



14th September 2006

To: the Secretary
Joint Standing Committee on Treaties

Re: ACF submission on the proposed China nuclear cooperation treaty

The Australian Conservation Foundation (ACF) welcome opportunity to participate in this Inquiry by the Joint Standing Committee on Treaties into the proposed Nuclear Cooperation Treaty for uranium exports to China. ACF consider this presents a number of important challenges to Australia's international responsibilities in nuclear issues.

ACF submit a set of recommendations for consideration by the JSCT Inquiry on this proposed treaty. We consider adoption of these recommendations to be in Australia's national interest and that they contribute toward required minimum changes to strengthen Australian government policy in remaining uranium exports.

We provide a critical appraisal of the IAEA safeguards regime and of the Australian bilateral agreement safeguards regimes in a report prepared jointly with the Medical Association for Prevention of War (Australia), (see Attachment 1):

"An Illusion of Protection. The "Unavoidable Limitations" of Safeguards and the Export of Uranium to China."

Note: that this report is a formal submission on behalf of both the ACF and the MAPW.

In our considered view the central claim of this treaty that Australian uranium can only be used for peaceful purposes in China is invalidated by serious shortcomings in both the IAEA safeguards and Australian bilateral agreement safeguards regimes.

These shortcomings are amplified in the case of China where the government is an unaccountable authoritarian state. This fact strongly predicates against the required level of confidence and assurance in transparency, independent verification and due process for delivery by China of peaceful use treaty obligations now and in the future.

The proposed bilateral agreement sanctions practices that could lead to Australian uranium exports contributing to an ongoing or future expanded nuclear weapons program in China. Including an indirect contribution through Australian supplied uranium freeing up China to use their limited supplies in their weapons program.

Uranium conversion and enrichment facilities and reprocessing facilities are dual use facilities with capability for production of fissile materials for nuclear weapons.

Australian should not allow reprocessing of spent nuclear fuel in any bilateral uranium exports agreement. This treaty proposes a programmatic approval to a 30 year reprocessing program for separation and stockpiling of weapons usable plutonium derived from the use of Australian uranium in China's nuclear power program.

The treaty further proposes to sanction the processing of Australian uranium in a uranium conversion facility outside of IAEA safeguards and inspection regime and the

enrichment of Australian uranium in a Chinese facility under joint military control. These treaty proposals would facilitate potential diversion of Australian uranium in China.

The treaty also fails to provide any material reason for confidence in nuclear safety or in nuclear waste management practices in China.

Every gram of Australian uranium exported to China is destined to become long lived radioactive waste. The management of radioactive waste – and the unique security, human and environmental hazards it poses – remains an unresolved global issue.

The potential for catastrophic accidents inherent in nuclear power and the increasing risks of nuclear terrorism are strong reasons for all countries to put public health and safety ahead of any proposed nuclear power expansion plans.

Rather than furthering nuclear risks it is in Australia's national interest to contribute to China's development and deployment of clean safe energy technologies through the engagement of renewables, conservation and efficiency to meet Chinese society's energy requirements into a carbon constrained future.

A legislative target has been set in China for 15% of national electricity production from renewables by 2020. Some three times the projected electricity contribution of China's expanded nuclear power program that may increase from 2% toward 4-5% by 2020. This provides for a much larger financial and sustainable Australian exports market.

China has an unacceptable track record in failure to comply with international norms and international treaties and conventions on a range of issues.

ACF provide a second report to the JSCT Inquiry, "*Nuclear Safeguards and Chinese Accountability*" (see Attachment 2). The report sets out a range of examples of Chinese breaches of treaties and agreements, across international trade rules including the WTO and Intellectual Property Rights and across human rights, and a relevant pattern of failure of governance in China on industrial practices and pollution control.

These breaches in China's obligations are symptomatic of factors that strongly predicate against confidence in compliance with the proposed uranium exports treaty.

China has a record of willingness to break its signed word in order to pursue other policy objectives. China's capacity to implement its agreements is hampered by serious governance issues, including opacity and corruption. China has a practice of enabling breaches through a strategy identified by the United States Trade Representative as "*delay, partial implementation, and creation of new barriers*" which prevents the international community from effectively holding China to account.

Australia can not be confident in this or all future Chinese government's compliance with key international non-proliferation norms on weapons of mass destruction and associated military technology given China's track record in proliferation issues.

China has proliferated nuclear weapons technology, materials and designs to Pakistan; stolen US nuclear weapons designs; proliferated WMD missile technology, weapons systems and components to countries including Iran, Pakistan, Libya, Syria, and North Korea; and has provided assistance to Iran's nuclear program.

In 1999 a US House of Representatives investigation, the "*SELECT COMMITTEE ON U.S. NATIONAL SECURITY AND MILITARY/COMMERCIAL CONCERNS WITH THE PEOPLE'S REPUBLIC OF CHINA*", also called the Cox Report, found that:

- (i) China had stolen design information on the US's most advanced thermonuclear weapons
- (ii) China was responsible for repeated thefts of the most sophisticated US nuclear weapons technology and that this practice likely continued
- (iii) China had proliferated such military technology to a number of other countries, including regimes hostile to the US, and
- (iv) China's actions posed a direct threat to the US and its friends and allies.

The "Overview" to the Cox Report (p.xxxvi-xxxvii) stated that:

"The Peoples Republic of China is one of the leading proliferators of complete ballistic missile systems and missile components in the world.

...

The PRC has proliferated military technology to Iran, Pakistan, and North Korea. In 1991, the PRC agreed to adhere to the April 1987 Missile Technology Control Regime (MTCR) guidelines, but the PRC has not accepted the revisions to those guidelines issued in 1993. The 1993 MTCR guidelines increase the kinds of missile systems subject to controls and call for a "strong presumption to deny" both sales of complete missile systems and components that could be used in ballistic missiles.

...

Iran. The PRC has provided Iran with ballistic missile technology, including guidance components and the recent transfer of telemetry equipment. The PRC reportedly is providing Iran with solid-propellant missile technology. Additionally, the PRC provided Iran with the 95-mile range CSS-8 ballistic missile. Since the mid-1980s, the PRC has transferred C-802 anti-ship cruise missiles to Iran. The PRC has also provided assistance to Iran's nuclear programs.

...

Pakistan. The PRC has provided Pakistan with a wide range of assistance. The PRC reportedly supplied Pakistan with CSS-X-7/M-11 mobile missile launchers and reportedly has provided Pakistan with the facilities necessary to produce M-11 missiles. The PRC provides Pakistan with assistance on uranium enrichment, ring magnets, and other technologies that could be used in Pakistan's nuclear weapons program."

See: <http://www.house.gov/coxreport/cont/gncont.html>

In ACF's view this unacceptable proliferation record should invalidate China for consideration as a potential customer for exports of Australian uranium.

In conclusion ACF find that the proposed nuclear cooperation treaty for uranium export to China is not in Australia's national interest and recommend to the JSCT Inquiry that this treaty should not be ratified by the Australian Parliament.

For any inquiries or clarifications on issues and recommendations raised in this submission please contact David Noonan, ACF Nuclear Free Campaigner available on Ph 0408 821 058 and 08-82322566, and e-mail: d.noonan@acfonline.org.au

ACF request the opportunity to appear before a public hearing of the JSCT Inquiry and look forward to discussion of these issues and recommendations with the Committee.

Yours sincerely

Denise Boyd
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ACF Recommendations to the JSCT Inquiry:

1. ACF policy recognises that the global nuclear industry is contrary to the principals of sustainability and calls for a phase out of the nuclear industry including Australian uranium mining and exports.

2. ACF conclude that the proposed China uranium exports treaty is not in Australia's national interest and recommend that the Australian Parliament should not Ratify the proposed treaty.

3. Proposed "Administrative Arrangements" to enact the Australian bilateral safeguards agreement in China must be made public and be subject to Parliamentary scrutiny as part to the process of formal consideration of the proposed Nuclear Cooperation Treaty with China.

ACF consider that it is contrary to the proper exercise of public and Parliamentary scrutiny of the proposed treaty, and an unacceptable practice of secrecy by ASNO, to fail to make public the key "Administrative Arrangements" to enact the Australian bilateral safeguards agreement in China. Without this public access no one can independently know if the proposed practice of safeguards can match the claims. Or if the ASNO accounting practices of 'equivalence' and of 'proportionality' are to be credibly or otherwise applied to Australian Obligated Nuclear Materials in China.

ASNO stated in the first JSCT public hearing that certain governments prefer that Australian "Administrative Arrangements" applying to bilateral uranium export treaties should not be made public and in effect that ASNO defer to this request.

Which countries are involved? Does this include any request from China to withhold these arrangements from the Australian Parliament and public, and why is ASNO putting these claims for secrecy ahead of due process in Australia?

Recommendations on strengthening IAEA Safeguards

4. IAEA safeguards should be strengthened through universal, mandatory and permanent application, including the full application of Additional Protocols, to Nuclear Weapon States including China in the same degree as to Non-Nuclear Weapon States.

The IAEA should end practices of discriminatory rules across countries and put an end to the 'favoured' status and limited application of safeguards to nuclear weapon states.

China has only a voluntary and limited safeguards agreement with the IAEA and can in future withdraw from any tier of safeguards, or withdraw any facility or nuclear materials from the coverage of IAEA safeguards. Australian's are being asked to trust in the decisions of this and of every future Chinese government to continue to comply with today's voluntary IAEA agreement and the Australian bilateral agreement.

In addition the Additional Protocol has only very limited application in China, restricted to a few listed facilities, and should have application geographically across China and to any facility declared or undeclared as it would do in a non- nuclear weapon state.

5. Application of IAEA safeguards should be extended to fully apply to mined uranium ores and to refined uranium oxides, and to uranium conversion facilities and uranium hexafluoride gas, prior to the stages of enrichment or fuel fabrication.

Australian uranium will disappear off the safeguards radar soon after its arrival in China as it enters a uranium conversion facility that is outside of IAEA safeguards and inspections, and run by the Chinese National Nuclear Corporation for joint military and nuclear power purposes. Thereafter only a nominated 'equivalent' amount of nuclear material will be subject to an Australian safeguards accounting process.

Some of our exported uranium could then be used for military purposes, potentially directly for weapons production or as fuel for military and research reactors. China has also been implicated in export of uranium hexafluoride gas to Iran to facilitate their uranium enrichment program which is recognised as having potential to produce fissile materials for nuclear weapons production.

Recommendations on strengthening Australia's Uranium Exports Policy

6. Australia should withdraw uranium sales from all Nuclear Weapon States that continue to fail to comply with their nuclear disarmament obligations under the Non-Proliferation Treaty, and that fail to ratify and abide by the Comprehensive Test Ban Treaty including verifiable closure of nuclear weapons testing facilities.

Australia should apply our international influence, including any influence that may follow from being the second largest uranium export nation, to require nuclear weapon states to meet their disarmament obligations under the Non-Proliferation Treaty and to

put an end to the threat of renewed nuclear weapons testing for all time.

These initiatives would strengthen and renew the Non-Proliferation Treaty, reduce the likelihood of other countries seeking to develop nuclear weapons for strategic military advantage, and make a strong contribution to lessen of tensions in a number of regional nuclear insecurities around the world including across the Taiwan straight.

7. Australia should withdraw from agreement to export uranium to Taiwan and fully enforce and maintain restrictions against nuclear trade including uranium exports to any non Non-Proliferation Treaty signatory states including India and Pakistan.

The NPT is being undermined by Australian agreement to export uranium to a non-NPT signatory state, Taiwan, and by Australian support for the US-India nuclear agreement to put aside NPT and other restrictions on nuclear trade with India and to accept India's nuclear weapons status.

This discriminatory US practice will be seen to sanction and reward countries developing and testing nuclear weapons against international norms.

8. Australia should not enter into additional bilateral agreements allowing for conversion and enrichment of Australian uranium in countries including China and India where such arrangements are not in place.

Australia should review and limit the countries and facilities where Australian uranium is processed and should not provide for additional agreements for processing of Australian uranium in facilities capably of being used to produce fissile materials for nuclear weapons, including conversion, enrichment and reprocessing facilities.

Just as the IAEA and UN have called for a moratorium on any new uranium enrichment and reprocessing facilities to strengthen world security, Australia should be limiting our engagement with these technologies and facilities that provide dual use capabilities for production of nuclear fuel and weapons material alike.

We can have no real control in countries such as China and India with coupled military and civilian nuclear industries that do not provide the confidence commensurate with the claim that Australian uranium can not contribute to military programs and aims.

Australian uranium exports to China will at a minimum provide for an indirect facilitation of Chinese military programs by freeing up their own limited uranium supplies for use in their ongoing or a future expanded nuclear weapons program.

As Iran has shown, the international community can have no assurance that so called 'civilian' uranium conversion and enrichment programs will not be used as a cover for producing weapons grade fissile materials.

9. The Australian Government should withdraw its agreement to reprocessing in existing bilateral treaties, and not provide any future agreements or consent including to China, for reprocessing of Australian Obligated Nuclear Materials or for any use of such materials in MOX or other Plutonium based fuels; and

10. Australia seek support for a Fissile Materials Cut-Off Treaty that prohibits reprocessing and the separation of weapons capable fissile materials, from all countries with which Australia currently has bilateral nuclear cooperation treaties.

