

Submission to the Joint Standing Committee on Treaties

2 November 2014

**Agreement between the Government of Australia and the Government of
India on Cooperation in the Peaceful Uses of Nuclear Energy**

Signed 5 September 2014

John Carlson AM

Nonresident Fellow, Lowy Institute

Former Director General,

Australian Safeguards and Non-Proliferation Office, 1989-2010

*The views in this submission are the author's
and not necessarily those of the Lowy Institute or his other affiliations.*

<u>Contents</u>	Page
1. Should Australia conclude a nuclear cooperation agreement with India?	1
2. Context of this agreement	
(a) Nuclear Non-Proliferation Treaty	4
(b) 2005 US-India political agreement and follow up	6
(c) Separation of India's military and civilian programs	7
(d) IAEA safeguards in India	7
(e) India's Additional Protocol	9
(f) India's non-proliferation record	9
(g) Interests of other countries	10
(h) Implications for Australian safeguards policy	11
3. Is there any risk that India's nuclear weapon program could benefit from the supply of Australian uranium?	11
4. Australia's bilateral safeguards policy	13
5. Major problems with this agreement	
(a) Accounting and tracking, and the impact of the administrative arrangement on the agreement	16
(b) Australia's prior consent for reprocessing	20
(c) Limiting AONM to facilities on IAEA safeguards list	21
(d) Right to IAEA reports	22
(e) Fallback safeguards	23
(f) Right of return of supplied material and items	23
(g) Settlement of disputes	23
6. Legal aspects	
(a) Accounting for material subject to the agreement	23
(b) South Pacific Nuclear Free Zone Treaty	24
(c) Safeguards Act	24
7. Conclusions and recommendations	25
Appendix – Nuclear accounting and the nuclear fuel cycle	27

1. Should Australia conclude a nuclear cooperation agreement with India?

Short answer: There are good reasons for concluding a nuclear cooperation agreement with India, but not this agreement.

It is one thing for the Government to determine there are compelling bilateral policy grounds for concluding a nuclear cooperation agreement with India. It is quite another to decide to weaken our usual safeguards standards, as this agreement does. India has an expanding nuclear weapons program and a complex civilian nuclear program which retains links to the weapon program. India also has a problematic history of disregarding peaceful use commitments. For these reasons due diligence requires Australia to maintain our rigorous safeguards requirements.

Further, nuclear cooperation should not be a one-way street. Australia has made a major concession to India by reversing our longstanding policy of not supplying uranium to countries not party to the Nuclear Non-Proliferation Treaty (NPT). Now India should demonstrate good faith by following through its political commitment to *assume the same responsibilities and practices as other leading countries*¹ – a good start would be to accept the same safeguards conditions as Australia's other nuclear partners.

India regards conclusion of a nuclear cooperation agreement as further evidence of its international acceptance as a global power, and as an important marker in developing our bilateral relations. By supplying uranium for India's nuclear energy program Australia can contribute to India's growing electricity needs, and help limit the growth in India's greenhouse gas emissions.

India needs an enormous expansion in electrical capacity to enable economic growth and increased living standards. A comparison with China is striking: China's total installed electrical generating capacity is 1,247 GWe (gigawatts electrical); India's is just one fifth of this, 249 GWe. India's per capita electrical consumption (779 kilowatt hours a year) is among the world's lowest. Almost 300 million Indians have no access to electricity.

Currently coal supplies one half of India's electricity generation. While a massive expansion in coal-fired generation is inevitable, there is a global interest in offsetting coal as much as possible by low carbon energy sources. Also efficiency and energy conservation improvements will be essential: India's current electrical grid losses are very high, over 23%. Currently in India installed capacity for hydropower is 40.7 GWe (16% of total), other renewables are 31.7 GWe (12.7%), natural gas is 22.6 GWe (9%), and nuclear 4.8 GWe (1.9%). India has ambitious plans across all these sectors – in the case of nuclear energy, an announced target of 63 GWe by 2032, though in December 2011 a "more realistic target" of 27.5 GWe was announced. Meeting even the lower end of the target for nuclear energy will depend on access to imported reactors and uranium.

Longer term, India aims to supply 25% of its electricity from nuclear power by 2050. India's installed baseline capacity then is projected to be 1,094 GWe. A quarter of this would be 250 GWe, 2½ times current US installed nuclear capacity. This would require the construction on average of seven 1,000 MWe (megawatt electrical) reactors every year from now until 2050! It seems unlikely a target of this magnitude can be achieved – but the scale

1. 2005 Bush/Singh statement – see page 3 of this submission.

2.

of India's electricity demand is such that even a much reduced level of nuclear capacity would still be a very substantial program.

Economic benefit As the above figures indicate, India represents a significant potential market for Australian uranium. In view of current post-Fukushima uncertainties (Germany and Sweden are committed to phasing out nuclear energy, France plans to reduce nuclear's contribution to its energy mix, the future of Japan's nuclear sector remains uncertain), a new market would seem attractive. However, we must be realistic about the size of this market. India's "realistic target" for 2032, 27.5 GWe of installed nuclear capacity, represents a uranium requirement of around 5,500 tonnes a year. Assuming Australia secured say one quarter of this, on current uranium prices this would bring export revenue of around \$140 million a year – quite modest in terms of our overall trade. In the long term India's nuclear sector *could* be one of the world's largest (if India's very ambitious plans are realised), but having regard to India's plans for reprocessing and for developing the thorium fuel cycle, one can only speculate about India's long term uranium requirements.

In addition to greenhouse gas mitigation, bringing India into the nuclear "mainstream" has other potential benefits, in terms of the opportunity to influence its behaviour in nuclear matters, and through nuclear safety and security improvements due to access to modern technology and increased cooperation.

Australia's usual safeguards standards should not be weakened

Australia has a longstanding set of conditions which we have applied under all 23 current agreements, covering 41 countries² – including all the countries with significant nuclear power programs except India. Requirements similar to Australia's are applied by the United States, Canada and the European Union under their agreements with other countries. Australia's safeguards conditions apply in full to all of our agreement partners, including our most trusted friends and allies, such as the US, EU, Japan and South Korea.

In 2006, when discussions between Australia and India on a nuclear agreement first started, India insisted on being treated the same as Australia's other agreement partners. But now India has moved the goal posts, expecting an agreement that contains less than all other Australian partners have agreed to. Far from building confidence in its intentions, India's position has the opposite effect. Rather than acquiescing in India's demands and weakening our standard conditions, the very fact that India is not prepared to meet the standards accepted by all our other partners is a strong reason not to proceed on such a basis.

India's IAEA safeguards agreement is very complex (see pages 7-8 below). Australia has no experience with an agreement of this complexity: it is impossible to foresee all the situations that might arise under it, and the onus should not be on Australia (or proponents of effective safeguards) to do this. Where a country has exploited weaknesses in agreements (see page 10 below), due diligence demands greater specificity, certainly not less, in any agreement with that country. Australia has a standard set of safeguards conditions which have stood the test of time and which should apply in India's case. Anything less introduces uncertainties and risks (see pages 11-13 below).

2. The difference in numbers is due to the agreement with the EU which covers 28 countries.

Engagement should be reciprocal

It is especially important to use greater engagement with India to advance nuclear non-proliferation and disarmament objectives. Waiving the comprehensive safeguards policy can be justified only if NPT-related goals can be achieved in other ways. Engagement should not be a one-way street – bringing India into the mainstream means that India should be prepared to adopt global norms and practices, not expect the rest of the world to fall into line with what India wants.

In the 2005 Bush/Singh statement³, Prime Minister Singh said India ...

would be ready to assume the same responsibilities and practices and acquire the same benefits and advantages as other leading countries with advanced nuclear technology, such as the United States.

Consistent with this, in 2006 Indian officials said they wanted the same conditions as Australia has with other countries. Now however it seems they want much less. The fact that India wants to weaken Australia's longstanding safeguards conditions shows it is not thinking in terms of assuming the same responsibilities and practices as other leading countries – this is not an encouraging start either for this agreement or for a closer bilateral relationship.

To date India has given little in terms of advancing non-proliferation and disarmament goals. The Government says that engagement with India provides greater opportunity for dialogue to promote these matters – but we should expect a more tangible demonstration of India's good intentions than just an annual dialogue.

What kind of commitments can India be expected to make? The example of France comes to mind – Australia concluded a nuclear cooperation agreement with France in 1981 on the basis that France, which was not then an NPT party (it did not join the NPT until 1992), undertook to act as if it were a party. There are various principles in the NPT, which NPT parties have accepted as legal commitments, which *could* also be accepted by non-parties. In addition there are important commitments complementary to the NPT.⁴ These include:

- (i) committing to pursue nuclear disarmament. Pursuit of negotiations on cessation of the nuclear arms race, nuclear disarmament and general disarmament is a legal commitment on all NPT parties through Article VI of the NPT. By not being a party to the NPT India has avoided this commitment. But there is a limit to how far nuclear disarmament can proceed without a country like India, which not only has not made this commitment but is actually increasing its nuclear arsenal;
- (ii) full separation of military and civilian nuclear programs. India has undertaken to separate these programs and place civilian activities under IAEA safeguards. However, major parts of its civilian program remain outside IAEA safeguards and are still linked to the military program;
- (iii) signing the Comprehensive Nuclear-Test-Ban Treaty (CTBT). This would be a major step in support of nuclear disarmament. The CTBT requires ratification by eight specified countries before it can enter into force. These are: China, Egypt, Iran, Israel

3. Joint Statement between President George W. Bush and Prime Minister Manmohan Singh, www.whitehouse.gov/news/releases/2005/07/20050718-6.html

4. These are discussed in detail in a Policy Brief issued by the Asia-Pacific Leadership Network for Nuclear Non-Proliferation and Disarmament, *Challenges and Opportunities for Extending NPT-Related Commitments to Non-NPT States*, <http://www.a-pln.org/content/policy-brief-no-15-challenges-and-opportunities-extending-npt-related-commitments-non-npt>.

