human rights records.
- * Australia has no independent safeguards capacity.

URANIUM SALES TO RUSSIA

The following questions and answers are taken from: October 2008 session of Senate Estimates, Senator Ludlam Questions on Notice to ASNO, Question 20, Output 1.1.10

ASNO notes that there is no requirement under the Howard/Putin agreement for there to be any IAEA inspections in future - a fact which ASNO conspicuously failed to convey to the JSCT inquiry into the Howard/Putin agreement.

Question X. Was there any requirement under Howard/Putin for there to be any IAEA inspections in future?

Answer X. The Australia-Russia Nuclear Cooperation Agreement does not contain any such requirement.

ASNO's answer CC states: *"The Russian Eligible Facility List is not a public document. There is no established procedure for nuclear-weapon states to publish their Eligible Facility Lists. ASNO has proposed to Russian officials that the eligible Russian facilities, with respect to the Agreement, be published when they are decided."*

It is concerning that the Eligible Facility list may not be publicly revealed, especially given the unacceptable secrecy which already surrounds safeguards.

In relation to the proposed processing of AONM in a non-safeguards-eligible enrichment plant/s in Russia, ASNO's answer DD states (in part): *"Russia does not propose to place these enrichment facilities on its Eligible Facilities List because the facilities were never designed for the application of safeguards and could not be readily adapted for safeguards purposes."* The facilities would not require any adaptation whatsoever. Russia simply needs to permit the application of safeguards and the IAEA could then adopt safeguards measures such as inspections, the use of video monitoring etc.

FURTHER COMMENTS

Gareth Evans told a hearing of the JSCT: "Beyond that, as I mentioned in passing in my opening remarks, I think what we are looking to from civil nuclear energy is a far more concerted effort to try to create proliferation resistant technology in the future, which, without going into the technical detail, basically means closed fuel cycles. This raises quite tricky issues because getting to there can often expose you to more risks along the way. But, once you are there, you do not have the problem of waste products and so on. This stuff is highly difficult, technically quite complex and quite sensitive commercially, but I think that kind of focus is the way forward, rather than try to think in terms of winding the clock back completely and getting to a nuclear fuel-free universe."

However, all existing and proposed nuclear fuel cycles (whether based on uranium, plutonium, thorium, or fusion of hydrogen nuclei) raise proliferation risks. These issues are addressed in:

* Papers posted at <http://www.foe.org.au/anti-nuclear/issues/nfc/power-weapons>

* Briefing paper #14 posted at <http://www.energyscience.org.au/factsheets.html>

* The Massachusetts Institute of Technology (MIT) Interdisciplinary Study into the future of nuclear power. which recommended against closed nuclear fuel cycles (involving reprocessing) because of proliferation risks and increased financial costs. <web.mit.edu/nuclearpower>.

* Critique of 'integral fast reactors' <www.foe.org.au/anti-nuclear/issues/nfc/power/ifr>