ACF believes that Australia's international responsibilities in export of uranium and potential expansion of countries such as China into other parts of the nuclear fuel cycle should be appraised regarding global security, health, safety and proliferation issues including the increasing proliferation threat of nuclear weapons and nuclear terrorism.

In support of this broader analysis ACF submit the work of the Oxford Research Group series of studies "**Secure Energy: Options for a Safer World**". (Oxford Research Group, Nov 2005). The full ORG work is available at:
<http://www.oxfordresearchgroup.org.uk/programmes/nuclearissues/secureenergy.htm>

In particular ACF submit for your consideration the Oxford Research Group Factsheet No.2 "**Effective Safeguards?**". This explains why the safeguards that operate at nuclear reprocessing facilities (using the example of Sellafield in the UK) cannot guarantee that all of the weapons-usable plutonium is secure from theft or diversion.

Furthermore, ORG contend that a decision to build a new round of nuclear power plants could lead to the development of Generation III and IV reactors that use MOX fuel and plutonium respectively. The ORG conclude that in the current international security environment, it would be very unwise to be increasing the availability of these plutonium materials through reprocessing.

Given that security can not be guaranteed for reprocessing technology in the UK it is apparent that if reprocessing goes ahead in China there can be no credible safeguards guarantee that Australian Obligated Nuclear Materials could not be diverted into a Chinese nuclear weapons program or potentially be stolen by non-state interests.

ACF draw your attention to the paramount recommendation of a key conservative US study by MIT into nuclear power which recognises concerns over proliferation from proposed reprocessing of spent nuclear fuel, see:

"The future of nuclear power. An Interdisciplinary MIT study" MIT 2003 at: <http://web.mit.edu/nuclearpower/>

The MIT report recommends against reprocessing and against proposed plutonium based fuel cycles and proposed new generation reactors that use plutonium as fuel:

"Thus our paramount recommendation is:

For the next decades, government and industry in the United States and elsewhere should give priority to deployment of the once-through fuel cycle, rather than development of the more expensive closed fuel cycle technology involving reprocessing and new advanced thermal or fast reactor technologies." ("The future of nuclear power", MIT, 2003, Part 2, p.75)

Since the Carter Administration in the 1970's the US government has had a position against reprocessing in recognition of the serious proliferation concerns in that technology. The ORG work makes clear that these inherent reprocessing proliferation risks remain. Therefore Australia should not agree to reprocessing in China, which involves the separation of weapons usable plutonium for which we would hold long term and ongoing responsibility without any credible safeguards capacity to do so.

Recommendation on Accountability in China

11. Australia should require China's agreement to sign, ratify and implement the full range of international human rights and labour rights treaties and conventions.

Key checks and balances present on the nuclear industry in the West – free trade unions, independent regulators, independent and rigorous media (China imprisons more journalists than any other nation), environment and community watchdogs – do not effectively exist in China.

There would need to be fundamental changes to human rights, judicial practice, labour rights and freedom of the press before Australia could have any confidence in nuclear accountability in China or that a nuclear whistle blower would survive to be heard.

ACF consider these issues to be pre-requisite conditions to any proposed credible consideration to confidence, assurance or accountability in China on nuclear issues.



Medical Association for Prevention of War (Australia)

An Illusion of Protection

*The “Unavoidable Limitations” of Safeguards and the Export of
Uranium to China.*

Marko Beljac.

A Report prepared on behalf of the Australian Conservation
Foundation and the Medical Association for Prevention of War
(Australia)

September 2006

Executive Summary

This report addresses the flaws and limitations of the international nuclear safeguards system with particular reference to the proposed sale of Australian uranium to China, a declared nuclear weapons state. The report highlights the limitations of the global nuclear safeguards regime, an issue of particular importance in the context of current moves to expand the Australian uranium industry.

The Medical Association for the Prevention of War and the Australian Conservation Foundation maintain that there is a serious risk that Australian uranium exports to China will directly or indirectly support Chinese nuclear weapons manufacture.

There is much that could be done to improve the international safeguards system, however its fundamental flaws and the pervasive interconnections between the civil and military application of nuclear technologies and materials mean that the most prudent and responsible position is to oppose the mining and export of uranium.

Supporters of Australia's uranium export industry claim that the safeguards applied to Australia's uranium exports are the equal of, or better than, safeguards applied by other uranium exporting nations. This claim ignores the problem that all uranium-exporting nations are reliant on the inadequate and under-resourced safeguards system of the IAEA and it cannot be credibly advanced to justify Australian uranium exports.

Claims that Australia would have no leverage in relation to international nuclear safeguards in the absence of an uranium export industry are false. Australia's moral authority to actively pursue a strengthened non-proliferation and safeguards regime would be enhanced by such an approach. Furthermore, non-nuclear and non-uranium exporting states can and do influence international safeguards through the Board of Governors of the International Atomic Energy Agency (IAEA) and by engagement with a range of other international fora and mechanisms.

Nuclear Weapons and Nuclear Proliferation

A strong bond exists between the use of uranium for civil and military purposes. Former Nobel Prize winning physicist Hannes Alven described the peaceful and military atom as being Siamese twins.

This link has resulted in the international community putting in place a non-proliferation regime that is meant to halt the spread of nuclear weapons and to provide a framework for disarmament by the nuclear weapons states. The key platform for this regime is the Nuclear Non-Proliferation Treaty (NPT).

The NPT recognises two forms of state—Nuclear Weapon States (NWS) and the Non-Nuclear Weapon States (NNWS). The treaty takes the form of a three-way bargain between these states. The Non-Nuclear Weapon States, in Articles I and II, agree not to acquire or manufacture nuclear weapons. In Article VI the Nuclear Weapon States pledge to work to eliminate their nuclear arsenals. Article IV allows for the use of nuclear technologies for peaceful purposes and provides for international trade in nuclear materials and technology, subject to Articles I and II.

The integrity of the NPT regime itself is currently very fragile. As the 2004 report of the UN Secretary-General's High Level Panel on Threats, Challenges and Change noted, "We are approaching a point at which the erosion of the non-proliferation regime could become irreversible and result in a cascade of proliferation".

The underlying flaw in the regime lies in the consanguineous relationship between civil and military nuclear operations. Article IV enables a NNWS to acquire nuclear materials, technology and infrastructure. However, once such a nuclear capacity is realised the possibility moving from NNWS to NWS status, is increased. There are clear examples that demonstrate that formally NNWS can become nuclear weapons

capable relatively quickly. By legitimising and encouraging the expansion of nuclear fuel cycle capabilities around the world the NPT has the perverse effect of providing the means for a cascade of proliferation.

The declared Nuclear Weapons States—the USA, Russia, the UK, China and France—are part of the same problem. Their refusal to seriously pursue nuclear disarmament undermines the wider regime. In February 2004 the Director General of the International Atomic Energy Agency, Dr. Mohamed ElBaradei, noted, "We must abandon the unworkable notion that it is morally reprehensible for some countries to pursue weapons of mass destruction yet morally acceptable for others to rely on them for security - indeed to continue to refine their capacities and postulate plans for their use".

International Safeguards System

The NPT system provides for the use of nuclear materials and technology in civil nuclear energy programs so the international community introduced a system of safeguards. These are supposed to provide assurance that nuclear materials and technology are not being diverted from civil to military uses. The IAEA administers this system, which does not seek to prevent diversion, merely to detect and deter diversion.

The safeguards system arises from Article III of the NPT. This requires that nuclear trade is to be conducted only when safeguards are in place and requires NNWS to accept IAEA safeguards on nuclear infrastructure. The NWS are not obliged to accept the same level of safeguards.

The IAEA system of safeguards relies upon three methods, known as material accountancy, containment and surveillance. Material accountancy is the primary method, with containment and surveillance being secondary or complimentary methods. Material accountancy is essentially a book-keeping exercise to ensure that nuclear materials flowing through a safeguarded plant are not being diverted. On-site inspections are used to verify that nuclear materials stay within the production pipeline.

The details of the way in which the IAEA implements these safeguards in a given state and in a given facility is via subsidiary arrangements. These are confidential agreements between the IAEA and the safeguarded state; essentially action plans that provide the working details and institutional arrangements for how safeguards are implemented in practice. They are of first importance in any assessment of the effectiveness of safeguards in a given state or facility.

The Office of Technology Assessment of the United States Congress has demonstrated that the technical goals that the IAEA has set itself in relation to safeguards are faced with, "unavoidable limitations". This is because the IAEA system of safeguards is not able to meet the IAEA's own criteria in relation to the detection of diversion of, "significant quantities" of nuclear materials in a, "timely fashion". In addition, it is possible to develop a nuclear weapon with materials less than the significant quantity provided for by the IAEA.

Nuclear technology is progressing rapidly, making it easier to develop nuclear weapons. The IAEA system of already inadequate "safeguards" is lagging further behind the developing technology. One example of this can be seen with the laser enrichment of uranium. Traditionally uranium has been enriched in huge plants, which are easy to detect. However, moves to develop laser enrichment, including the Australian-based Silex process, make detection more difficult.

The ineffectiveness of the safeguards approach was recognised by the former IAEA Director General Dr Hans Blix in the important Weapons of Mass Destruction Commission report (2006). It documents that Iraq, Libya and North Korea were all able to effectively hoodwink the IAEA.

Due to the inadequacy of the safeguards system the international community put in place a series of *additional protocols* to enhance the safeguards regime. These are not a fundamental change in the safeguards system *per se*; they are merely additional to the traditional system. The additional protocols fail to address the fundamental limitations and flaws of the safeguards system, particularly the permissibility and encouragement of the spread of nuclear facilities and materials.

Australian Safeguards

In the 1970s successive Governments came under increasing pressure from mining corporations to allow the mining and export of Australian uranium. This became a major political issue and in 1974 the Whitlam Government set up an inquiry chaired by Justice Russell Fox to examine the matter, a process continued by the Fraser Government. The subsequent Fox Report was ambiguous and cautious about proceeding with the export of uranium. The report:

- stated that the major hazard of the nuclear industry was its unintentional contribution to, “an increased risk of nuclear war”
- recognised that the IAEA system of safeguards provided only, “an illusion of protection”
- recognised that Article IV confers upon Australia no obligation to export uranium, contrary to the claims made by mining advocates.

In 1977 the Fraser Government decided to allow uranium mining in Australia. The Government stated that the decision was made to strengthen the goal of non-proliferation and had nothing to do with commercial gain. It announced a system of bilateral safeguards that would regulate the export of Australian uranium. The main provisions were:

- The recipient state must pledge not to divert Australian uranium into military programs and to accept a number of safeguards provisions governing its use in a bilateral agreement
- Uranium would only be sold to those States that are a part of the NPT
- No enrichment of uranium to higher than 20% U-235 can occur without Australian consent
- Australia would need to give prior written consent for any reprocessing of nuclear material derived from the use of Australian uranium
- Australia would oppose the stockpiling of plutonium
- There would be no further transfer of Australian uranium or nuclear material derived from the use of Australian uranium without Australia’s prior consent.

The history of Australian safeguards policy is one of the progressive weakening of already inadequate provisions. An example is the Howard Government’s exporting of uranium to Taiwan in the absence of a bilateral safeguards agreement and despite advice from the Department of Foreign Affairs and Trade that this could in no way meet the criteria of Australian safeguards policy. The Fox Report also recommended that Australian uranium should only be sold to a state that is a part of the NPT—Taiwan is not a part of the NPT.

The Fraser Government watered down the Fox Report to allow the export of Australian uranium to France, a nuclear weapon state that only joined the NPT in 1992 and has a strong link between its civil and military nuclear programs.

The prior written consent clause for reprocessing has also been watered down by a policy known as “programmatically consent”. Programmatic consent means that Australia gives long term consent to the reprocessing of spent fuel derived from the use of Australian uranium. This has led to the stockpiling of Australian-obligated plutonium in Japan and the European Union.

A Massachusetts Institute of Technology multi-disciplinary study on nuclear power recommended that, given the proliferation risk, there should be a global ban on the reprocessing of spent nuclear fuel. A supplier state of uranium, should it value non-proliferation, would refuse to supply uranium to any state that expresses an interest in developing a plutonium fuel cycle. There exists no record of Australia using its leverage as a supplier of uranium to strengthen safeguards.

Australia allows for the “flag-swapping” or “flag transferring” of Australian uranium. Through this process actual Australian uranium can lose its identity.

In essence Australia’s system of safeguards is a book keeping exercise that relies upon the importing state to adhere to the material accountancy system. This can be murky in the case of nuclear weapon states because of the clear and proven linkages between civil and military facilities, including in the USA where a power reactor is used to produce tritium for nuclear weapons.

Non-proliferation and the Export of Uranium to China

In April 2006 Australia and the Peoples Republic of China signed two nuclear agreements. The first is a bilateral safeguards agreement that allows the export of Australian uranium to China. The second is a broader nuclear cooperation agreement.