4.

and the US, which have signed but not yet ratified; and India, Pakistan and North Korea, which have not signed.

US ratification depends on gaining the necessary number of votes in the Senate, which the Obama Administration is pursuing. The general expectation is that when the US is able to ratify, China and the others will quickly follow. However, if India does not ratify China might use this as an excuse not to do so. India's position therefore is critical. India has said it will maintain its unilateral test moratorium – it is not asking too much for it to show good faith by signing the CTBT now;

- (iv) real support for a fissile material cut-off treaty (FMCT). This is another important area where India could demonstrate its good intentions. In the 2005 Bush/Singh statement India undertook to work towards the conclusion of an FMCT. Today however India is one of only three countries – the others being Pakistan and North Korea – still producing fissile material for nuclear weapons. While FMCT negotiations are being stalled very visibly by Pakistan, India seems happy to take advantage of this.

Is it asking too much for India to seriously consider ceasing production of fissile material now, as the nuclear-weapon states have done? Serious moves in this direction would have an immediate effect in reducing tensions with Pakistan – India could show leadership on this issue by initiating negotiations with Pakistan on a bilateral cut-off agreement;

- (v) placing all imported nuclear material under IAEA safeguards. Under its IAEA safeguards agreement, India accepts safeguards on imported nuclear material only when this is required by an arrangement to which it is a party. Today all uranium suppliers are NPT parties, therefore are obliged to require safeguards on nuclear material supplied to any non-nuclear-weapon state (NPT Article III.2). In the case of non-NPT parties this is interpreted to mean that safeguards must be required on all supplied material. However, it is not known whether all countries supplying uranium to India are doing this; if not, they will be in violation of their NPT obligations. It would be regrettable if India were taking advantage of failures by suppliers to comply with the NPT – it would be an important gesture of good faith for India to undertake to place all imported nuclear material under IAEA safeguards.

Before any uranium is supplied to India, we should expect more from India on these matters.

2. Context of this agreement

(a) Nuclear Non-Proliferation Treaty (NPT)

For many years Australia and many other countries interpreted the NPT as excluding any nuclear supply to India. Article III.2 of the NPT provides that parties shall not provide nuclear material, equipment or nuclear-related materials ...

to any non-nuclear-weapon State ... unless ... subject to the safeguards required by this Article.

The reference to *the safeguards required by this Article* is to paragraph 1 of Article III, which requires each non-nuclear-weapon state party to the NPT to conclude a safeguards agreement with the International Atomic Energy Agency (IAEA) applying to all its nuclear material –

what used to be termed *full scope safeguards* and today is known as *comprehensive safeguards*.

Australia and others considered that the NPT required comprehensive safeguards as a condition of supply for all non-nuclear-weapon states, even those which were not party to the NPT. A number of key NPT parties, including the US, never accepted the comprehensive safeguards interpretation of the NPT, therefore this never represented a *consensus* interpretation. Accordingly, the requirement for comprehensive safeguards was a matter of *policy* rather than agreed interpretation.

Nuclear Suppliers Group (NSG) India's 1974 nuclear test demonstrated that nuclear technology transferred for peaceful purposes could be misused (see page 10 below). The NSG was established largely in response to this, and the members adopted the policy of comprehensive safeguards as a condition of supply to non-nuclear-weapon states. This policy applied until 2008, when the members decided to support a US initiative to lift the comprehensive safeguards requirement to allow nuclear supply to India (the "India exception").

India and the NPT India has not joined the NPT, regarding the Treaty as discriminatory. Therefore Article III.1 does not apply to India and India has no obligation to accept comprehensive safeguards. NPT parties, however, are obliged to follow Article III.2 – so the question here is, what exactly does Article III.2 require with respect to India?

Is India a non-nuclear-weapon state in terms of the NPT? The NPT refers to two classes of state, *nuclear-weapon states* and *non-nuclear-weapon states*. Nuclear-weapon states are those that had conducted a nuclear explosion before 1 January 1967. There are five such states: the US, Russia, the UK, France and China. The literal interpretation of the NPT is that all other states are non-nuclear-weapon states.

India certainly was a non-nuclear-weapon state in 1968 when the NPT text was concluded. However, India conducted a nuclear test explosion in 1974, and has become a *nuclear-armed* state. India does not meet the NPT's terms for joining as a nuclear-weapon state (as it had not tested prior to 1967), but it cannot join the NPT as a non-nuclear-weapon state unless it relinquishes its nuclear weapons – which it certainly will not do in current circumstances. To consider India as a non-nuclear-weapon state is a legal fiction, which ignores reality. As a practical matter, India's situation is not specifically covered by the NPT.

After the NPT opened for signature, the comprehensive safeguards policy had an important purpose – to encourage as many countries as possible to join, in support of efforts to universalise the Treaty. Now this policy has served its purpose; the NPT is as close to universal as it is likely to be. We are down to the determined hold-outs – India, Israel and Pakistan – which will never join in current circumstances (and there is North Korea, which was a party but withdrew in 2003). Now we are faced with the question, *is there a more constructive basis for engagement with the NPT non-parties, and can this be done in a way that furthers nuclear non-proliferation and disarmament objectives?*

This issue was behind the US initiative for the NSG to adopt the *India exception*. The India exception certainly does not mean that nuclear material and items can be supplied to India free of safeguards. The international practice has developed for IAEA safeguards to apply to all nuclear material and items transferred to India and other non-NPT parties.

6.

Critics are concerned that reversing the comprehensive safeguards requirement for India has damaged the NPT, by giving countries the message that they can withdraw from the Treaty and still receive all the benefits under it. The case of a country that never joined, however, is totally different to a country that is a party and seeks to withdraw. Any withdrawal is automatically referred to the Security Council and the country concerned could expect to face sanctions. North Korea is the only country to have withdrawn from the NPT; there is no indication of any other country wanting to follow North Korea's example. All that being said, however, resentment within the NPT membership that India is getting all the benefits of the NPT without accepting any of the obligations has added to the difficulty of managing the politics of the NPT.

(b) 2005 US-India political agreement and follow up

In 2005 the GW Bush Administration decided to strengthen the bilateral relationship with India and as part of this, to normalise India's participation in international nuclear cooperation. In June 2005 President Bush and Prime Minister Singh issued a Joint Statement⁵, in which India undertook, inter alia, to:

- identify and separate civilian and military nuclear facilities and programs in a phased manner;
- voluntarily place civilian facilities under IAEA safeguards;
- conclude an Additional Protocol with respect to civilian facilities (see (e) below);
- continue India's unilateral moratorium on nuclear testing;
- work with the US for the conclusion of a multilateral fissile material cut-off treaty.

In 2006 India released its separation plan⁶ – 14 out of 22 power reactors in operation or under construction would be placed under safeguards, along with nominated upstream and downstream facilities (35 facilities in all). For the future, facilities would be placed under safeguards if India determines that they are "civilian" (see discussion in (c) following).

In 2007 India and the US concluded a nuclear cooperation agreement, and in 2009 India concluded a new safeguards agreement with the IAEA.⁷ Previously India had an *item-specific* safeguards agreement covering imported facilities and materials, where safeguards were required by the suppliers. The new IAEA agreement expands on the previous item-specific model, with an Annex listing facilities which India places under safeguards. In addition to imported facilities, these include indigenous facilities that India nominates for safeguards.

Included in the follow-up to the US-India political agreement, as noted above, in 2008 the NSG agreed to the *India exception*, lifting the comprehensive safeguards requirement to allow nuclear supply to India.

Subsequent to the 2007 US-India agreement, the following countries have concluded nuclear cooperation agreements with India: Argentina, Canada, France, Kazakhstan, Mongolia, Namibia, Russia, South Korea and the UK.

5. www.whitehouse.gov/news/releases/2005/07/20050718-6.html

6. www.iaea.org/Publications/Documents/Infocircs/2008/infocirc731.pdf

7. www.iaea.org/Publications/Documents/Infocircs/2009/infocirc754.pdf

(c) Separation of India's military and civilian programs

India has a military nuclear program and now, in effect, two parallel civilian programs, one under IAEA safeguards and one not. To complicate this situation, an unsafeguarded facility can be placed under safeguards temporarily, if safeguarded material is being used there.

On the military side, India operates both reprocessing and enrichment facilities, and is estimated to have produced between 90 and 110 nuclear weapons (compared with estimates for Pakistan of 100-120 and China of 250).⁸ India is expanding its fissile material production capability, with an unsafeguarded 500 MWe fast breeder reactor nearing completion (this will be “commercial”, generating electricity, but also producing weapons-grade plutonium), and plans to build a large-scale centrifuge enrichment plant, again nominally “commercial” but unsafeguarded so able to contribute to the weapons program.

The language used in India's separation plan is revealing:

- India will include in the civilian list ... *only those facilities offered for safeguards that, after separation, will no longer be engaged in activities of strategic significance;*
- *The overarching criterion would be a judgement whether subjecting a facility to IAEA safeguards would impact adversely on India's national security;*
- *...a facility will be excluded from the civilian list if it is located in a larger hub of strategic significance, notwithstanding the fact that it may not be normally engaged in activities of strategic significance;*
- *a civilian facility would therefore, be one that India has determined not to be relevant to its strategic programme.*

This indicates that close links remain between the military and civilian programs – while it appears those placed under safeguards are not considered relevant to the “strategic program”, the relationships between *civilian safeguarded*, *civilian unsafeguarded* and military are opaque, especially since *civilian unsafeguarded* facilities can be transferred into safeguards and out again on a temporary or *campaign* basis, safeguarded material can be used in normally unsafeguarded facilities, and unsafeguarded material can be used in safeguarded facilities. The separation between military and civilian programs has a long way to go compared with the separation that exists in nuclear-weapon states.

Incidentally, the National Interest Analysis is not correct in saying India expects to have all its civilian reactors under safeguards by the end of 2014 (NIA paragraph 11). As shown by the discussion above, India uses a particular definition of “civilian”, there are facilities that would normally be regarded as civilian but will remain unsafeguarded (e.g. current power reactors – India is placing under safeguards only 14 out of the total of 22).

(d) IAEA safeguards in India

Before looking at the operative provisions of the 2009 India-IAEA agreement, regard must be had to the preambular provisions. These say, *inter alia*, that ...

An essential basis of India's concurrence to accept Agency safeguards ... is the conclusion of international cooperation arrangements creating the necessary conditions for India to obtain access to the international fuel market, including reliable, uninterrupted and continuous access to fuel supplies from companies in several nations, as well as support for an Indian effort to

8. www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat

8.

develop a strategic reserve of nuclear fuel to guard against any disruption of supply over the lifetime of India's reactors; and

India may take corrective measures to ensure uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies.

These are extremely important paragraphs. Clearly they refer to the situation if India conducts a further nuclear test, and suppliers suspend supply (as Australia would surely do). Unfortunately the National Interest Analysis does not refer to these paragraphs, and does not discuss their implications for any Australian material in India. What are the *corrective measures* India might take? Could India argue that the basis of its concurrence to accept safeguards had not been satisfied and therefore the IAEA agreement was annulled? The provisions of the Australia-India agreement on fallback safeguards and right to return of material are not of hypothetical interest but could become very important for Australia.

Turning to the operative provisions – the India-IAEA safeguards agreement is an *item-specific* agreement, i.e. it applies to specified items and materials.⁹ This is the type of safeguards agreement applicable to non-NPT parties. Usually these agreements are concluded as a requirement by nuclear suppliers, and safeguards under them apply only to transferred (i.e. imported) items and materials (including materials produced in transferred facilities). This agreement is different, in that India has agreed to nominate (some) *indigenous* as well as imported facilities. The agreement has an Annex in which facilities nominated for safeguards are listed. These facilities are subject to safeguards permanently, i.e. once they are listed in the Annex they cannot be removed, unless they are shut down and decommissioned.

In addition to facilities listed in the Annex, safeguards also apply *inter alia* to:

- nuclear material etc. supplied to India which is required to be safeguarded by an arrangement to which India is a party;
- material, including subsequent generations of material, produced, processed or used in a facility listed in the Annex or by the use of material supplied to India under safeguards;
- a facility not on the Annex (i.e. not usually safeguarded), while producing, processing, using or storing material subject to safeguards.

The agreement has provisions on substitution of unsafeguarded for safeguarded material, exemption of material from safeguards in certain circumstances (including if the material is subject to safeguards only because it has been processed or used in a safeguarded facility), suspension of safeguards, and termination of safeguards.

India has undertaken to add future civilian facilities to the Annex, but it is for India to decide whether a facility is “civilian”. It has announced that the 500 MWe prototype fast breeder reactor nearing completion will not be placed under safeguards. Future fast breeders might be nominated for safeguards, but India has given no commitment. Also, the proposed “commercial” enrichment plant will not be placed under safeguards.

A positive feature of this agreement, compared with safeguards in the five NPT nuclear-weapon states, is that the IAEA actively inspects all facilities and materials under the agreement (in the nuclear-weapon states the IAEA inspects only a limited number of facilities it selects for inspection). IAEA policy is to conduct inspections at all facilities under item-specific agreements. As more facilities and materials are added to the India agreement,

9. www.iaea.org/Publications/Documents/Infcircs/2009/infcirc754.pdf

inspections in India will represent an increasingly significant proportion of the IAEA's overall safeguards workload.

(e) India's additional protocol – *the additional protocol to have when you don't want an additional protocol*

The additional protocol is a supplementary safeguards agreement (i) extending the range of information countries are required to report to the IAEA and (ii) extending the IAEA's right of access to nuclear-related sites and to any location in the country concerned where the IAEA has a matter to investigate.

In the 2005 Bush/Singh statement India undertook to conclude an additional protocol "with respect to civilian nuclear facilities". This commitment was reflected in the 2007 India-US nuclear cooperation agreement, which stipulates that nuclear material under the agreement will be subject to an additional protocol.

The additional protocol that India eventually concluded, however, is limited to certain nuclear exports, and has no application to any nuclear material or facilities in India. Here, the National Interest Analysis is incorrect when it says that AONM (*Australian-obligated nuclear material*) will be subject to the additional protocol (NIA paragraph 11) and that the Australia-India agreement assures that all civilian facilities in India and all AONM will be subject to the additional protocol (NIA paragraph 15).

As the additional protocol is intended to enhance the IAEA's capacity to detect undeclared nuclear activities, and nuclear-weapon states and non-NPT states such as India obviously have unsafeguarded nuclear activities, it might be asked is there a point in having additional protocols applying to facilities in these countries. The approach taken by the nuclear-weapon states can be outlined as follows:

- US – applies the additional protocol to all civilian facilities, recognising this may assist the IAEA in developing verification techniques;
- UK – applies to any facilities or locations involved in R&D or other cooperation with non-nuclear-weapon states, and also to any facility for *design information verification* (a normal safeguards activity);
- France – applies to any facilities or locations involved in R&D or other cooperation with non-nuclear-weapon states;
- Russia and China – do not provide access to facilities, but do provide information on R&D or other cooperation with non-nuclear-weapon states.

India's additional protocol has the narrowest scope of all, applying only to nuclear exports, and providing no information on, let alone access to, any Indian facility. This is totally inadequate compared with the commitment given to apply the additional protocol to civilian facilities. India's additional protocol was meant to have been a positive factor but is in fact an unfulfilled commitment.

(f) India's non-proliferation record

When announcing the signing of the nuclear cooperation agreement with India, Mr Abbott said "India has an absolutely impeccable non-proliferation record ... and has been a model international citizen". In the context, Mr Abbott seemed to be implying that a relaxation of

Australia's usual safeguards standards would be warranted for India. Unfortunately, Mr Abbott is misinformed about India's record:

Proliferation means the acquisition of nuclear weapons by countries that did not previously have them. In 1968 when the NPT was concluded India did not have nuclear weapons. Today it has – ergo, India has proliferated; and it has done so in breach of agreements:

- (i) India conducted its first nuclear test in 1974. This used plutonium from the Canadian-supplied CIRUS reactor. India exploited a loophole in its agreement with Canada and contract with the US covering this reactor. These stipulated that the reactor could be used only for *peaceful purposes*, but through oversight did not explicitly prohibit nuclear explosions. India claimed its weapon test was a “peaceful nuclear explosion”.
- (ii) This diversion of plutonium from peaceful purposes cannot be dismissed as just a one-off incident that occurred 40 years ago. Despite the peaceful use conditions applying to CIRUS, India continued to use this reactor to produce plutonium for its nuclear weapon program until the reactor was shut down in 2010.

Maybe what Mr Abbott meant was that India has not (as far as we know) directly assisted another country to acquire nuclear weapons. Its record here, however, is far from impeccable. In developing its unsafeguarded uranium enrichment program, India is believed to have sourced restricted designs, components and materials from the black market (including ironically Pakistan's AQ Khan network)¹⁰, thereby supporting the operations of suppliers illicitly supplying nuclear weapons programs in other countries.

As for India being a model citizen:

- (i) India refuses to sign the CTBT.
- (ii) India is still producing fissile material for nuclear weapons, and is expanding the number of its nuclear weapons.
- (iii) While India has now placed many of its civilian facilities under IAEA safeguards, it has kept a number outside safeguards, and describes some of these as “dual-use”, i.e. available for the weapons program. India is proposing to produce substantial quantities of weapons-grade plutonium, using unsafeguarded as well as safeguarded facilities, as part of its “civilian” program. This plutonium is seen as a strategic threat by Pakistan, exacerbating tensions between the two countries, and it will also present a serious terrorism risk.