The IAEA administers safeguards in China according to the provisions of 1998 Voluntary Offer Agreement. The IAEA safeguards only three nuclear facilities in China - a nuclear power reactor, a uranium enrichment plant and a research reactor. Of these three facilities only the power reactor actually has a safeguards action plan in force. The application of international safeguards to the Chinese nuclear industry is more symbolic than real and cannot deliver the required levels of transparency and certainty.

The bilateral agreement between Australia and China recognises that the 1988 agreement between Beijing and the IAEA provides the safeguard system to be applied to Australian uranium in the first instance. It will cover an equivalent amount rather than Australia uranium *per se*. In other words, Australian uranium can be used in Chinese nuclear weapons without breaching the agreement, despite statements to the contrary from the Australian Government.

The way in which the bilateral agreement is to be implemented is via an administrative arrangement. This would be a detailed plan outlining how the safeguards are to work in relation to Australian uranium. The administrative agreement will be secret, will not subject to parliamentary approval (as its status is less than a treaty document), is subject to change at any time and is yet to be negotiated. Should the Australian Parliament ratify the bilateral safeguards agreement it will lose effective oversight of the negotiations between Canberra and Beijing.

The agreement allows for use of Australian derived nuclear materials in plutonium reprocessing plants. Currently no reprocessing plants are safeguarded in China. The IAEA global fuel cycle profile states that China currently has no reprocessing plant save for a pilot reprocessing facility. This refers only to the civil sector—reprocessing plants in China are associated with the Chinese nuclear weapons program.

China has an experimental fast breeder reactor where plutonium is used to make more plutonium outside Beijing and is keen to develop a plutonium economy based on breeder reactors. This policy flows logically from an energy strategy that is designed to maximise China's autonomy in the global energy market. By declaring its support for this in the bilateral agreement Australia dilutes its declared commitment to nuclear non-proliferation.

Essential to the working of safeguards will be China's material accounting system for fissile materials. There are serious deficiencies in China's fissile material accounting system. A US analysis of the Chinese nuclear industry stated, "China may not even have a precise inventory of the amount of nuclear materials in its facilities" and that "without this knowledge there is no way to detect the disappearance of any material". Furthermore, the study noted that it would seem that China's nuclear facilities have not been designed to measure the "amount of fissile materials accurately, easily and frequently".

If China does not have a precise inventory it is simply not credible to accept the proposition that the Australian Government be able to satisfactorily ensure material accountancy.

The bilateral agreement can be changed over time and does not actually lock China in to a system of safeguards over the thirty year life span of the agreement. On past experience any change will weaken rather than strengthen safeguards.

China currently relies heavily upon oil and coal for its energy needs. It is a net oil importer and reliance upon Middle East oil is expected to grow rapidly. China is currently making large investments in oil and other resources in Iran and seeks to be as free as possible from outside (particularly US) interference in its energy and industrial policies.

Iran has an interest in nuclear power and technology and its nuclear compliance record is patchy. China's nuclear know-how is creating a strategic relationship that is problematic from a proliferation perspective as China may assist, both overtly and covertly, Iran in the development of its nuclear capabilities.

China's looming energy crisis means it is embarking on an ambitious expansion of its domestic nuclear industry. The World Nuclear Association estimates that based on the projected expansion targets the annual amount of spent fuel arising from China would be 600 tonnes in 2010 and 1000 tonnes in 2020 with the cumulative amounts increasing to 3800 tonnes and 12 300 tonnes respectively. These are sobering numbers. The large annual throughputs for reprocessing that would result from this magnify the inevitable safeguards measurement errors.

Based on current plans China cannot meet its ambitious nuclear plans by relying upon domestic sources of uranium. Australia has the largest reserves of economic uranium in the world. It is estimated that Australia will export several thousand tonnes of uranium per year to China. The large amounts of uranium to be exported, the large annual throughputs in reprocessing facilities, the limitations of safeguards and the long-term consent to reprocessing of Australian nuclear material, lead to the distinct possibility that China could divert fissile materials from civil to military programs.

A consistent non-proliferation policy would see Australia refuse to supply uranium to China.

The Balance of Leverage and Safeguards

China is Australia's second largest trading partner as such it holds significant leverage over the Australian Government. In addition, it is expected that much of the proposed uranium supply from Australia to China would come from BHP Billiton's Olympic Dam mine in South Australia. BHP Billiton has become heavily reliant upon the Chinese market to sustain its record rates of profit. Commercial imperatives and a weakened international safeguards regime combine to mean that Australia is in a weak negotiating position and will be unlikely to influence Chinese nuclear conduct.

The bilateral safeguards agreement with China is a living document that does not lock China over the life of the agreement to current safeguards policy. China's leverage over Canberra and BHP Billiton means that should the agreement be revised it will be revised in the direction of a weakening of safeguards.

Chinese Nuclear Modernisation and the Potential for Conflict

The relatively low number of warheads in China's arsenal means Beijing maintains a policy of ambiguity in relation to fissile material production and its nuclear policies more broadly. This poses a problem for Australian safeguards because China would seek to maximise secrecy in relation to its nuclear potential. During the bilateral safeguards agreement talks the Australian Government unsuccessfully sought clarification from Beijing on this key issue.

China is currently engaged in a nuclear weapons modernisation program. Initially China was interested in replacing older missile systems for more modern designs but increasingly China has become understandably concerned about US plans to construct a ballistic missile defence system and to place other weapons in space.

Current levels of military-grade plutonium create an upper bound on how many new warheads China can produce. A US National Security Presidential Directive (NSDP 23) stipulates that as any state develops its response to the US missile defence system the US will expand the system to meet the new challenge to its integrity. This means that should Beijing manufacture more warheads, the US will upgrade its missile defences. A likely scenario is that Beijing would manufacture more warheads in response to any US move. Such an escalation could propel a potential arms race and increase regional insecurity.

Such an arms race would take place in the context of the ongoing dispute regarding Taiwan. Recently the US military drew up formal plans (OPLAN5077) for a major military conflict with China that would include the use of nuclear weapons. Zhu Chenghu, a senior Chinese general responded to this development by warning that Beijing is ready to use nuclear weapons in response.

China does not have enough uranium to meet its civil and military plans simultaneously. This was made perfectly clear in a mining industry address given by Madame Fu Ying, the Chinese ambassador to Australia in Melbourne in December 2005. Madame Fu stated that while China has sufficient uranium reserves to support its nuclear weapons program it needed imports to meet power demands. At best, this means that the export of uranium to China will free up Chinese uranium for warhead modernisation. At worst, Australian uranium will be diverted directly to nuclear weapons production. Clearly neither outcome is in Australia's national interest or the wider interests of the region.

Recommendations:

1. Australia should stop its contribution to the global nuclear chain by refusing to continue to mine and export uranium.
2. Australia should not export uranium to China.
3. Significant resources and government support should be directed to research and development into alternative, safe and renewable sources of energy.
4. IAEA safeguards should be strengthened through universal, mandatory and permanent application, including the full application of Additional Protocols, to Nuclear Weapon States including China in the same degree as to Non-Nuclear Weapon States.
5. Australia should withdraw from agreement to export uranium to Taiwan and fully enforce and maintain restrictions against nuclear trade including uranium sales to any non-NPT signatory states including India and Pakistan.
6. Proposed administrative arrangements to enact the Australian bilateral safeguards agreement in China must be made public and be subject to parliamentary scrutiny as part of the process of formal consideration of the proposed Nuclear Cooperation Treaty with China.
7. The Australian Government must withdraw consent in existing bilateral treaties, and not provide any future agreements or consent including to China, for reprocessing of Australian Obligated Nuclear Materials or for any use of such materials in MOX or other plutonium-based fuels.
8. Australia should require support for a Fissile Materials Cut-Off Treaty that prohibits reprocessing and the separation of weapons capable fissile materials, from all countries with which Australia currently has bilateral nuclear cooperation treaties.
9. Application of IAEA safeguards must be extended to fully apply to mined uranium ores, to refined uranium oxides, to uranium hexafluoride gas, and to uranium conversion facilities, prior to the stages of enrichment or fuel fabrication.
10. Australia must not enter into additional bilateral agreements allowing for conversion and enrichment of Australian uranium in countries including China and India where such arrangements are not in place.
11. Australia should withdraw uranium sales from all Nuclear Weapon States that continue to fail to comply with their nuclear disarmament obligations under the Non-Proliferation Treaty, and that fail to ratify and abide by the Comprehensive Test Ban Treaty including verifiable closure of nuclear weapons testing facilities.

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Report to the
Australian Conservation Foundation

Nuclear Safeguards and Chinese Accountability

By

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Contribution towards the submission to the Australian Parliamentary Review on
Nuclear Safeguards agreements between Australia and China

July-August 2006

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Executive Summary

China is currently seeking to buy Australian uranium in order to fuel its expanding nuclear industry. To close this deal, Australia has negotiated a set of nuclear safeguards designed to ensure Australian uranium is not used in a way contrary to the national interest.

Safeguards attempt to prevent China enriching Australian uranium beyond an acceptable level or exporting the uranium beyond China's borders without Australian consent. To verify this, China has agreed to subject facilities where Australian uranium is used to International Atomic Energy Association (IAEA) inspection.

However, China's Weapons of Mass Destruction (WMD) proliferations record, and the record of the IAEA in holding nations such as Iraq and Iran to account makes it difficult to hold full confidence in the proposed nuclear safeguards.

China has substantially contributed towards the nuclear programs of nations such as Iran, Iraq and Pakistan, and been involved in the proliferation of Chemical and Biological weapons across international borders. Such proliferation has had serious consequences for the international community, with the North Korean nuclear crisis a flow on effect of China's activities. China has been implicated in nuclear proliferation as recently as 2001.

This proliferation background makes a study of China's accountability to its signed word essential. As China is one of the few nations which has demonstrated an interest in nuclear proliferation, Australia needs to be sure nuclear safeguards will be taken seriously and implemented fully.

China's accountability will be measured in two main ways. China's internal accountability – how well the government holds domestic actors to account, and vice versa - and China's accountability to external bodies, such as States and international organisations.

Given that nuclear safeguards are based, to a large degree, on the ability of China to set up effective and independent regulators of Australian uranium, China's record in regulating and enforcing its trade obligations provides a good case study of accountability.

The WTO outlines several breaches of international trading rules and China's WTO accession agreement.

The gravest of these are identified as the lack of enforcement of intellectual property rights (IPR), lack of transparency, poor adoption of international product standards, and hidden import barriers and industry subsidies.

These breaches in China's obligations are symptoms of three factors. Firstly, it is an indication that China is willing to break its signed word in order to pursue other policy objectives. Secondly China's capacity to implement its agreements is hampered by serious governance issues, including opacity and corruption. Thirdly, breaches are enabled by a strategy of "delay, partial implementation, and creation of new barriers", identified by the USTR, which prevents the international community from effectively holding China to account.

China's WTO compliance record has the following implications for nuclear safeguards signed with China.

Firstly, given that lack of transparency and its associated problems are so prevalent within China, a nuclear safeguard system based upon the existence of independent, effective regulatory bodies will be flawed. Regulatory bodies will not, in all probability, be independent from political pressures, and their ability to regulate will be hampered by the culture of opacity throughout Chinese industries.

Secondly, mindful that China has a dreadful record of WMD proliferation activities, the opacity criticised by the WTO, combined with the clear examples of China breaching its trade obligations in pursuit of other policy objectives, creates a scenario whereby China has the ability to breach Australian safeguards in pursuit of other objectives and escape accountability by arguing a lack of capacity.

Lastly, it is clear from Chinese behaviour that the government has only implemented its obligations in many areas of trade through a system of pressure exerted by extremely powerful external organisations. On difficult issues, China seems to do little to meet its obligations that it is not directly pressured into.

Business and industry groups also raise concerns over China's accountability.

Groups as diverse as the Department of Foreign Affairs and Trade (DFAT), Australian Industry Group (AIG), Insurance Australia Group (IAG), AVCARE, United States Trade Representative (USTR), United States Committee for International Business (USCIB), and the EU commission have criticised elements of China's accountability.

Most of these organisations primarily direct their criticism towards China's accountability to its IPR obligations. Business groups in Australia have stated that companies are often reluctant to export to China because of the fear their products will be counterfeited. Industry groups also outline several instances where Australian companies have been directly affected by counterfeiting of their goods through lax regulation of IPR in China.

Lack of transparency within China is also commented on. Industry groups report that rules and legislation are often changed without adequate notice or consultation with concerned organisations.

Despite these issues being raised with the Chinese authorities on multiple occasions, the problems have persisted.

Given that China seems not to be accountable to its IPR commitments, and operates behind an opaque system, their accountability to nuclear safeguards is again questionable. If China cannot safeguard Australian intellectual property rights, how will they safeguard Australian uranium? If the country cannot be held to account in the IPR domain, will the international community be able to hold China account in the nuclear field?

China's industrial pollution record also provides an insight into several key governance issues which affect China's accountability.