These are all good reasons for Australia to exercise due diligence in our nuclear dealings with India.

(g) Interests of other countries

What happens with the Australia-India agreement will be watched closely by other countries. Australia is involved with Canada, the US and the EU – which for decades have had similar safeguards requirements – in an informal working group on bilateral safeguards. A topic of particular interest in this group is *tracking*. The decision of the Canadian government to waive tracking for India (see page 18 of this submission) will have caused consternation in this working group. The administrative arrangement under the US-India agreement has been

10. www.isis-online.org/publications/southasia/indiagrowingcapacity.pdf; www.nti.org/gsn/article/india-could-be-fourth-customer-q-khan-ring-expert-says/

outstanding for several years, apparently over legal issues, including tracking, where it is understood India is refusing to account for material under the agreement. If Australia gives in to India on accounting and tracking, this will be used by India to pressure the US, and no doubt the EU.

Japan is also watching closely. Japan and India have been trying to conclude a nuclear cooperation agreement for some years, but this has been stalled over similar issues.¹¹

(h) Implications for Australian safeguards policy

Bipartisan support for, and public acceptance of, uranium exports is based on Australia's safeguards conditions, such as peaceful use obligations and consent rights over reprocessing, high enrichment and retransfers, and the assurance that Australia is able to track our material and determine that our conditions are being met. Australia's safeguards requirements were developed by the Fraser government and have applied to all our safeguards agreements ever since – today we have 23 agreements covering 41 countries, including all the countries with significant nuclear power programs except India.

It is short-sighted to make this agreement even more contentious by compromising Australia's safeguards standards. This will jeopardise bipartisan support for the agreement, raising the prospect of future governments suspending exports to India. It also risks re-opening the wider uranium debate in Australia. None of this is in the interests of the two governments or industry in either country.

If the Government does compromise Australia's safeguards conditions, inevitably this will lead to other agreement partners asking for similar treatment. If we are prepared to give a special deal to India, it will be impossible to justify not passing this on to others who will question why they are being discriminated against. This would start the unravelling of the entire policy. If the Government wants to change the policy, this should be examined through a careful process of review, similar to the process that resulted in the policy in the first place (the Ranger Inquiry and substantial supporting studies by departments and agencies), and the review that confirmed the policy – the ASTEC inquiry commissioned by the Hawke government. Also, as noted, other governments and the EU need to be consulted. Piecemeal change through individual agreements is bound to lead to unexpected and unwanted consequences.

3. Is there any risk that India's nuclear weapon program could benefit from the supply of Australian uranium?

Short answer: Risk is relative, and is very much influenced by the terms of the nuclear cooperation agreement. If there were *no* bilateral agreement, India would be free to use imported uranium for *any* purpose, including nuclear weapons. The Australia-India agreement will, for a start, make supplied uranium and material derived therefrom subject to IAEA safeguards. If Australia thought India might violate IAEA safeguards by diverting material from safeguards, we should not proceed with an agreement. However, the complexities of India's IAEA safeguards agreement are such that there may be risks, other than outright diversion, of Australian uranium benefitting India's weapon program. It is essential that the Australia-India agreement addresses these risks.

11. www.jaea.go.jp/04/np/nnp_pletter/0002_en.html

Weaknesses in the Australia-India agreement could be exploited – in particular, if AONM is not identified and accounted for as such, the conditions of the agreement will be readily evaded (see the discussion of tracking, pages 16-20 below). Australia's standard safeguards requirements are essential in their entirety for closing off opportunities and temptations, and for providing confidence that the agreement will not be circumvented.

When the question of risk is posed, there may be an underlying implication that if the risk is low, safeguards standards can be relaxed. This is to misunderstand the rationale for bilateral safeguards. If Australia thought India was likely to blatantly violate the agreement we should not proceed – no agreement, however drafted, can *prevent* violation if the other party is so minded. The point of a bilateral agreement is to build confidence between the parties about their good intentions through a willingness to accept established conditions.

How do we assess risk, what factors are relevant and how do we weigh them? On the one hand, India is certainly not dependent on Australian uranium for its weapon program. India has domestic uranium reserves: not great, but more than enough for the weapon program. India also has access to imported uranium from several sources, such as Kazakhstan, Uzbekistan, Namibia, Niger and Canada. It is not known if every country supplying uranium to India requires it to be subject to IAEA safeguards (see page 4 above).

On the other hand, India's nuclear programs and the connections between them are complex and it is difficult to predict all the circumstances that could arise in the future. Relevant facts include:

- India is increasing its nuclear weapon arsenal and is expanding its fissile material production capacity for this purpose. It sees as its principal adversary not Pakistan but China, which currently outnumbers India in nuclear weapons by up to 3:1;
- in a situation of nuclear build-up, fissile production shortages are more significant than uranium supply. India will be concerned about production rates for plutonium and highly enriched uranium, and no doubt will be looking at how "civilian" materials can be used to advantage if needed;
- India has two parallel civilian nuclear programs, one subject to IAEA safeguards and one that is not. Nuclear material from unsafeguarded civilian facilities is used in, or is available to, the weapons program;
- the India-IAEA safeguards agreement has very complex provisions on suspension of safeguards, withdrawal of material from safeguards, exemption of material from safeguards, substitution of material, and on application of proportionality rules to plutonium production, not to mention dual-use facilities;
- other complexities include that India is free to move unsafeguarded civilian facilities into IAEA safeguards while using or processing safeguarded material, then to remove them from safeguards when processing unsafeguarded material; and safeguarded and unsafeguarded materials can be used in the same facility.

The objective of IAEA safeguards in India is to *guard against withdrawal of safeguarded nuclear material from civilian use*. However, nuclear material could be used to benefit a weapon program without outright diversion from safeguards. Just one of a number of possible scenarios is as follows:

- suppose India wishes to use an unsafeguarded fast breeder reactor to produce weapons-grade plutonium for weapons use but does not have sufficient unsafeguarded plutonium for the fuel required. It could use *safeguarded* plutonium to make up the shortfall in fuel, provided this is less than 30% of the plutonium fuel.¹² The weapons-grade plutonium produced would be pro-rated between safeguarded and unsafeguarded, the latter being available for weapons. The benefit to India in using safeguarded plutonium in this scenario is being able to produce plutonium for weapons more quickly than would otherwise be possible;
- incidentally, this scenario could also work with safeguarded facilities – India can use unsafeguarded material with safeguarded material in a safeguarded facility and exempt from safeguards plutonium produced in the unsafeguarded material.¹³

These examples show that the statement in the National Interest Analysis (paragraph 22) that *Any plutonium or other special fissionable material that is separated by reprocessing AONM would be used only to produce nuclear fuel for India's IAEA-safeguarded nuclear energy programme* is not accurate for all situations that could arise under the India-IAEA agreement.

A totally different area of risk arises because of the preambular language of the India-IAEA agreement, implying some conditionality on India's acceptance of IAEA safeguards and foreshadowing that India may take unspecified *corrective measures* in the event of disruption of foreign fuel supplies (see pages 7-8 above). The potential implications for any AONM in India are not known.

Australia has no experience with an IAEA safeguards agreement of this complexity: it is impossible to foresee all the situations that might arise under it, and the onus should not be on Australia (or proponents of effective safeguards) to do so. Where a country has exploited weaknesses in agreements, due diligence demands greater, not less, specificity in any agreement with that country. Australia has a standard set of safeguards conditions which have stood the test of time and which should apply in India's case. Anything less will result in a higher level of potential risk that AONM could contribute in some way to India's nuclear weapon program.

4. Australia's bilateral safeguards policy

Why are bilateral safeguards agreements required?¹⁴

Australia's bilateral safeguards policy was developed early in the life of the NPT and the IAEA's *comprehensive safeguards* system (i.e. application of safeguards to all nuclear material in non-nuclear-weapon states party to the NPT). IAEA safeguards by themselves are not considered sufficient because:

- (a) there are actions permitted by IAEA safeguards that supplier countries (like Australia) may not wish to happen to material they supply, unless with their consent and subject to any conditions they may require. These include:

12. See Article 25 of the India-IAEA agreement.

13. See Article 30(b) of the India-IAEA agreement.

14. For a general discussion on bilateral safeguards see *The role of bilateral nuclear safeguards agreements*, www.dfat.gov.au/asno/publications/vertic_bilateral.html

14.

- high enrichment, i.e. enrichment of uranium to 20% or more in the isotope uranium-235;
 - reprocessing (separation of plutonium from spent fuel); and
 - retransfer to third countries;
- (b) in the case of nuclear-weapons states, acceptance of IAEA safeguards is voluntary and bilateral agreements are the only way of applying peaceful use conditions to the supply of nuclear material and items to them. This is also the case with India; under the India-IAEA agreement safeguards do not apply unless there is an arrangement with India requiring this;
- (c) the IAEA does not distinguish between nuclear material from different suppliers, all material is treated alike. Further, so far as the IAEA is concerned, high enrichment, reprocessing and retransfers are all permitted provided they are reported to the IAEA and are carried out under safeguards. The only way for Australia and other suppliers to limit such actions is through a bilateral agreement. Canada, the US and the EU have bilateral agreements similar to those of Australia;
- (d) Australia is selective about the countries to which it will supply uranium. Not only will we not conclude an agreement with a country in poor non-proliferation standing, but we wish to ensure there are no secondary transfers of AONM to such a country. And we want to ensure all uranium exported from Australia, and materials derived therefrom, remain within our network of bilateral agreements. Hence, the requirement in Australia's agreements for prior consent for retransfers is also very important.