Two major toxic spills resulting from industrial accidents in 2005 temporarily rendered two of China's largest rivers, the Biejiang and Songhuajiang, hopelessly contaminated and unfit for human needs. These incidents outlined several flaws in China's regulatory and accountability systems.

Firstly, while a number of individuals were held to account for the accidents through dismissal from their posts, legal mechanisms were shown to be severely limited in the ability to prosecute officials for breaching their responsibilities. Secondly, the incidents revealed the corrupt and opaque nature of China's environmental regulation system. Environmental regulators on a national level were severely limited in their powers, and local regulators were placed beneath provincial authorities who could, in league with industry, coopt the organisation into turning a blind eye to polluting or safety issues due to the profitable nature of industrial activity.

One of the responsible smelters was even awarded the status of "National Advanced Unit in Pollution Treatment" before the 2005 disaster.

This corruption is enabled by a lack of transparency which prevents the public from effectively holding industries, and the authorities to account for their actions.

The problems of opacity, corruption and lack of oversight all reflect badly upon China's level of internal accountability.

China's poor human rights record is also a clear reflection upon the nations accountability to international treaties. Abuses of human rights have been widely condemned by the international community for decades now, and China has so far not been held to account for its wilful breaches of its obligations. In particular, torture is still used by state agencies, despite China being a signatory to the *Convention against Torture*. Children within China also receive a very poor level of protection, often

employed in hard labour or subject to sexual trafficking, this is clearly in breach of *The Convention on the Rights of the Child*, signed by China in 1992.

Breaching these human rights treaties clearly demonstrates that China is will to breach its international obligations, and has not been held to account for this behaviour, either by domestic or international actors.

Overall, this report reveals several key factors reflecting poorly on China's level of accountability.

Firstly, China has clearly demonstrated that it is willing to breach its international obligations in pursuit of domestic policy objectives. This is seen in the proliferation background of the nation, the breaches in Intellectual Property Rights enforcement and concealed industry subsidisation, the concerns of leading business organisations, and China's human rights record. Although many organisations and States attempt to police China's adherence to its various agreements, actors find it very difficult to effectively hold the country to account due to its economic and geopolitical importance.

Secondly, transparency within China is chronically lacking. The opacity of the Chinese system is remarked upon throughout the areas explored in the report, and cited as one of the most serious barriers to accountability. Opacity leads to widespread corruption, poor regulation, and an environment under which China can conceal the extent of its implementation of agreements.

Lastly, the report placed a real question mark over China's ability to effectively monitor and safeguard Australian uranium. The opacity and willingness to breach agreements have constructed a culture under which even a regulatory body set up in good faith will face major challenges in undertaking its duties effectively and independently. The challenges of corruption, lack of oversight, and the tendency to hide mistakes will be hard to overcome in any Chinese regulatory environment.

In short, the state of accountability in China means China's signed word cannot easily be trusted, China cannot effectively be monitored and held to account for its actions,

and little faith can be held in the ability of internal Chinese institutions to monitor and regulate the use of Australian uranium.

China will, in all likelihood, not be held to account by the nuclear safeguard agreements. Exporting a highly strategic and dangerous resource in these conditions carries a high degree of risk.

Introduction

In order to sell its uranium resources to China, the Australian parliament is currently reviewing a set of proposed nuclear safeguard agreements which are designed to ensure Australian uranium is only used for peaceful purposes.

These safeguards depend upon three factors in order to deliver their promises. Firstly, they depend upon the responsibility of the Chinese State – its trustworthiness and willingness to adhere to its international obligations. Secondly, safeguards depend upon China's internal systems, its ability to efficiently regulate and account for its nuclear fuel cycle. Lastly, safeguards depend upon the ability for Australia and international institutions to verify the nuclear fuel cycle through transparent processes.

Perhaps the most accurate test we can apply to China that touches upon all these factors, is the accountability of China. Accountability is taken here as a broad concept which embodies: the degree to which China holds actors within its system to account, the degree to which actors can hold the government to account, and the degree to which China is accountable to the international community for its undertakings.

This report will then leave aside the question of whether uranium should be transferred to China at all, or whether mining uranium is in Australia's best interests. It will instead gauge the level China's accountability by looking at criticisms raised about the nation's compliance with international agreements and the nation's capacity to implement its obligations. This will be explored through China's WTO performance, international business group concerns, industrial pollution record, and human rights record.

Overall, the level of accountability, transparency and regulatory ability will be shown to be seriously deficient throughout a broad section of China's bureaucracy and industry.

These accountability issues have serious consequences for the potential misuse of Australian uranium and argue strongly for a postponement of plans to export uranium to China.

Before identifying the accountability issues in China, some background on nuclear safeguards and China will be provided.

Background

On the 3rd of April 2006, Prime Minister John Howard of Australia and Premier Wen Jibiao of China signed two documents designed to safeguard the use of Australian uranium within China.

These documents paved the way for a lucrative deal exporting uranium to China in order to expand its civilian nuclear power industry.

The deal will reap an economic windfall for Australia's mining industry and export dollar. However, the broader environmental, security and moral aspects of such a deal are much less positive.

The safeguards themselves are very limited in their scope. They are dependant upon an International Atomic Energy Agency (IAEA) inspection regime that has laboured to verify the nuclear activities of many countries, including the worrying cases of Iraq under the regime of Saddam Hussein and Iran.

Furthermore, safeguards will only require IAEA oversight in those facilities where Australian uranium is used. This leaves a large part of China's nuclear industry and fuel cycle beyond the regulation of Australia and the international community. In a country which previously made little distinction between its military and civilian nuclear industries, this leaves much room for China to falsify the accounting of fissile material.¹

Safeguards also rely upon China's internal systems of accounting and regulation. This is set out in several key passages in the safeguard agreements. For instance, Article X (1) of the *Agreement Between the Government of Australia and The Government of the People's Republic of China on the Transfer of Nuclear Material*

¹ On the military-civilian nuclear distinction, see Paul Daley, 'New China Syndrome', *The Bulletin*, 2 Feb 2006, (<http://www.energyprobe.org/energyprobe/index.cfm?DSP=content&ContentID=14679>, accessed 10/8/06)

states: “Each Party shall establish and maintain a system of accounting for and control of all nuclear material subject to this agreement.”²

Similarly, both the *Agreement on the Transfer of Nuclear Material*, and the *Agreement on the Cooperation in the Peaceful Uses of Nuclear Energy* rest upon the *Convention on the Physical Protection of Nuclear Material*.³ Australia is currently seeking to amend the convention to clearly state in *Fundamental Principle D: Competent Authority*, that: “The State should establish or designate a competent authority which is responsible for the implementation of the legislative and regulatory framework,”⁴ and that: “The State should take steps to ensure an effective independence between the functions of the State’s competent authority,”⁵ and the State in question.

China’s ability to provide an effective and independent regulatory body is then a key criterion of the nuclear safeguards agreement. This report finds that under present circumstances, China’s capacity and willingness to do so is highly questionable.

In short, the proposed nuclear safeguards are riddled with serious flaws, and leave much room for breaches to occur. They in no way guarantee that Australian uranium will not end up in Chinese nuclear weaponry, transferred beyond China’s borders without permission, or enriched beyond that required for power generation. Once we export our uranium, we will almost certainly lose track of it amidst the opaque nuclear industry of China.

All these factors are worrying, yet what spurs the need for careful and detailed scrutiny of China’s accountability is, more than any other factor, China’s Weapons of Mass Destruction (WMD) proliferation record.

² Department of Foreign Affairs and Trade, *Agreement Between the Government of Australia and The Government of the People’s Republic of China on the Transfer of Nuclear Material*, 4/4/06, (http://www.dfat.gov.au/geo/china/treaties/nuclear_material.html, accessed 26/6/06).

³ IAEA, *The Convention on the Physical Protection of Nuclear Material*, May 1980, (<http://www.iaea.org/Publications/Documents/Infcircs/Others/inf274r1.shtml>, accessed 12/8/06).

⁴ Department of Foreign Affairs and Trade, Canberra, *Amendments to the Convention on the Physical Protection of Nuclear Material*, 8 July 2005 (Not yet in force), (http://www.aph.gov.au/house/committee/jsct/20june2006/treaties/cppnm_text.pdf, accessed 26/6/06), pp. 4-5.

⁵ *ibid.*

In selling Australian uranium to China for energy needs, we are aiding in expanding and developing a nuclear industry in a country that has previously demonstrated indifference or contempt towards international regulation of nuclear technology and other sensitive industries.

For a start, Paula DeSutter, US Assistant Secretary for Verification and Compliance, has criticised China for structuring “its membership and involvement in various international nuclear regimes so that it may still “lawfully” circumvent the basic purpose and intent of these regimes.”⁶ In other words, China has attempted to cast a veil of respectability over its WMD activities while undermining the aims of non-proliferation.

In fact, while China has recently made a concerted attempt to appear compliant with non-proliferation measures, it remains one of the world’s nuclear proliferators.

For instance, China’s aid was a key component in the development of the Pakistani and Iranian nuclear programs. The flow on effect of actions such as these can ultimately be seen in the nuclear black market of A Q Khan and the ability of North Korea to develop nuclear weapons despite strict international embargoes.

China’s support for these nuclear programs occurred before several reforms in China’s attitude to non-proliferation. From the 1980s onward, China has signed a series of agreements and safeguards with the international community in regard to nuclear technology and proliferation that promised greater responsibility and accountability. However, several of these agreements have subsequently been breached by Chinese activities. Transfers of sensitive technology and equipment have continued, and the degree to which China has held itself to account for its international obligations in this respect greatly limits the trust we may invest in the current proposed nuclear safeguards regarding Australian uranium.

⁶ Paula A. DeSutter, Assistant Secretary for Verification and Compliance, Testimony Before the U.S. – China Commission, Washington, DC, July 24 2003, ‘China’s Record of Proliferation Activities’, *US Department of State website*, (<http://www.state.gov/t/vci/rls/rm/24518.htm>, accessed 5/7/06).

Some cases in very recent years demonstrate that China continues to hold a very tenuous relation to nuclear non-proliferation efforts. In February 2001, China's Seventh Research and Design Institute, which is under the aegis of the China National Nuclear Corporation, "supplied 50 ceramic capacitors to Pakistan's New Labs plutonium reprocessing plant,"⁷ a plant reportedly capable of producing enough plutonium for one nuclear weapon per year.

In April 2000 China was also suspected of restarting negotiations with Iran "on the construction of a nuclear graphite production facility,"⁸ despite offering an assurance to the US in 1997 that they would "undertake no new cooperation with Iran."⁹

Clearly, some elements within China continue to have an interest in exporting nuclear technology and material against the interests of the international community.

One of the most worrying aspects of China's continuing breaches of proliferation regimes, in terms of nuclear, chemical and biological technology is the "Serial Proliferator Problem."¹⁰

Companies such as the China North Industries Corporation (NORINCO), the China Precision Machinery Import-Export Corporation (CPMIEC), and the China Metallurgical Equipment Corporation (CMEC), have engaged in proliferation activities which have slipped, or perhaps been allowed, under the radar of Chinese export regulation, only halting under international pressure. Despite being sanctioned for these breaches by the international community, serial proliferator companies have continued to operate and continued to breach China's international obligations. This could not occur without either a complicit or negligent government.

In one example of this problem, CPMIEC was sanctioned by the US for "missile related transfers"¹¹ to Iran and Pakistan in 1991, 1993, 2002, and again in 2003.

⁷ Testimony of Gary Milhollin, Professor Emeritus, University of Wisconsin Law School and Director, Wisconsin Project on Arms Control, Before the U.S-China Security Review Commission, October 12, 2001, *Wisconsin Project website*, (<http://www.wisconsinproject.org/pubs/testimonies/2001/10-12-01.htm>, accessed 5/7/06).

⁸ *ibid.*

⁹ *ibid.*

¹⁰ Paula A. DeSutter, Testimony Before the U.S. -China Commission, July 24 2003.

Whether Chinese regulation is ineffective in managing its corporation's exports, or simply turns a blind eye to such activities seems of little import. That such activity can continue without serious consequences being imposed has major implications for any 'independent' legislative and regulatory framework set up by the Chinese authorities. China's ability to be effective in safeguarding Australian uranium from finding its way beyond China's borders is highly questionable given the existence of serial proliferators.

China has also proven itself an unreliable partner in the non-proliferation of chemical weapons.

Despite being a signatory to the Chemical Weapons Convention, Geneva Protocol, and bringing its domestic regulations in line with Australia Group (AG) regulations in 2002, "[t]he United States believes that [...] China has an advanced chemical weapons research and development program."¹²

Export regulation of materials used in chemical weapon production has also been poor. The US has sanctioned Chinese companies for alleged breaches of non-proliferation agreements. For example, in 1997 and 2001, "Chinese entities" were sanctioned "for exporting dual-use chemical" production equipment to Iran.¹³

More recently, in January 2002, the "Liyang Chemical Equipment company, the China Machinery and Electric Equipment Import and Export Company, and an individual broker and agent named as Q.C. Chen,"¹⁴ were sanctioned for transferring technology used to manufacture chemical weapons. Technology that is restricted under AG regulations.

¹¹ Paula A. DeSutter, Testimony Before the U.S. –China Commission, July 24 2003.

¹² NTI, 'China Profile: Chemical Overview', *NTI website*, (http://www.nti.org/e_research/profiles/China/Chemical/index.html, accessed 19/7/06).

¹³ *ibid.*

¹⁴ *ibid.*

After each US complaint, China has publicly reaffirmed its commitment to the CWC, yet has continued in activities condemned by the AG, an international organisation committed to non-proliferation and championed by Australia.

Should we consider a pair of rather limited nuclear safeguards agreement sufficient to bind a nation that has repeatedly demonstrated it does not share Australia's commitment to the restriction and eventual abolition of chemical weaponry, and will not be bound by its international agreements in this regard?

China's entire proliferation record makes it of vital importance to establish the level of responsibility and accountability that is likely to be displayed in regard to Australian uranium and nuclear safeguards.

WTO Obligations and Accountability

China's accountability to its international trade obligations provides an excellent case study to gauge the nation's overall level of accountability.

As stated earlier, China's accountability must be gauged in two ways. The first is in regard to China's internal accountability. In other words, how well are public and private entities able to hold the government to account for its actions, and vice versa.

This type of accountability is vital to assessing nuclear safeguards with China, as the safeguard agreements are based upon the supposition that: "Each Party shall establish and maintain a system of accounting for and control of all nuclear material subject to this agreement."¹⁵ Internal accountability throughout the Chinese system then reflects upon the States ability to uphold safeguards effectively.

The second tier of accountability is the way China, as a whole, has shown itself accountable within the international system. Beyond China's ability to uphold safeguards, this aspect investigates the value China associates with keeping its international obligations, and the ability of actors in the international system to hold it to account for breaches of those obligations.

In this section, we will explore some examples where China has breached its international trade agreements, and evaluate the degree to which China has been held to account for these breaches by outside agencies. Some outstanding governance issues identified by trade regulators will also be explored as a barrier to accountability.

As the bulk of China's trade relations occur within the framework of the WTO, we will focus on the nations performance within this framework.

¹⁵ Department of Foreign Affairs and Trade, *Agreement Between the Government of Australia and The Government of the People's Republic of China on the Transfer of Nuclear Material*, 4/4/06, (http://www.dfat.gov.au/geo/china/treaties/nuclear_material.html, accessed 26/6/06).

The investigation will show that China has breached its trade obligations numerous times, and has often avoided full implementation, notable in the area of Intellectual Property Rights (IPR) protection, despite concerted pressure from outside agencies. Implementation of agreements is also severely hampered by lack of transparency and corruption.

The most comprehensive evaluation of China's accountability to its WTO agreements is the WTO Secretariat report, released in April 2006. The report outlined the following breaches or areas of major concern in China's trade obligations.

- Protection of Intellectual Property remains inadequate, violating China's obligations under the TRIPS agreement.¹⁶ The WTO concludes that: "enforcement remains weak and infringement of intellectual property rights widespread."¹⁷
- Compliance with part III of the TRIPS agreement: 'Enforcement of Intellectual Property Rights' is especially problematic within China.
- Adoption of international standards for products remains low. In 2000 there were 19287 Chinese regulatory standards, 31.9% of which aligned with international standards. In 2004 there were 21,342 regulatory standards, 32% of which aligned with international standards, which represents only a 0.1% increase.¹⁸
- Although within the WTO system, some import prohibitions are allowed for environmental and national security grounds, "such import prohibitions are also issued for industrial policy reasons"¹⁹ in an abuse of the clause by China.

¹⁶ See WTO, *Agreement on Trade-Related Aspects of Intellectual Property Rights*, available from the WTO website, (http://www.wto.org/english/docs_e/legal_e/27-trips.pdf, accessed 14/7/06).

¹⁷ WTO Secretariat, *Trade Policy Review: People's Republic of China*, April 2006, (www.wto.org/english/tratop_e/tpr_e/s161-3_e.doc, accessed 20/7/06), p. 157.

¹⁸ See *ibid.*, p. 90.

¹⁹ *ibid.*, p. 77.

- China's export policies have created major problems for foreign markets. An indication of this being that, "[d]uring 2002-04, WTO Members initiated 756 anti-dumping cases, among which 152 or about one fifth involve Chinese exports."²⁰
- The WTO report reveals that, "[i]n 2002, [...] China had stated that: 'the practice of one product or service under multiple pricing has been entirely eliminated in China'."²¹ Yet in 2006, in clear breach of this statement, end use electricity rates vary because of, among other factors, "the use of multiple pricing by the national government to attain different goals."²² In effect, this means China is able to subsidise selected industries with lower electricity costs.

Furthermore, the USTR, the US body charged with monitoring the implementation of China's trade obligations, outlines a common pattern by China of "delay, partial implementation, and creation of new barriers"²³ in relation to its WTO obligations. This means, in short, that while the list of breaches identified by the WTO is significant, many problems with regard to implementation have been hidden behind a mirage of partial reforms and undertakings. China has learnt to play the rules of the game, while effectively undermining the spirit of international institutions.

China's goodwill in regard to its IPR commitments is also somewhat suspect. China, and the WTO, cite lack of regulatory and enforcement capacity as the major problems with compliance. Yet it seems strange that when it comes to *political* intellectual property issues, (for example, access to the internet, practise of religion, espousal of certain views, etc.), China is one of the most efficient regulators and prosecutors of perceived violations (breaching many human rights standards in the process). Yet when we deal with *economic* intellectual property, the picture is completely reversed.

²⁰ WTO Secretariat, *Trade Policy Review: People's Republic of China*, p. 110.

²¹ *ibid.*, p. 187 (footnote 167).

²² *ibid.*, p. 187.

²³ USTR, *U.S.-China Trade Relations: Entering a New Phase of Greater Accountability and Enforcement: Top-to-Bottom Review*, February 2006, (available from http://www.ustr.gov/assets/Document_Library/Reports_Publications/2006/asset_upload_file921_8938.pdf#search=%22U.S.-China%20Trade%20Relations%3A%20Entering%20a%20New%20Phase%20of%20Greater%20Accountability%20and%20Enforcement%3A%20Top-to-Bottom%20Review%22, accessed 2/7/06), p. 16.

Lest the reader views IPR enforcement issues as far removed from the issue of nuclear safeguards, the limited legal means to pursue and prosecute offenders in IPR matters also reflects upon the ability of China to protect and deter against the kind of activity led by Abdul Qadeer Khan of Pakistan in establishing a black market in nuclear technology – in part an IP issue.

The most recent example of China breaching WTO trading rules occurs after the publication of the WTO Secretariat report. Despite repeated negotiations, the US has resorted to the WTO dispute settlement mechanism in an attempt to prevent China from using domestic regulations as de facto tariffs on imports of automotive parts. This is clearly a protectionist measure on China's part in breach of its obligations.²⁴ Other WTO parties, namely the EU, quickly supported this motion.

China has had two previous cases brought against it in the WTO, the first relating to tax rebates on semi conductors, the second concerned with anti-dumping. Both were brought against China by the US, and both were resolved in the initial stage of dispute settlement, or before the official commencement of WTO processes. China has demonstrated great skill in avoiding official punitive measures in this regard.

The WTO Secretariat report identifies that one of the major problems in holding China to account for its obligations, especially in the area of IPR, results from a chronic lack of transparency within China. They state: "China ranks among the most opaque countries."²⁵

Lack of transparency is a central theme throughout this report, and is caused among other factors, largely by the extremely tight control over the media by the State and the restriction on freedom of speech within China. Transparency is crucial to gauging China's accountability. Without sufficient transparency, there can be no true accountability.

²⁴ USTR, 'United States Files WTO Case Against China Over Treatment of U.S. Auto Parts', *USTR website*, (http://www.ustr.gov/Document_Library/Press_Releases/2006/March/United_States_Files_WTO_Case_Against_China_Over_Treatment_of_US_Auto_Parts.html), accessed 2/7/06).

²⁵ WTO Secretariat, *Trade Policy Review: People's Republic of China*, (http://www.wto.org/english/tratop_e/tpr_e/s161-2_e.doc), accessed 20/7/06), p. 37 (footnote 39).

In direct terms, opacity is important in two main ways in relation to China upholding its international obligations. Firstly it affects the capacity of state institutions to deliver on state promises. For example, opacity results in poor inter-departmental cooperation and a limited policy development and feedback system. Yet the greatest problem arising from an opaque system is that of corruption.

Corruption harms China's accountability in several ways.

For instance, the WTO found that enforcement of the legal system in China is hampered by corruption in the form of "protection of local interests, and government interference."²⁶ So much so that the Chinese Supreme People's Court reported that, while new laws may be passed, "the difficulty of executing civil and commercial judgments has become a 'chronic ailment.'"²⁷

Political interference is pronounced. According to the WTO, "[j]udges in the local courts at various levels are apparently appointed or removed by the local people's congress or its standing committee, thus creating a strong incentive to protect local interests and for greater political involvement in judicial decision-making."²⁸ This is exacerbated by "abuse of power by government officials, frequent policy changes, and lack of laws."²⁹

Overall the WTO reported that China scored a dismal "3.2 out of 10"³⁰ in a 2005 corruption study. The problem is widespread and the WTO confirmed that, "in 2004, investigations carried out by the procuratorates found more than 2,900 officials across the country, at or above county level, guilty of corruption."³¹ The fact that these offenders were caught at all is held up as an improvement, but it is clear that

²⁶ WTO Secretariat, *Trade Policy Review: People's Republic of China*, (http://www.wto.org/english/tratop_e/tpr_e/s161-2_e.doc, accessed 20/7/06), p. 37.

²⁷ OECD in WTO Secretariat, *Trade Policy Review: People's Republic of China*, p. 37.

²⁸ WTO Secretariat, p. 37 (footnote 35).

²⁹ *ibid.*, p. 37 (footnote 36).

³⁰ *ibid.*, p. 37 (footnote 39).

³¹ China News Service online information, available at: www.chinanews.com.cn/news/2005/2005-02-28/26/544643.shtml, [8 June 2005] in WTO Secretariat, *Trade Policy Review: People's Republic of China*, p. 39.

corruption is a real barrier to holding individuals and entities to account for their breaches of China's international obligations.

These problems are to a large degree systemic within China. They reproduce themselves from the highest level of government, to the numerous State-run corporations, to the smallest family operations.

Chinese governance issues are underlined by a World Bank governance reporting project, which finds that from 1998 to 2004, Voice and Accountability dropped from 7.9% to 7.3%, Regulatory Quality dropped from 42.9% to 35%, Rule of Law dropped from 52.4% to 40.6% and Control of Corruption has dropped from 60.7% to a staggering 39.9%.³²

To place this in perspective, the impoverished African nation of Rwanda in 2004 scored significantly higher in both 'Voice and Accountability' and 'Control of Corruption' figures, 18.9% and 44.3% respectively.³³

So, clearly problems arising from opacity such as corruption and poor coordination result in a lack of capacity to effectively implement international commitments.

Opacity also allows the state to *deliberately* breach their obligations in pursuit of other policy agendas, and cite the above capacity issues as excuses for the existence of breaches. The point of such opacity is that we *cannot know to any degree of certainty* whether China is implementing its agreements in good faith.

In relation to the effectiveness of nuclear safeguards with China this leads to two unacceptable conclusions.

Firstly, given that lack of transparency and its associated problems are so prevalent, a nuclear safeguard system based upon the existence of independent, effective regulatory bodies is highly suspect in light of the systemic problems China faces in

³² Source: D. Kaufmann, A. Kraay, and M. Mastruzzi, 2005: *Governance Matters IV: Governance Indicators for 1996-2004*, (available from <http://www.worldbank.org/wbi/governance/govdata/>, accessed 27/6/06).

³³ *ibid.*

such pursuits. Regulatory bodies will not, in all probability, be independent from political pressures, and their ability to regulate will be hampered by the culture of opacity throughout industry – especially in the nuclear sector.

Secondly, mindful that China has a dreadful record of WMD proliferation activities, the opacity criticised by the WTO, combined with the clear examples of China breaching its trade obligations in pursuit of other policy objectives, creates a scenario whereby China has the ability to breach Australian safeguards in pursuit of other objectives and escape accountability by arguing a lack of capacity.

Lastly, it is clear from Chinese behaviour that the government has only implemented its obligations in many areas of trade through a system of pressure exerted by extremely powerful external organisations. On difficult issues, China seems to do little to meet its obligations that it is not directly pressured into.

Nuclear resources are a far more sensitive security issue than that of IPR or many of the trade issues dealt with here, yet Australian safeguards will be monitored and dealt with primarily through the IAEA and, to a lesser extent, the Australian government. Can these two institutions deliver the same leverage in a more sensitive area than the WTO and the US can in the trade arena?

Given the IAEA's difficulties with assessing the Iranian, Libyan and Iraqi nuclear programs, and preventing abuse of the legal proliferation framework, its effectiveness in safeguarding Australian uranium is under considerable doubt.