A further factor is that, hitherto, Australia has been keen to limit the spread of proliferation-sensitive technologies (such as uranium enrichment and reprocessing technology), and to make certain that sensitive materials – highly enriched uranium and separated plutonium – are held securely. Australia takes into account both the security standards that will apply to sensitive materials and whether there are any policy concerns about having such materials in the particular country. Accordingly, the requirement for prior consent for high enrichment and reprocessing is especially important.

Now that the overwhelming majority of countries are non-nuclear-weapon states party to the NPT, some might consider that bilateral agreements are no longer necessary (this of course is not India's situation, India is a *nuclear-armed* state outside the NPT). However, most of the considerations outlined above continue to apply for non-nuclear-weapon states, and they all continue to apply to countries with unsafeguarded nuclear programs – the nuclear-weapon and nuclear-armed states.

Australia's safeguards policy

The basic components of Australia's bilateral safeguards policy are set out on the DFAT web site, repeated in the box on the next page.

This text box covers most aspects of the policy, but some others should be mentioned:

- detailed administrative arrangements are to be concluded between the respective implementing authorities, the Australian Safeguards and Non-Proliferation Office (ASNO) and its counterpart, setting out the procedures to apply in accounting for and reporting on AONM; and
- there must be provision for the cessation of supply and the removal of AONM in the event of a breach of the agreement.

Australia's Uranium Exports Policy

Australia's uranium export policy acknowledges the strategic significance which distinguishes uranium from other energy commodities. Australian policy has consistently recognised that special arrangements need to be put in place to distinguish between the civil and military applications of nuclear energy.

Australia's uranium export policy embodies fundamental tenets first outlined in 1977, adjusted to reflect a number of international and domestic developments in the intervening period. It provides assurances that exported uranium and its derivatives cannot benefit the development of nuclear weapons or be used in other military programs. This is done by precisely accounting for amounts of Australian-Obligated Nuclear Material (AONM) as it moves through the nuclear fuel cycle. At the same time, the policy recognises the needs of customer countries and the nuclear industry for predictability about the way Australia exercises the non-proliferation conditions governing its uranium supply.

In summary, Australia's policy is that:

- Australian uranium may only be exported for peaceful non-explosive purposes under Australia's network of bilateral safeguards Agreements, which provide for:
 - coverage by IAEA safeguards
 - fallback safeguards in the event that IAEA safeguards no longer apply for any reason
 - prior Australian consent for any transfer of AONM to a third party, for any enrichment beyond 20 per cent of uranium-235 and for reprocessing of AONM, and
 - physical security requirements.
- Australia retains the right to be selective as to the countries with which it is prepared to conclude safeguards arrangements.
- Non-nuclear weapon state customer countries must at a minimum be a party to the NPT and have concluded a fullscope safeguards Agreement with the IAEA.
- Nuclear weapon state customer countries must provide an assurance that AONM will not be diverted to non-peaceful or explosive uses and accept coverage of AONM by IAEA safeguards.
- Commercial contracts for the export of Australian uranium should include a clause noting that the contract is subject to the relevant bilateral safeguards arrangement.
- The Australian Government has further tightened Australia's export policy by making an Additional Protocol with the IAEA (providing for strengthened safeguards) a pre-condition for the supply of Australian obligated uranium to all states.

From DFAT web site - http://www.dfat.gov.au/security/aus_uran_exp_policy.html

(underlining in second paragraph added for emphasis)

Accounting for nuclear material under bilateral agreements

Accounting and tracking are necessary because uranium undergoes several processes (with processing losses), is changed into a number of chemical and physical forms and produces new nuclear material, as it moves through the fuel cycle – see the Appendix to this submission. Safeguards accounting tracks the uranium, and produced plutonium, through all these processes, applying mass balance principles to ensure all material is accounted for and none is diverted from safeguards coverage.

Accounting is undertaken by facility operators and is verified by IAEA safeguards. Bilateral or *obligation* accounting is applied to the material flow covered by IAEA safeguards, to track material of a particular obligation. For example, country X may have produced 1,000 tonnes of uranium, and imported 5,000 tonnes – 2,000 tonnes from Canada, 1,500 tonnes from Australia, 1,000 tonnes from Kazakhstan and 500 tonnes from Namibia – making 6,000

tonnes in total. Canada and Australia have bilateral agreements with country X, requiring their material to be accounted for (Kazakhstan and Namibia do not have a similar requirement). This involves identification and tracking of the material supplied by Canada and Australia as it moves through the fuel cycle. Tracking is based on adding obligation (nationality) coding to the IAEA documentation covering each batch of nuclear material or each discrete item (e.g. a fuel assembly).

Effective implementation of each bilateral agreement requires accounting for and identification of *nuclear material subject to the agreement*. If the various obligations under an agreement cannot be linked to specific material, it will not be possible to meet these obligations, or for Australia to tell if in fact the obligations are being met.

Each of Australia's agreements requires the agreement partner to maintain a system of accounting for material under the agreement. This obligation is not satisfied simply by including nuclear material subject to an agreement on the inventory of nuclear material under the applicable IAEA safeguards agreement, because the IAEA makes no distinction between nuclear material from different suppliers or sources – AONM will be just part of the totality of material in that country.

Accounting for AONM allows Australia to track and quantify this material as it moves through the different stages of the fuel cycle. The information reported by each agreement partner can be assessed for accuracy against information available on the fuel cycle processes involved (process losses, fuel burn-up and so on).

The requirement for tracking exists not only under Australia's various nuclear agreements, but also under the Safeguards Act¹⁵ – section 51(2) requires the Director General of ASNO to prepare an annual report showing, for all materials and items of Australian origin and for each jurisdiction (i.e. for each agreement), the total quantities in each stage of the nuclear fuel cycle, the intended end-use, and any unreconciled accounting differences. This cannot be done without tracking.

5. Major problems with this agreement

(a) Accounting and tracking, and the impact of the administrative arrangement on the agreement

Tracking is the shorthand term for the procedures involved in identifying and accounting for nuclear material supplied under an agreement and all subsequent materials (such as plutonium) produced from that material.

The greatest problem with this agreement may be something that does not appear in the text, but will be hidden from view in the administrative arrangement, a document of *less-than-treaty* status which will set out how the agreement is to be implemented.

Article III, paragraph 5 of the agreement provides that:

Each Party shall establish and maintain a system of accounting for and control of items subject to this Agreement.

15. Nuclear Non-Proliferation (Safeguards) Act 1987.

The agreement does not set out anything further on what is meant by *a system of accounting for ... items subject to the agreement*. This is to be elaborated in the administrative arrangement provided for in Article III, paragraph 4 of the agreement. The administrative arrangement is to be concluded by the authorities responsible for implementing the agreement – ASNO and the Indian Department of Atomic Energy. As far as known publicly, the administrative arrangement has not yet been negotiated, but it is expected to be concluded in 2015.

Administrative arrangements are usually confidential to the parties, hence are not available for Parliamentary or public scrutiny. The administrative arrangement is a document of critical importance, as it will determine the interpretation of the agreement. Depending on the content of the administrative arrangement, it could effectively negate the whole agreement. The fact that the administrative arrangement is not available to JSCOT, and might never be available, presents a serious issue in terms of JSCOT's review of the agreement.

Effective implementation of the agreement will require identification of *nuclear material subject to the agreement* (i.e. AONM). AONM includes not only the initially-supplied uranium, but all material processed and produced from this material, especially subsequent generations of plutonium.

If the various obligations under the agreement cannot be linked to specific material, it will not be possible for India to meet these obligations, nor for Australia to tell if in fact they are being met. This is the meaning of Article III.5, requiring each party to maintain a system of accounting for and control of material subject to the agreement.

The National Interest Analysis says (paragraph 19) that both India and Australia maintain systems of accounting and control to meet IAEA requirements. If this is all that is required, there would be no point to Article III.5, because both countries are obliged to do this anyway under their respective IAEA agreements. The purpose of Article III.5 is to address the issue that the IAEA makes no distinction between AONM and all the other safeguarded nuclear material in India. IAEA safeguards by themselves cannot ensure performance of all the obligations in the Australia-India agreement. Article III.5 clearly requires identification of and accounting for AONM – in other words, that AONM be tracked. This is a legal requirement, essential to the proper functioning of the agreement. There are almost four decades of practice applying Australia's agreements this way, backed up by US, Canadian and EU practice.

In addition to identifying and accounting for AONM, the administrative arrangement should include a requirement for India to provide regular reports to Australia showing the flow of this material through the fuel cycle. In order for Australia to know that the agreement is operating as it should, Australia needs to be able to track and account for AONM. Australia's ability to do this is both a public expectation and a legal requirement under the Safeguards Act.¹⁶

Indian objections to accounting ... and Australian acquiescence??

Disturbingly, it is reported that Indian officials are refusing to provide Australia with reports accounting for material under the agreement. Even more disturbing, it is reported that the Abbott government is prepared to waive this requirement for India.¹⁷ The same issue has

16. See page 24 of this submission.

17. <http://www.abc.net.au/news/2013-11-19/australia27s-nuclear-deal-with-india/5101030>

arisen under India's agreements with the US and Canada. In the case of the US, the administrative arrangement has been outstanding for several years – reportedly the US is insisting on receiving tracking information and India is refusing.¹⁸ In the case of Canada, the Harper government gave in to India on this – an outcome described as the *meltdown of Canadian non-proliferation policy*.¹⁹ The Canadian government refuses to reveal details.

It is understood Indian officials say they will not account for AONM, they will not do more than maintain IAEA accounts, because they say tracking AONM is expensive, complicated and unnecessary:

- (i) the first objections are not true – AONM can be tracked simply by adding a two- or three-letter code to IAEA accounting forms, this is the standard practice in all Australian partner countries (e.g. the code for Australia is “AU” or “AUS”). The entries for AONM are readily aggregated by the accounting software in use today;
- (ii) as to whether tracking is *necessary*, this is not a matter for debate, it is a legal requirement – Article III.5 requires that it be done.

Essentially, Indian officials seem to be saying, before the agreement even enters into force, that India has no intention of complying with Article III.5. If Australian officials, in the negotiation of the administrative arrangement, accept India's refusal to track AONM, they will be acquiescing in the contravention of the agreement.

A pragmatic approach?

The National Interest Analysis (paragraph 19) says that *additional procedures to separately track nuclear material ... will be addressed in the administrative arrangement*. The NIA does not say what is envisaged. The NIA certainly does not say that the accounting and tracking arrangements will be the same as under Australia's other agreements.

The concern here is that the Government may claim that the objectives of accounting for and tracking AONM can be met through “equivalent” information. A “pragmatic” approach can be envisaged that might work *temporarily* – for example, if Australia required all uranium sold to India to be fabricated as fuel assemblies in the US and transferred into India under the US-India agreement, then the uranium could be tracked informally because Australia would know (hopefully) which reactors were being supplied with those fuel assemblies.

However, there are assumptions in such an approach that could prove problematic:

- (i) it assumes that Indian companies buying Australian uranium will be prepared to have conversion, enrichment and fuel fabrication carried out in the US. This might not be the case, particularly if they are operating non-US-supplied reactors. In any event India may object that this approach is commercially disadvantageous and discriminatory;
- (ii) it assumes the US-India agreement is in operation. At present the administrative arrangement for the US-India agreement remains outstanding, it is not clear when the agreement will come into operation.

18. <http://timesofindia.indiatimes.com/india/India-confident-of-sealing-Australia-N-deal-but-wary-of-US/articleshow/41830409.cms>

19. http://www.thestar.com/opinion/editorialopinion/2012/11/15/india_and_the_meltdown_of_canadas_nuclear_nonproliferation_policy.html

There is a much more serious problem with this “pragmatic” approach. Such an approach cannot provide a long-term alternative to accounting. First, without accounting Australia would have no way of knowing how much plutonium was produced in this fuel when it is used in reactors. Second, when the fuel is reprocessed – and India intends that reprocessing will be a central part of its fuel cycle – Australia would lose all track of the plutonium and recovered uranium.²⁰ This “pragmatic” approach will lose any efficacy when the first reprocessing operation takes place, when the fuel assemblies are dissolved and the material loses its identity.

The nuclear material under this agreement will be usable for nuclear purposes for hundreds, if not thousands, of years. The material can undergo a number of recycling operations, producing further plutonium each time. Within the first decade or two there could be tonnes of plutonium derived from Australian uranium that would be well beyond any information available to Australia. The same situation applies to the uranium recovered from reprocessing, most of which could be recycled many times. Without a proper accounting system, once material loses its initial identity, there is no way of knowing where that material goes, or even quantifying it. There is no substitute or “equivalent” for accounting and tracking.

Why does India want to be treated differently to all other partners on this issue?

This could be simply that Indian officials are unfamiliar with *obligation accounting* and believe it is difficult to implement. If this is the case, ASNO should be able to demonstrate to their Indian counterparts how easy this is, and to assist them in setting up the necessary procedures. If the problem is intransigence on the part of Indian officials, this is something Prime Minister Modi has the power to resolve.

There is, disturbingly, another explanation. India has an expanding nuclear weapon program. Although it has undertaken to separate its military and civilian nuclear programs, these are not fully separated, and some facilities are dual-use. Indian military planners will wish to maintain maximum flexibility with all the nuclear material available in the country – to this end, it is an advantage if India can delink nuclear material from the restrictions imposed by bilateral agreements. India’s safeguards agreement with the IAEA does not impose the same restrictions as bilateral agreements, e.g. consent rights on reprocessing, higher enrichment, retransfers to third countries, R&D activities, or even prohibition of military purposes such as production of tritium that could be used in nuclear weapons.

If it is not possible to identify which batch of material is covered by which bilateral agreement, then India can work a *pea and thimble* trick with foreign-sourced material, being able to assure each of its agreement partners that none of *their* material is involved in activities proscribed by the respective agreement. The mere possibility of this situation is sufficient to call into question India’s commitment to observing our agreement, and emphasises the need for Australia to proceed with caution.

Recommendation to JSCOT: The key question here is, will the administrative arrangement enable Australia to track and account for all AONM? Accounting and tracking are not, as the Government may think, policy options that can be waived, but legal requirements of fundamental importance to the very purpose of the agreement. The

20. Some 95% of the uranium initially loaded as fuel can be recovered through reprocessing and is available for further nuclear use.

Government must be prepared to make it clear to the Indian government that proper accounting and tracking arrangements are legal requirements and as such are not negotiable.

The Government should proceed no further with the agreement unless it can give an assurance that Australia's longstanding requirements on accounting for and tracking AONM will be met in full (and not dealt with through some sleight of hand on "equivalent" information). The Government may try to dismiss this discussion as speculation. The problem is that the public – and the Parliament – may never know the facts. The possibility that a confidential document, the administrative arrangement, could negate the operation of a treaty is contrary to the public interest and undermines the JSCOT review process.

JSCOT needs to insist on examining – if necessary *in camera* – whether the terms of the administrative arrangement will enable Australia to confirm that all AONM is properly accounted for and that Australia's safeguards conditions are fully met. Because, as far as we know, the administrative arrangement has not yet been negotiated, JSCOT may need to withhold its conclusions on the agreement itself until the text of the administrative arrangement is available.

When the text of the administrative arrangement is available, ASNO should be required to explain to JSCOT in detail whether there are any differences between this administrative arrangement and those under other Australian agreements, and if so, the implications of the differences.

Given the public interest in this agreement and the concerns about the administrative arrangement, JSCOT may wish to recommend that the administrative arrangement be made public.

(b) Australia's prior consent for reprocessing (Article VI.2)

Reprocessing, involving separation of plutonium from spent fuel, is the most sensitive stage of the nuclear fuel cycle. To date Australia's consent to reprocessing has been limited to Japan and Euratom (EU – allowing reprocessing by UK and France), and has been given on what is called a programmatic basis. This means reprocessing takes place only in accordance with a nuclear fuel cycle programme mutually determined by each side's implementing authorities. In other words, Australian approval is required for the specific *downstream* facilities using, handling or storing separated plutonium and the purposes involved.

In the Australia-India agreement, however, Australia has essentially outsourced consent to the US. The agreement gives consent in advance for India to reprocess in accordance with an *arrangements and procedures* document India concluded with the US in 2010. This covers safeguards at two reprocessing plants which India plans to build in the future, but includes only a vague reference to management of plutonium, and has nothing corresponding to programmatic consent. Further, the US arrangements and procedures apply primarily to US-obligated material, and certain provisions (e.g. suspension for *exceptional circumstances*) do not apply to non-US-obligated material. The implications for AONM are not clear.

A contrast can be drawn with Australia's nuclear agreement with China (2006). China sought reprocessing consent, but has not yet built a reprocessing plant for civilian fuel, and the downstream facilities have not yet been built or identified. In these circumstances it was considered premature to give reprocessing consent, and instead the agreement contains a Reprocessing Annex (Annex C). In this Annex:

- Australia recognises China's interest in reprocessing as part of its civil nuclear energy program, and China's interest in predictable and practical implementation of consent rights under the agreement;
- Australia undertakes that it *will* provide consent on a long term basis to reprocessing in accordance with a fuel cycle program mutually determined by both countries' responsible authorities (i.e. programmatic consent);
- Australia undertakes that it will provide this consent at such time that China's plans for reprocessing are sufficiently advanced to nominate the facilities, reactors and other facilities concerned for inclusion in the approved fuel cycle program.