Business and Government group concerns

While the section on accountability within the WTO system is useful to establish a broad picture of China's accountability in the international system, it leaves something of a gap in revealing the more detailed relationships between China and the rest of the world.

In an attempt to rectify this, the following section explores China's accountability from the point of view of business groups and companies, both in Australia and abroad. This helps to define how China's breaches of international agreements have direct relevance for Australian business, and develops a richer understanding of the accountability issues nuclear safeguards will confront.

As a starting point, the Department of Foreign Affairs and Trade (DFAT) found that Chinese authorities are still ineffective in holding companies to account for breaching Intellectual Property Rights (IPR) rules. DFAT found the situation was so bad that Chinese companies viewed IPR fines as "simply another overhead."³⁴

DFAT reports that this lack of protection for intellectual property has deterred several Australian companies from exporting to the region, specifically in the areas of recognised food brands and genetically modified products, for fear that counterfeiting and unauthorised sale of the goods will reduce international profitability.³⁵

DFAT outlines several instances where the failure of China to live up to its international agreements, and hold entities within its border to account, has harmed Australian interests.

For example:

³⁴ DFAT, 'Australia-China FTA Negotiations: Behind the border issues and concerns', *DFAT website*, (http://www.dfat.gov.au/geo/china/fta/facts/border_issues.html, accessed 14/7/06).

³⁵ *ibid.*

- “A Queensland-based processed food manufacturer with a recognised brand discovered an entire counterfeit factory, website and promotional material of its product in China.”³⁶
- A NSW-based processed food company has expressed concern about the integrity of its brand and status as “Made in Australia” having witnessed local manufacturers [in China] applying “Made in ...” labels to product being made locally.”³⁷
- “An Australian automotive parts manufacturer found Chinese counterfeits of their Australian design registered product, bearing the company’s markings, being imported into Australia.”³⁸
- “Rampant pirating in China of a world-class software product of a NSW-based software developer has eroded the company’s significant market potential in China where the product sells for less than 1% of the retail price. Sales to Europe and the United States have also been affected because international Chinese enterprises are operating abroad with the benefit of the pirated product.”³⁹

DFAT is clearly demonstrating in its criticisms that China is unable or unwilling to hold actors within its borders to account, and that Australia cannot effectively hold China to account for breaching agreements designed to safeguard Australia’s intellectual property.

Business and Industry groups add to DFAT’s summary

³⁶ DFAT, ‘Australia-China FTA Negotiations: Behind the border issues and concerns’, *DFAT website*.

³⁷ *ibid.*

³⁸ *ibid.*

³⁹ *ibid.*

The Australian Industry Group (AIG) outlines similar concerns to DFAT, reporting that IP protection is inadequate in China and clearly in breach of WTO rules, leading to real problems for Australian exporters.⁴⁰

The Insurance Australia Group (IAG) also criticises China's compliance with its TRIPS (trade-related aspects of intellectual property rights) obligations, reporting that "enforcement remains problematic, with counterfeiting and piracy still at very high levels."⁴¹ So much so that "92 per cent of the software used in China is pirated."⁴² The IAG also outlines the following areas of concern with China's WTO commitments:

- "At times China has shown difficulty in adhering to WTO rules. Its commitment to market access, for example, is being undermined by administrative measures. An opaque regulatory process and overly burdensome licensing and operating requirements continue to frustrate foreign providers of services."⁴³
- In regard to legislation transparency, "China's basic compliance with notice-and-comment commitments continues to be uneven."⁴⁴ Notice and comment procedures are basically policy feedback and adjustment periods for entities affected by the introduction of new laws and regulations
- In regard to financial services, "[m]arket access is constrained by high capital requirements and prudential requirements which are beyond international norms. Concerns about discriminatory treatment in branch approval processes also are being raised."⁴⁵

⁴⁰ Australian Industry Group, *Australia – China Free Trade Agreement Feasibility Study*, July 2004, (http://www.aigroup.asn.au/aigroup/pdf/membership/Aust_China_FTA_Submission160704.pdf, accessed 19/7/06).

⁴¹ ISOC-au, *Unlocking China's Services Sector*, (available from <http://www.isoc-au.org.au/Events/ChinaServices.html>, accessed 25/7/06), p. xi.

⁴² Mark Vaile in ISOC, 'Unlocking China's Services Sector', *ISOC-au website*, (<http://www.isoc-au.org.au/Events/ChinaServices.html>, accessed 25/7/06).

⁴³ ISOC-au, *Unlocking China's Services Sector*, p. ix.

⁴⁴ *ibid.*, p. x.

⁴⁵ *ibid.*

- “Overall, China’s telecommunications sector remains highly restrictive with healthy competition being constrained by an unclear licensing system, compromised pricing regulations, inadequate regulations on interconnection and high capital requirements. Further reforms are needed to give effect to China’s telecommunications services commitments.”⁴⁶
- “China still maintains a number of regulatory barriers restricting the delivery of education and training in relation to crossborder supply, commercial presence and the movement of educational professionals.”⁴⁷

AVCARE, an organisation that represents Australian companies producing and selling products such as chemicals used in agricultural and veterinary supplies, has also complained that products originating from China “do not always meet the required [Australian] standards. Our members often go to considerable trouble and expense, and have to resort to private litigation to seek remedies.”⁴⁸

Overseas sources are if anything, even more critical of China’s accountability in relation to its trade commitments.

In America, the United States Trade Representative (USTR) identified clear failures in IPR protection within China’s legal system, regulatory abilities, and border controls.⁴⁹ More broadly, the USTR identifies a pattern across the breadth of China’s WTO obligations of “delay, partial implementation, and creation of new barriers,”⁵⁰ which makes it very difficult to hold the nation to account.

The United States Committee for International Business (USCIB) finds serious transparency issues within China. Referring again to IPR issues, the USCIB

⁴⁶ ISOC-au, *Unlocking China's Services Sector*, p. x.

⁴⁷ *ibid.*, p. xi.

⁴⁸ Avcare, *Submission to the Department of Foreign Affairs and Trade on a possible Australia-China Free Trade Agreement*, 16th June 2006, (http://www.dfat.gov.au/geo/china/fta/submissions/2NAG_19_Avcare.pdf, accessed 25/7/06), p. 3.

⁴⁹ USTR, *U.S.-China Trade Relations: Entering a New Phase of Greater Accountability and Enforcement: Top-to-Bottom Review*, February 2006, p. 10.

⁵⁰ *ibid.*, p. 16.

concludes that, “[o]verall, the issue of IPR protection is marked by a readiness at the central government level to make strides to address the problem while implementation at local levels of government continues to leave much to be desired.”⁵¹

Efforts to rectify this situation are hampered by a serious “lack of transparency in China’s administrative and criminal enforcement system.”⁵²

The EU commission reinforced the concerns raised above, stating that “[t]oo often Europe’s businesses meet a Chinese wall rather than an open door,”⁵³ contrary to the spirit of China’s WTO accession deal.

The EU commission, through extensive industry consultation finds that:

“[M]any European businesses feel that they are not getting a fair deal in China. Barriers to EU investment range from the inadequate protection of Intellectual Property to regulatory restrictions on investment and services trade. Safety standards, and market access regulation are applied disproportionately, or inconsistently, or in the case of IPR protection - not really at all.”⁵⁴

In an example of this, the commission cites that:

“[T]here were fresh complaints from European construction companies that capital requirements and rules limiting them to joint ventures are barring them from effective competition in China - at the same time as Chinese construction companies are expanding rapidly overseas.”⁵⁵

Clearly, from the range of business and industry groups surveyed here, considerable anxiety exists within the business community over China’s accountability, especially

⁵¹ Thomas Niles and Clarence Kwan, USCIB, ‘Re: China’s WTO Obligations’, 10/9/03, *USCIB website*, (<http://www.uscib.org/index.asp?documentID=2742>, accessed 29/6/06).

⁵² *ibid.*

⁵³ Peter Mandelson, Speech at the EU-China Conference, ‘EU Trade and Investment with China: Changes, Challenges and Choices’, Brussels, 7 July 2006, *EU website*, (http://ec.europa.eu/comm/commission_barroso/mandelson/speeches_articles/temp_icentre.cfm?temp=sppm109_en, accessed 29/7/06).

⁵⁴ *ibid.*

⁵⁵ *ibid.*

in the area of IPR protection and transparency requirements under the WTO framework.

These industry concerns raise a straightforward question in relation to nuclear safeguards. If China is not accountable for safeguarding Australian and international intellectual property, and for complying in goodwill with its international trade commitments, can they be trusted with safeguarding Australian uranium?

Industrial pollution and Chinese Accountability

China's industrial pollution and safety record is another area in which the nation's accountability may be evaluated. Specifically, two catastrophic accidents in the latter half of 2005 highlight several serious accountability and monitoring issues. These systemic problems are highly relevant to the most sensitive of industries: nuclear.

On the 13 of November, several explosions occurred at a chemical plant owned by the China National Petroleum Corporation (CNPC). These explosions led to a large quantity of Benzene escaping into the Songhuajiang River. Widespread environmental damage resulted, and the water from the river was made unfit for human consumption for a lengthy period, endangering the populations dependent upon it for their water supplies.⁵⁶

Despite safety reviews promised by the authorities, just one month from this disaster on the 15 of December, another safety failure led to the Shaoguan Zinc Smelter releasing toxic cadmium into the Biejiang River, pushing cadmium levels to 10 times the acceptable threshold. Like the first incident, this spill devastated natural ecosystems and had a widespread impact upon the human populations along the length of the river.⁵⁷

While the implications for China's industrial safety and environmental credential are damning, of more interest to our topic is the governance and accountability problems exposed by these events.

As punishment for the CNPC incident in November, the Minister of State Environmental Protection Administration (SEPA), Xie Zhenhua, was stood down from his post, along with 3 CNPC managers responsible for the site. In response to the Shaoguan smelter incident, Zhang Weijian, head of the smelter, was stood down.⁵⁸

⁵⁶ See Li Li, 'Spilling Out', *Beijing Review website*, (<http://www.bjreview.com.cn/06-01-e/china-5.htm>, accessed 2/7/06).

⁵⁷ See *ibid.*

⁵⁸ See *ibid.*

Despite these individuals being held accountable, the investigations sparked by the incidents found that the accidents were symptoms of a systemic lack of transparency and effective independent regulatory systems. Within this opaque system, managers and officials pursuing the highest profit margins could ignore environmental and safety breaches with impunity. Holding individuals to account for single incidents does little to address this underlying reality.

In an indication of the lack of regulation and oversight, locals reported to observers that industrial spills had occurred on a number of occasions at the sites in question prior to the major disasters of 2005. These spills resulted in environmental crises of a smaller scale which, somehow, escaped the attention of regulators. SEPA had been completely ineffective in monitoring these warning signs. To highlight this, the Shaoguan Smelter was even issued the status of “National Advanced Unit in Pollution Treatment”⁵⁹ shortly before the 2005 incident.

The reason China’s environmental regulator cannot hold industry to account effectively is simple. China’s governance structure gives the national environmental body, SEPA, the power to issue technical directives to organisations on the provincial level, for instance the level at which a chemical trace is deemed unacceptable in a water supply, but not operational directives. These provincial organisations, ostensibly independent in the way they undertake regulation, are placed under the authority of local officials. These officials have the power to dismiss the heads of the local environmental watchdogs if they stand in the way of industry profit – the same industry profit which generated government income through taxation, and paid the salaries of government officials.⁶⁰

From these examples, we can discern a familiar pattern of opacity, corruption and failure to monitor the activities of industry. Certainly, a number of individuals were held to account for the industrial accidents. Yet even this was restricted by the lack of effective legal mechanisms. Ultimately, the blame for this variety of incident lies

⁵⁹ China Business Council for Sustainable Development, ‘Chinese Agency Investigates Beijiang River Pollution Accident’, *China Business Council for Sustainable Development website*, (<http://english.cbcsd.org.cn/themes/efficiency/2933.shtml>, accessed 3/7/06).

⁶⁰ See Li Li, ‘Spilling Out’, *Beijing Review website*.

with the ineffective regulatory systems and lack of transparency, and it is highly problematic holding entities or individuals to account for systemic failures.

An accident of the type described here in a nuclear facility containing Australian uranium will produce far more catastrophic results than the pollution of a river, and nuclear safeguards will not protect the world from errors made in the unaccountable Chinese environment.

Human Rights Breaches and Chinese Accountability

One of the clearest and most worrying breaches of China's international obligations is in relation to its human rights commitments. While human rights abuses themselves are an indication of the character of the Chinese system, and not of its ability to fulfil nuclear safeguards signed with Australia, the fact that China is willing to breach its international obligations is of real concern in the veracity of China's signed word.

Breaches of China's international commitments will be demonstrated in regard to two specific areas of human rights: The convention against torture and the convention on the rights of the child.

China and the Convention against Torture

China is a signatory to the *Convention against Torture*,⁶¹ and ratified the agreement in 1988. In light of this, it would be expected that torture would not be used, encouraged or allowed by the Chinese state in any of its citizens pursuits.