In contrast to these other agreements, with the Australia-India agreement Australia will have no say in the facilities in which the recovered plutonium will be used, or the purposes for which it may be used. The only condition is the general one that nuclear material subject to the agreement may be used only for peaceful and non-explosive purposes (Article VII.1) and must remain subject to IAEA safeguards (Article VII.4). Examples of activities Australia might not wish to approve could include:

- R&D of a dual-use nature with potential military application – this is not explicitly excluded by the India-IAEA safeguards agreement;
- production of weapons-grade plutonium for use as reactor fuel. India has a plan to produce such plutonium in *fast breeder reactors* for use as *driver fuel* in thorium reactors. This is problematic on non-proliferation and nuclear security grounds. Pakistan believes the real purpose of the fast breeder program is to produce plutonium for weapons (so this plan raises tensions between the two countries); and transport and use of weapons-grade plutonium in civil reactors presents a serious terrorism risk (weapons-grade material would be a priority target for seizure by terrorists). Recently Indian scientists have suggested 20% enriched uranium (the threshold for highly enriched uranium) might be used instead of plutonium – the point is, we just do not know what India's future plans are for use of plutonium, it makes no sense to give India a blank cheque;
- use of safeguarded material with unsafeguarded material to augment production of unsafeguarded plutonium, which would be exempt from IAEA safeguards and could be used for weapons (see page 13 above).

Recommendation to JSCOT The reprocessing consent as given in the current agreement should not be supported, there are too many uncertainties about India's future plutonium program. At this time India should only be given an undertaking of favourable consideration, as in Annex C of the China agreement. Consent, when given, should be only on a programmatic basis, as in Australia's other agreements.

(c) Limiting AONM to facilities on the IAEA safeguards list

Australia's nuclear agreements with all nuclear-weapon states (US, UK, France, Russia and China) limits use of AONM to facilities that are on each country's *eligible facility list* under its safeguards agreement with the IAEA. This means facilities subject to ongoing IAEA safeguards.

In contrast to these agreements, the Australia-India agreement does not limit use of AONM to such facilities. Article VII.4 of the agreement requires only that AONM be subject to IAEA safeguards in accordance with the India-IAEA safeguards agreement. The India-IAEA

agreement applies to two kinds of facility: (a) those that are listed in the agreement's Annex for ongoing safeguards; and (b) facilities that are normally unsafeguarded, in which case safeguards apply temporarily while safeguarded material is present.²¹

Does it matter if material subject to the agreement goes to an unsafeguarded facility, provided safeguards apply while the material is there? This is potentially a very complicated situation, and it is difficult to foresee all the problems that could arise. The India-IAEA agreement allows for use of safeguarded and unsafeguarded material together, and for a proportion of the material produced therefrom to be exempt from safeguards.²² These complications should be avoided by not allowing AONM to go to unsafeguarded facilities, i.e. facilities not listed with the IAEA for ongoing safeguards. Consideration should also be given to excluding use of unsafeguarded material with AONM to produce plutonium – a scenario outlined at page 13 above.

Comparison with nuclear-weapon states In the case of the US and UK, all their civilian facilities are on the eligible facility list under their respective IAEA safeguards agreements. France has a variation of this, whereby all facilities using nuclear material subject to bilateral agreements are listed for IAEA safeguards. In addition, in UK and France Euratom safeguards inspections (which are similar to IAEA inspections) are conducted at all civilian facilities.

In the case of Russia and China, only some facilities are listed for IAEA safeguards. Australia's agreements with these countries provide not only that AONM is limited to facilities listed for IAEA safeguards, but an additional limitation applies – AONM can be used only in facilities that are included in a mutually determined fuel cycle program. In other words, Australia's approval is required for all facilities using AONM. This ensures transparency about how AONM is used.

India's situation is closest to Russia and China: India has a nuclear weapon program, and has both safeguarded and unsafeguarded civilian facilities. Unlike Russia and China, however, India is still producing fissile material for weapons (Russia and China ceased this many years ago) and some of India's unsafeguarded civilian facilities contribute to the weapon program.

Recommendation to JSCOT Because India has both safeguarded and unsafeguarded facilities, and the India-IAEA safeguards agreement allows safeguarded material to be used in facilities that are normally unsafeguarded, it is essential for Australia's agreement with India to limit AONM to facilities included in the Annex to the India-IAEA agreement. In addition, AONM should be limited to a mutually determined fuel cycle program, as in the case of Australia's agreements with Russia and China.

(d) Right to IAEA reports

Australia's standard condition is that Australia shall be given, on request, the IAEA's safeguards findings insofar as they relate to AONM.

There is no such provision in the Australia-India agreement. India's agreements with the US and Canada do give those countries the right to IAEA reports. It is not known why India is apparently unwilling to give Australia what it has agreed with the US and Canada. The right to request IAEA reports is especially important given India's circumstances: the safeguarded

21. See Article 11, paragraphs (a) and (f) respectively, of the India-IAEA agreement.

22. Article 25 of the India-IAEA agreement.

and unsafeguarded civilian fuel cycles; the links between the latter and India's military program; and the suspension, substitution and exemption provisions of the India-IAEA agreement.

Recommendation to JSCOT Omission of the right to IAEA safeguards findings for AONM is a serious deficiency. The agreement should be renegotiated to include this, or the matter could be addressed by treaty-level side letters.

(e) Fallback safeguards (Article VII.5)

Australia's standard condition is that, if for any reason IAEA safeguards cease to apply, the parties are to establish safeguards arrangements that conform with IAEA safeguards principles and procedures and provide equivalent assurance.

The Australia-India agreement requires only that the parties consult and agree on *appropriate verification measures*, a vague term readily open to differing interpretations. What happens if Australia and India are unable to reach agreement?

Recommendation to JSCOT This issue is not hypothetical, it could be very important in the event that foreign fuel supplies to India are interrupted (e.g. in the event of a further nuclear test by India). The provision is unsatisfactory compared with all other Australian agreements, and should be included in matters to be renegotiated.

(f) Right of return of supplied material and items

Australia's standard conditions include a right for Australia to require the return of AONM if there is a breach of an agreement. The Australia-India agreement contains no such provision.

Recommendation to JSCOT As with fallback safeguards, discussed above, this issue is far from hypothetical, it could be very important in the event that foreign fuel supplies to India are interrupted. The lack of any right of return in this agreement is a serious deficiency which should be included in matters to be renegotiated.

(g) Settlement of disputes (Article XII)

Australia's standard requirement is for negotiation, backed by an arbitration process. This agreement refers only to negotiation, with no mechanism for resolving deadlock.

Recommendation to JSCOT The lack of any mechanism to break a deadlock is a serious deficiency which should be included in matters to be renegotiated.

6. Legal aspects

(a) Accounting for material subject to the agreement

As discussed in pages 16-17 of this submission, accounting for AONM is a legal requirement, in terms of Article III.5 of the agreement and because of the need to be able to identify the material to which the obligations of the agreement apply.

There is a further legal issue – the administrative arrangement, as a document of *less-than-treaty* status, cannot legally be inconsistent with, let alone contradict, the agreement. The agreement requires accounting, the administrative arrangement cannot provide for a substitute for accounting. The administrative arrangement is likely to be kept confidential, but this does not excuse the Government from the duty to act lawfully with respect to the agreement.

(b) South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga)

The Rarotonga Treaty has been cited as a legal obstacle to Australia supplying nuclear material to India. Article 4 of the Rarotonga Treaty says that parties shall not provide nuclear material or items to any non-nuclear-weapon state unless subject to the safeguards required by Article III.1 of the NPT (i.e. *comprehensive safeguards*).

As discussed in page 5 of this submission, the wording of NPT Article III.1 by its own terms does not encompass India, and the *comprehensive safeguards* interpretation of the NPT does not represent the internationally agreed interpretation of the NPT. It can be argued that the cross-reference to the NPT in the Rarotonga Treaty should not be interpreted as requiring comprehensive safeguards for a non-party to the NPT when the NPT itself does not require this.

It is not the purpose of this submission to canvass this legal issue, other than to note that the most certain way for the Government to resolve the issue is by seeking an amendment to the Rarotonga Treaty or, less onerously, to approach the other parties to this Treaty and seek an agreed interpretation to the effect that the Treaty does not proscribe nuclear supply to India.

(c) Safeguards Act (Nuclear Non-Proliferation (Safeguards) Act 1987)

Section 51(2) The requirement for accounting and tracking exists not only under this agreement, as with Australia's other nuclear agreements, but also under the Safeguards Act. Section 51(2) requires the Director General ASNO to prepare an annual report showing, for all materials and items of Australian origin and for each jurisdiction (i.e. for each agreement), the total quantities in each stage of the nuclear fuel cycle, the intended end-use, and any unreconciled accounting differences. This cannot be done without tracking. This requirement was included in the Safeguards Act as part of a political agreement allowing the Act to pass – any attempt to evade the Act can be expected to attract close Parliamentary attention.

Section 70(1) This provides that ...

Where this Act confers a power, discretion, duty or function on a person, the exercise of the power or discretion or the performance of the duty or function is authorised by this Act only to the extent that the exercise or performance is not inconsistent with Australia's obligations under the relevant international agreements.

This section could apply in the context of the question whether the Australia-India agreement is inconsistent with the Rarotonga Treaty.

The National Interest Analysis foreshadows legislation to clarify the legal basis for uranium transfers to India (NIA paragraph 34). It is not clear what is proposed, but it may address both NPT and Rarotonga aspects.

7. Conclusions and recommendations

While it is understandable for governments to place political priority on strengthening relations with India, it makes no sense for this to lead to compromises in non-proliferation and safeguards standards. India has said it is prepared to assume the same responsibilities and practices as other leading nuclear countries, such as the US²³ – India should live up to this commitment.

India's nuclear circumstances – an expanding nuclear weapon program, the links between military and civilian activities, parallel safeguarded and unsafeguarded civilian programs – present particular safeguards challenges. In these circumstances, applying the same safeguards conditions to India as apply to all other bilateral partners is a major demonstration of trust and confidence. To propose *lesser* conditions cannot be justified.

The Australia-India nuclear cooperation agreement has too many serious deficiencies compared with all other Australian nuclear agreements, and should not proceed in its present form. The agreement does not guarantee uranium supply, it is open to a future government to suspend uranium transfers to India. It is not in the interest of either country to have a contentious agreement that fails to provide the long term predictability needed for energy planning. The opportunity should be taken now to get the agreement right, it will be much easier to do this through a revision before ratification, rather than as a formal treaty amendment later.

For a start, JSCOT should call on the Government to make a firm commitment that it will ensure Australia's longstanding accounting and tracking arrangements will apply. This assurance is needed whatever is in the agreement's final text. "Pragmatic" alternatives or "equivalent information" are illusory. Without Australia's usual accounting and tracking arrangements the agreement will be ineffective.

In view of the critical importance of the administrative arrangement to the way the agreement is implemented, JSCOT should ask to examine the text of the administrative arrangement before it is concluded, if necessary *in camera*. Given the public interest in this agreement and the concerns about the administrative arrangement, JSCOT may wish to recommend that the administrative arrangement be made public.

JSCOT should recommend that the Government take up with India the mutual interest in improving the text of the agreement to ensure it provides a better long term basis for nuclear cooperation between the two countries. It is to be hoped that Prime Minister Modi can bring a new perspective to this negotiation and will see the benefit of the two countries working together constructively to improve the present text.

JSCOT should further recommend that if the two governments are not prepared to re-open the present text, the most serious problems in the text could be addressed through the two governments exchanging treaty-level (legally-binding) side letters to the agreement, elaborating on the text. Specifically, side letters could deal with the following:

- (i) plutonium from reprocessing to be used within a mutually determined fuel cycle program (see pages 20-21 above on programmatic consent);

23. See page 3 of this submission.

- (ii) AONM to be used only in facilities included in the Annex to the India-IAEA agreement (see pages 21-22 above);
- (iii) IAEA safeguards findings, insofar as they relate to AONM, to be given to Australia upon request (see pages 22-23 above).

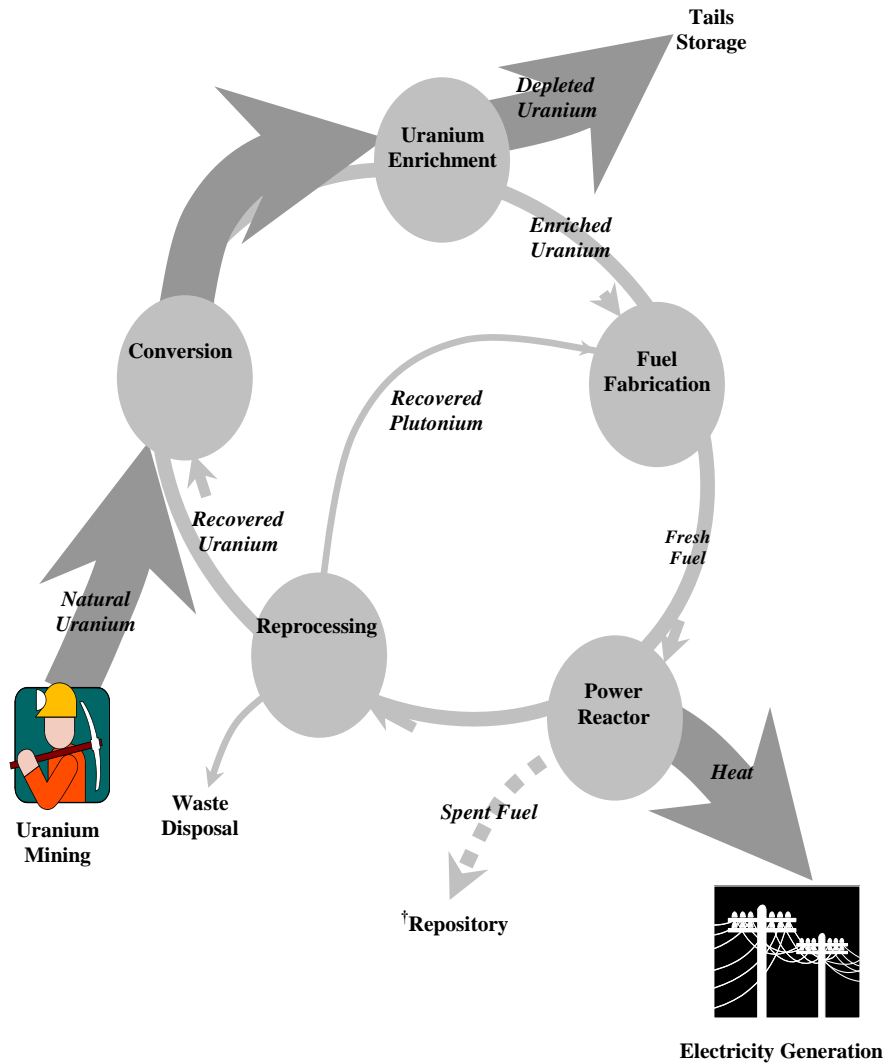
This is not to say the issues of fallback safeguards, right to return of material and dispute settlement are not important – they are – but to recognise that if the problems of the agreement have to be solved through side letters it will be necessary to prioritise, it is unlikely all issues could be dealt with this way. Clearly a revision of the agreement is the best course.

Any side letters should be treaty-level and should be submitted to JSCOT for review.

Strengthening ASNO's independence? The major problems with this agreement suggest that ASNO has been overruled on the provisions of the agreement (and also the administrative arrangement?). ASNO has the responsibility of ensuring that safeguards agreements can be implemented effectively and that they produce technically sound outcomes, in line with statutory requirements and public expectations. This requires technical judgment, with legal input where necessary. It is a quasi-regulatory function which should never be compromised by the government in actions it takes. Clearly if the government decides to change Australia's safeguards policy this will affect the technical objectives – it is essential that the government is fully cognizant of the safeguards implications of any policy change, to avoid unintended consequences. It is also essential that any proposed policy changes proceed transparently, with opportunity for public and political debate. JSCOT may wish to recommend strengthening ASNO's independence to ensure the integrity of its functions with respect to the operation of Australia's safeguards agreements.

Appendix - Nuclear accounting and the nuclear fuel cycle

Figure 1: Nuclear fuel cycle



Accounting and tracking are necessary because uranium undergoes a number of processes, and produces new nuclear material, as it moves through the fuel cycle – see Figure 1:

- Australia exports *uranium ore concentrate* (UOC), popularly known as *yellowcake*;
- UOC undergoes conversion to produce uranium hexafluoride (UF₆), the feedstock for uranium enrichment;
- uranium enrichment is a process for increasing the proportion (concentration) of the fissile uranium isotope, uranium-235. In natural uranium the proportion of U-235 is 0.711% (the remaining approx. 99.3% is U-238). To fuel light water reactors, the predominant reactor type today, the concentration of U-235 must be increased, typically to between 3.5% and 5%. The product of enrichment to these levels is

28.

known as low enriched uranium (LEU). LEU is typically in the form of UF_6 (as it leaves the enrichment plant), or uranium oxide as it undergoes fuel fabrication;

- fuel fabrication involves processing LEU into fuel pellets (typically UO_2) and assembling these pellets into metal tubes which are fabricated into fuel assemblies;
- irradiation in a reactor – U-235 atoms are fissioned (split) through the impact of neutrons, to produce heat (energy). In the process, fission products and *actinides* (elements with atomic weights near or above uranium) are formed, and some U-238 atoms capture a neutron and are transformed into plutonium;
- spent fuel discharged from the reactor contains LEU (the U-235 content typically reduced to a little over 1% – total uranium content, predominantly U-238, will be around 95%), plutonium (typically around 0.9% of total material in the fuel), and fission products and actinides (typically around 4% of the total material);
- reprocessing involves dissolving spent fuel and chemically processing it to separate and recover plutonium and the residual uranium LEU;
- plutonium can be used as an alternative to U-235 as the fissile component in new fuel.

From this brief description it can be seen that uranium undergoes several processes (with processing losses), and is changed into a number of chemical and physical forms. Irradiation transforms a proportion of the uranium into plutonium, as well as fission products (mostly wastes) and actinides (some of which are of nuclear interest). Safeguards accounting tracks the uranium, and produced plutonium, through all these processes, applying mass balance principles to ensure all material is accounted for and none is diverted from safeguards coverage.