However, Amnesty International reported in 2001 that: "Torture and ill-treatment of detainees and prisoners is widespread and systemic in China,"⁶² and that "Chinese law punishes torture and ill-treatment as a crime in some specific circumstances only. Many perpetrators acting in an official capacity, such as part-time, contracted or seconded security staff, are specifically excluded from prosecution for crimes of torture."⁶³

Notwithstanding some improvements in the prosecution of perpetrators of torture, Amnesty again stated in 2006 that, "[t]orture and ill-treatment continued to be reported in a wide variety of state institutions."⁶⁴ In a horrifying twist, recent reports

⁶¹ United Nations, *Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment*, 10/12/84, (http://www.unhchr.ch/html/menu3/b/h_cat39.htm, accessed 20/7/06).

⁶² Amnesty International, 'Torture – A Growing Scourge in China – Time for Action', 12/2/2001, *Amnesty International website*, (<http://web.amnesty.org/library/Index/engASA170042001>, accessed 19/7/06).

⁶³ *ibid.*

⁶⁴ Amnesty International, 'Regional Overview: China', *Amnesty International website*, (<http://web.amnesty.org/report2006/chn-summary-eng#8>, accessed 19/7/06).

have revealed that the organs of executed political dissidents are often harvested and sold as transplants to Western customers.⁶⁵

China has clearly breached its international treaty obligations in this instance, and has so far not been held to account for its actions.

China and the Rights of the Child

China ratified *The Convention on the Rights of the Child* in 1992. Unfortunately government implementation of this agreement has been highly inadequate, and several government policies clearly infringe upon the nation's international obligations.

The controversial One Child policy, which attempts to limit families to a single child and imposes penalties for subsequent children, is a good example. When combined with a cultural preference for boys, this policy has resulted in ill treatment of female children and a serious gender imbalance in the population that reveals a disturbing pattern of missing lives.⁶⁶ The results of this policy, at a minimum, breach the standards of non-discrimination and right to life enshrined in the convention.

The existence of child labour in China represents another breach of the convention. Despite Chinese labour law banning child labour, a huge number of children are employed in factories throughout the country, where their smaller hands and keen eyesight are highly valued, but lowly paid. This problem has only risen as industry has boomed. Regulation is not the problem here so much as enforcement of Chinese and international law.⁶⁷

Similarly, China does not adhere to its obligations regarding children in the juvenile justice system. The HRIC reported that: "Laws and procedures relating to juvenile justice, are unclear and do not meet international standards on preventing

⁶⁵ See Jill McGivering, 'China 'selling prisoners' organs'', *BBC News website*, (<http://news.bbc.co.uk/2/hi/asia-pacific/4921116.stm>, accessed 10/8/06).

⁶⁶ HRIC, *Implementation of the CRC in the PRC*, 9/8/05, (<http://www.hrichina.org/public/contents/article?revision%5fid=24031&item%5fid=23908>, accessed 19/7/06).

⁶⁷ China Labour Bulletin, 'As China's Economy Grows, So does China's Child Labour Problem', *China-labour.org*, (<http://www.china-labour.org.hk/public/contents/article?revision%5fid=18577&item%5fid=15889>, accessed 20/7/06).

exploitation, and in the execution of those procedures, children's rights are violated."⁶⁸

China also fails to sufficiently care for the large number of AIDS orphans. As one of the most vulnerable subsets of children within China, the orphans suffer from "little access to basic services because of the narrow definition for those children that the PRC uses, and because of insufficient allocation of resources to those children."⁶⁹ The sexual exploitation and trafficking of children is also subject to an inadequate level of reporting and enforcement, and constitutes a shameful mark on the country's record.⁷⁰

In short, "there is no comprehensive legal framework to implement the rights of the child."⁷¹

China's human rights record represents another area in which the nation has demonstrated a lack of accountability towards international agreement. This does not bode well for nuclear safeguards.

⁶⁸ HRIC, *Implementation of the CRC in the PRC*.

⁶⁹ *ibid.*

⁷⁰ *ibid.*

⁷¹ *ibid.*

Conclusion

This report set out to evaluate the accountability of the Chinese government in three ways.

The degree to which China holds actors within its system to account, the degree to which China is accountable to the international community, and the ability of the Chinese system to provide accountability for its actions.

Judgements on these elements of accountability are crucial in determining how effective nuclear safeguards of any sort will be in ensuring Australian uranium is not used contrary to the national interest.

The areas explored throughout this report have uncovered several key factors which produce a damning verdict for China's level of accountability.

Firstly, China has clearly demonstrated that it is willing to breach its international obligations in pursuit of domestic policy objectives. This is seen in the proliferation background of the nation, the breaches in Intellectual Property Rights enforcement and concealed industry subsidisation, the concerns of leading business organisations, and China's human rights record. Although many organisations and States attempt to police China's adherence to its various agreements, they find it very difficult to effectively hold the country to account due to its economic and geopolitical importance.

Secondly, transparency within China is chronically lacking. The opacity of the Chinese system was remarked upon throughout the areas explored in the report, and cited as one of the most serious barriers to accountability. Opacity leads to widespread corruption, poor regulation, and an environment under which China can conceal the extent of its implementation of agreements.

Lastly, the report placed a real question mark over China's ability to effectively monitor and safeguard Australian uranium. The opacity and willingness to breach

agreements have constructed a culture under which even a regulatory body set up in good faith will face major challenges in undertaking its duties effectively and independently. The challenges of corruption, lack of oversight, and the tendency to hide mistakes will be hard to overcome in any Chinese regulatory environment.

In short, the state of accountability in China means China's signed word cannot easily be trusted, they cannot effectively be monitored and held to account for their actions, and little faith can be held in the ability of internal Chinese institutions to monitor and regulate the use of Australian uranium.

China will, in all likelihood, not be held to account by the nuclear safeguard agreements. Exporting a highly strategic and dangerous resource in these conditions carries a high degree of risk.

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Medical Association for Prevention of War (Australia)

An Illusion of Protection

**The “Unavoidable Limitations” of Safeguards and the
Export of Uranium to China.**

Marko Beljac.

*A Report prepared on behalf of the Australian
Conservation Foundation and the Medical Association
for Prevention of War (Australia)*

September 2006

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Executive Summary

This report addresses the flaws and limitations of the international nuclear safeguards system with particular reference to the proposed sale of Australian uranium to China, a declared nuclear weapons state. The report highlights the limitations of the global nuclear safeguards regime, an issue of particular importance in the context of current moves to expand the Australian uranium industry.

The Medical Association for the Prevention of War and the Australian Conservation Foundation maintain that there is a serious risk that Australian uranium exports to China will directly or indirectly support Chinese nuclear weapons manufacture.

There is much that could be done to improve the international safeguards system, however its fundamental flaws and the pervasive interconnections between the civil and military application of nuclear technologies and materials mean that the most prudent and responsible position is to oppose the mining and export of uranium.

Supporters of Australia's uranium export industry claim that the safeguards applied to Australia's uranium exports are the equal of, or better than, safeguards applied by other uranium exporting nations. This claim ignores the problem that all uranium-exporting nations are reliant on the inadequate and under-resourced safeguards system of the IAEA and it cannot be credibly advanced to justify Australian uranium exports.

Claims that Australia would have no leverage in relation to international nuclear safeguards in the absence of an uranium export industry are false. Australia's moral authority to actively pursue a strengthened non-proliferation and safeguards regime would be enhanced by such an approach. Furthermore, non-nuclear and non-uranium exporting states can and do influence international safeguards through the Board of Governors of the International Atomic Energy Agency (IAEA) and by engagement with a range of other international fora and mechanisms.

Nuclear Weapons and Nuclear Proliferation

A strong bond exists between the use of uranium for civil and military purposes. Former Nobel Prize winning physicist Hannes Alven described the peaceful and military atom as being Siamese twins.

This link has resulted in the international community putting in place a non-proliferation regime that is meant to halt the spread of nuclear weapons and to provide a framework for disarmament by the nuclear weapons states. The key platform for this regime is the Nuclear Non-Proliferation Treaty (NPT).

The NPT recognises two forms of state—Nuclear Weapon States (NWS) and the Non-Nuclear Weapon States (NNWS). The treaty takes the form of a three-way bargain between these states. The Non-Nuclear Weapon States, in Articles I and II, agree not to acquire or manufacture nuclear weapons. In Article VI the Nuclear Weapon States pledge to work to eliminate their nuclear arsenals. Article IV allows for the use of nuclear technologies for peaceful purposes and provides for international trade in nuclear materials and technology, subject to Articles I and II.

The integrity of the NPT regime itself is currently very fragile. As the 2004 report of the UN Secretary-General's High Level Panel on Threats, Challenges and Change noted, "We are approaching a point at which the erosion of the non-proliferation regime could become irreversible and result in a cascade of proliferation".

The underlying flaw in the regime lies in the consanguineous relationship between civil and military nuclear operations. Article IV enables a NNWS to acquire nuclear materials, technology and infrastructure. However, once such a nuclear capacity is realised the possibility moving from NNWS to NWS status, is increased. There are clear examples that demonstrate that formally NNWS can become nuclear weapons capable relatively quickly. By legitimising and encouraging the expansion of nuclear fuel cycle capabilities around the world the NPT has the perverse effect of providing the means for a cascade of proliferation.

The declared Nuclear Weapons States—the USA, Russia, the UK, China and France—are part of the same problem. Their refusal to seriously pursue nuclear disarmament undermines the wider regime. In February 2004 the Director General of the International Atomic Energy Agency, Dr. Mohamed ElBaradei, noted, "We must abandon the unworkable notion that it is morally reprehensible for some countries to pursue weapons of mass destruction yet morally acceptable for others to rely on them for security - indeed to continue to refine their capacities and postulate plans for their use".

International Safeguards System

The NPT system provides for the use of nuclear materials and technology in civil nuclear energy programs so the international community introduced a system of safeguards. These are supposed to provide assurance that nuclear materials and technology are not being diverted from civil to military uses. The IAEA administers this system, which does not seek to prevent diversion, merely to detect and deter diversion.

The safeguards system arises from Article III of the NPT. This requires that nuclear trade is to be conducted only when safeguards are in place and requires NNWS to accept IAEA safeguards on nuclear infrastructure. The NWS are not obliged to accept the same level of safeguards.

The IAEA system of safeguards relies upon three methods, known as material accountancy, containment and surveillance. Material accountancy is the primary method, with containment and surveillance being secondary or complimentary methods. Material accountancy is essentially a book-keeping exercise to ensure that nuclear materials flowing through a safeguarded plant are not being diverted. On-site inspections are used to verify that nuclear materials stay within the production pipeline.

The details of the way in which the IAEA implements these safeguards in a given state and in a given facility is via subsidiary arrangements. These are confidential agreements between the IAEA and the safeguarded state; essentially action plans that provide the working details and institutional arrangements for how safeguards are implemented in practice. They are of first importance in any assessment of the effectiveness of safeguards in a given state or facility.

The Office of Technology Assessment of the United States Congress has demonstrated that the technical goals that the IAEA has set itself in relation to safeguards are faced with, “unavoidable limitations”. This is because the IAEA system of safeguards is not able to meet the IAEA’s own criteria in relation to the detection of diversion of, “significant quantities” of nuclear materials in a, “timely fashion”. In addition, it is possible to develop a nuclear weapon with materials less than the significant quantity provided for by the IAEA.

Nuclear technology is progressing rapidly, making it easier to develop nuclear weapons. The IAEA system of already inadequate “safeguards” is lagging further behind the developing technology. One example of this can be seen with the laser enrichment of uranium. Traditionally uranium has been enriched in huge plants, which are easy to detect. However,

moves to develop laser enrichment, including the Australian-based Silex process, make detection more difficult.

The ineffectiveness of the safeguards approach was recognised by the former IAEA Director General Dr Hans Blix in the important Weapons of Mass Destruction Commission report (2006). It documents that Iraq, Libya and North Korea were all able to effectively hoodwink the IAEA.

Due to the inadequacy of the safeguards system the international community put in place a series of *additional protocols* to enhance the safeguards regime. These are not a fundamental change in the safeguards system *per se*; they are merely additional to the traditional system. The additional protocols fail to address the fundamental limitations and flaws of the safeguards system, particularly the permissibility and encouragement of the spread of nuclear facilities and materials.

Australian Safeguards

In the 1970s successive Governments came under increasing pressure from mining corporations to allow the mining and export of Australian uranium. This became a major political issue and in 1974 the Whitlam Government set up an inquiry chaired by Justice Russell Fox to examine the matter, a process continued by the Fraser Government. The subsequent Fox Report was ambiguous and cautious about proceeding with the export of uranium. The report:

stated that the major hazard of the nuclear industry was its unintentional contribution to, “an increased risk of nuclear war”

recognised that the IAEA system of safeguards provided only, “an illusion of protection”

recognised that Article IV confers upon Australia no obligation to export uranium, contrary to the claims made by mining advocates.

In 1977 the Fraser Government decided to allow uranium mining in Australia. The Government stated that the decision was made to strengthen the goal of non-proliferation and had nothing to do with commercial gain. It announced a system of bilateral safeguards that would regulate the export of Australian uranium. The main provisions were:

The recipient state must pledge not to divert Australian uranium into military programs and to accept a number of safeguards provisions governing its use in a bilateral agreement

Uranium would only be sold to those States that are a part of the NPT

No enrichment of uranium to higher than 20% U-235 can occur without Australian consent

Australia would need to give prior written consent for any reprocessing of nuclear material derived from the use of Australian uranium

Australia would oppose the stockpiling of plutonium

There would be no further transfer of Australian uranium or nuclear material derived from the use of Australian uranium without Australia's prior consent.

The history of Australian safeguards policy is one of the progressive weakening of already inadequate provisions. An example is the Howard Government's exporting of uranium to Taiwan in the absence of a bilateral safeguards agreement and despite advice from the Department of Foreign Affairs and Trade that this could in no way meet the criteria of Australian safeguards policy. The Fox Report also recommended that Australian uranium should only be sold to a state that is a part of the NPT—Taiwan is not a part of the NPT.

The Fraser Government watered down the Fox Report to allow the export of Australian uranium to France, a nuclear weapon state that only joined the NPT in 1992 and has a strong link between its civil and military nuclear programs.

The prior written consent clause for reprocessing has also been watered down by a policy known as "programmatically consent". Programmatically consent means that Australia gives long term consent to the reprocessing of spent fuel derived from the use of Australian uranium. This has led to the stockpiling of Australian-obligated plutonium in Japan and the European Union.

A Massachusetts Institute of Technology multi-disciplinary study on nuclear power recommended that, given the proliferation risk, there should be a global ban on the reprocessing of spent nuclear fuel. A supplier state of uranium, should it value non-proliferation, would refuse to supply uranium to any state that expresses an interest in developing a plutonium fuel cycle. There exists no record of Australia using its leverage as a supplier of uranium to strengthen safeguards.

Australia allows for the "flag-swapping" or "flag transferring" of Australian uranium. Through this process actual Australian uranium can lose its identity.

In essence Australia's system of safeguards is a book keeping exercise that relies upon the importing state to adhere to the material accountancy system. This can be murky in the case of nuclear weapon states because of the clear and proven linkages between civil and military

facilities, including in the USA where a power reactor is used to produce tritium for nuclear weapons.

Non-proliferation and the Export of Uranium to China

In April 2006 Australia and the Peoples Republic of China signed two nuclear agreements. The first is a bilateral safeguards agreement that allows the export of Australian uranium to China. The second is a broader nuclear cooperation agreement.

The IAEA administers safeguards in China according to the provisions of 1998 Voluntary Offer Agreement. The IAEA safeguards only three nuclear facilities in China - a nuclear power reactor, a uranium enrichment plant and a research reactor. Of these three facilities only the power reactor actually has a safeguards action plan in force. The application of international safeguards to the Chinese nuclear industry is more symbolic than real and cannot deliver the required levels of transparency and certainty.

The bilateral agreement between Australia and China recognises that the 1988 agreement between Beijing and the IAEA provides the safeguard system to be applied to Australian uranium in the first instance. It will cover an equivalent amount rather than Australia uranium *per sé*. In other words, Australian uranium can be used in Chinese nuclear weapons without breaching the agreement, despite statements to the contrary from the Australian Government.

The way in which the bilateral agreement is to be implemented is via an administrative arrangement. This would be a detailed plan outlining how the safeguards are to work in relation to Australian uranium. The administrative agreement will be secret, will not subject to parliamentary approval (as its status is less than a treaty document), is subject to change at any time and is yet to be negotiated. Should the Australian Parliament ratify the bilateral safeguards agreement it will lose effective oversight of the negotiations between Canberra and Beijing.

The agreement allows for use of Australian derived nuclear materials in plutonium reprocessing plants. Currently no reprocessing plants are safeguarded in China. The IAEA global fuel cycle profile states that China currently has no reprocessing plant save for a pilot reprocessing facility. This refers only to the civil sector—reprocessing plants in China are associated with the Chinese nuclear weapons program.

China has an experimental fast breeder reactor where plutonium is used to make more plutonium outside Beijing and is keen to develop a plutonium economy based on breeder reactors. This policy flows logically from an energy strategy that is designed to maximise China's autonomy in the global energy market. By declaring its support for this in the bilateral agreement Australia dilutes its declared commitment to nuclear non-proliferation.

Essential to the working of safeguards will be China's material accounting system for fissile materials. There are serious deficiencies in China's fissile material accounting system. A US analysis of the Chinese nuclear industry stated, "China may not even have a precise inventory of the amount of nuclear materials in its facilities" and that "without this knowledge there is no way to detect the disappearance of any material". Furthermore, the study noted that it would seem that China's nuclear facilities have not been designed to measure the "amount of fissile materials accurately, easily and frequently".

If China does not have a precise inventory it is simply not credible to accept the proposition that the Australian Government be able to satisfactorily ensure material accountancy.

The bilateral agreement can be changed over time and does not actually lock China in to a system of safeguards over the thirty year life span of the agreement. On past experience any change will weaken rather than strengthen safeguards.

China currently relies heavily upon oil and coal for its energy needs. It is a net oil importer and reliance upon Middle East oil is expected to grow rapidly. China is currently making large investments in oil and other resources in Iran and seeks to be as free as possible from outside (particularly US) interference in its energy and industrial policies.

Iran has an interest in nuclear power and technology and its nuclear compliance record is patchy. China's nuclear know-how is creating a strategic relationship that is problematic from a proliferation perspective as China may assist, both overtly and covertly, Iran in the development of its nuclear capabilities.

China's looming energy crisis means it is embarking on an ambitious expansion of its domestic nuclear industry. The World Nuclear Association estimates that based on the projected expansion targets the annual amount of spent fuel arising from China would be 600 tonnes in 2010 and 1000 tonnes in 2020 with the cumulative amounts increasing to 3800 tonnes and 12 300 tonnes respectively. These are sobering numbers. The large annual

throughputs for reprocessing that would result from this magnify the inevitable safeguards measurement errors.

Based on current plans China cannot meet its ambitious nuclear plans by relying upon domestic sources of uranium. Australia has the largest reserves of economic uranium in the world. It is estimated that Australia will export several thousand tonnes of uranium per year to China. The large amounts of uranium to be exported, the large annual throughputs in reprocessing facilities, the limitations of safeguards and the long-term consent to reprocessing of Australian nuclear material, lead to the distinct possibility that China could divert fissile materials from civil to military programs.

A consistent non-proliferation policy would see Australia refuse to supply uranium to China.

The Balance of Leverage and Safeguards

China is Australia's second largest trading partner as such it holds significant leverage over the Australian Government. In addition, it is expected that much of the proposed uranium supply from Australia to China would come from BHP Billiton's Olympic Dam mine in South Australia. BHP Billiton has become heavily reliant upon the Chinese market to sustain its record rates of profit. Commercial imperatives and a weakened international safeguards regime combine to mean that Australia is in a weak negotiating position and will be unlikely to influence Chinese nuclear conduct.

The bilateral safeguards agreement with China is a living document that does not lock China over the life of the agreement to current safeguards policy. China's leverage over Canberra and BHP Billiton means that should the agreement be revised it will be revised in the direction of a weakening of safeguards.

Chinese Nuclear Modernisation and the Potential for Conflict

The relatively low number of warheads in China's arsenal means Beijing maintains a policy of ambiguity in relation to fissile material production and its nuclear policies more broadly. This poses a problem for Australian safeguards because China would seek to maximise secrecy in relation to its nuclear potential. During the bilateral safeguards agreement talks the Australian Government unsuccessfully sought clarification from Beijing on this key issue.

China is currently engaged in a nuclear weapons modernisation program. Initially China was interested in replacing older missile systems for more modern designs but increasingly China

has become understandably concerned about US plans to construct a ballistic missile defence system and to place other weapons in space.

Current levels of military-grade plutonium create an upper bound on how many new warheads China can produce. A US National Security Presidential Directive (NSDP 23) stipulates that as any state develops its response to the US missile defence system the US will expand the system to meet the new challenge to its integrity. This means that should Beijing manufacture more warheads, the US will upgrade its missile defences. A likely scenario is that Beijing would manufacture more warheads in response to any US move. Such an escalation could propel a potential arms race and increase regional insecurity.

Such an arms race would take place in the context of the ongoing dispute regarding Taiwan. Recently the US military drew up formal plans (OPLAN5077) for a major military conflict with China that would include the use of nuclear weapons. Zhu Chenghu, a senior Chinese general responded to this development by warning that Beijing is ready to use nuclear weapons in response.

China does not have enough uranium to meet its civil and military plans simultaneously. This was made perfectly clear in a mining industry address given by Madame Fu Ying, the Chinese ambassador to Australia in Melbourne in December 2005. Madame Fu stated that while China has sufficient uranium reserves to support its nuclear weapons program it needed imports to meet power demands. At best, this means that the export of uranium to China will free up Chinese uranium for warhead modernisation. At worst, Australian uranium will be diverted directly to nuclear weapons production. Clearly neither outcome is in Australia's national interest or the wider interests of the region.

Recommendations:

1. **Australia should** stop its contribution to the global nuclear chain by refusing to continue to mine and export uranium.
2. Australia should not export uranium to China.
3. Significant resources and government support should be directed to research and development into alternative, safe and renewable sources of energy.

4. IAEA safeguards should be strengthened through universal, mandatory and permanent application, including the full application of Additional Protocols, to Nuclear Weapon States including China in the same degree as to Non-Nuclear Weapon States.
5. Australia should withdraw from agreement to export uranium to Taiwan and fully enforce and maintain restrictions against nuclear trade including uranium sales to any non-NPT signatory states including India and Pakistan.
6. Proposed administrative arrangements to enact the Australian bilateral safeguards agreement in China must be made public and be subject to parliamentary scrutiny as part of the process of formal consideration of the proposed Nuclear Cooperation Treaty with China.
7. The Australian Government must withdraw consent in existing bilateral treaties, and not provide any future agreements or consent including to China, for reprocessing of Australian Obligated Nuclear Materials or for any use of such materials in MOX or other plutonium-based fuels.
8. Australia should require support for a Fissile Materials Cut-Off Treaty that prohibits reprocessing and the separation of weapons capable fissile materials, from all countries with which Australia currently has bilateral nuclear cooperation treaties.
9. Application of IAEA safeguards must be extended to fully apply to mined uranium ores, to refined uranium oxides, to uranium hexafluoride gas, and to uranium conversion facilities, prior to the stages of enrichment or fuel fabrication.
10. Australia must not enter into additional bilateral agreements allowing for conversion and enrichment of Australian uranium in countries including China and India where such arrangements are not in place.
11. Australia should withdraw uranium sales from all Nuclear Weapon States that continue to fail to comply with their nuclear disarmament obligations under the Non-Proliferation Treaty, and that fail to ratify and abide by the Comprehensive Test Ban Treaty including verifiable closure of nuclear weapons testing facilities.

Chapter 1

Nuclear Weapons and Nuclear Proliferation

Ever since many of the world's most renowned scientists and engineers in New Mexico in order to, "produce a practical military weapon in the form of a bomb in which the energy is released by a fast neutron chain reaction in one or more of the materials known to show nuclear fission"¹ nuclear weapons have assumed a central place in any consideration of the destiny of humankind.

Nuclear fission can also be used to generate power in a nuclear reactor. The various components of the mining, use, storage or re-processing of uranium and associated nuclear material is called the nuclear fuel chain. Australia is a player in the global nuclear fuel chain because it is a major supplier of uranium.

Plutonium, an end product of the fuel chain, produced in a civil power reactor can be used in nuclear weapons. The long-standing head of the Australian Safeguards Office, John Carlson, testified to the Senate Uranium Mining and Milling Committee that, "the plutonium produced with Australian uranium in power reactor operation is not suitable for nuclear weapons"². The committee made much of this dismissing the idea that reactor grade plutonium can be used for weapons as being a, "hypothetical problem"³.

In a paper for the world's leading science journal, *Nature*, Amory Lovins demonstrated that in fact reactor grade plutonium can be used as the fissile material for nuclear weapons⁴. A point confirmed by the former head of the theoretical division of the Los Alamos National Laboratory.⁵ Indeed, the US has tested at least two weapons using reactor grade plutonium.⁶

¹ Robert Serber, *The Los Alamos Primer: The First Lectures on How to Build an Atomic Bomb* (Berkeley: University of California Press, 1992) p3. For more on the development of the atomic bomb see Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon and Schuster, 1986). Henry De Wolf Smyth, *Atomic Energy for Military Purposes: The Official Report on the Development of the Atomic Bomb Under the Auspices of the United States Government, 1940-1945. Written at the request of L.R. Groves* (Princeton: Princeton University Press, 1946).

² The Parliament of the Commonwealth of Australia, *Uranium Mining and Milling in Australia: The Report of the Senate Select Committee on Uranium Mining and Milling Volume 1* (Canberra: Australian Government Publishing Service, 1997), p156.

³ The Parliament, *Uranium Mining and Milling*, p157.

⁴ Lovins A.B., "Nuclear Weapons and Power Reactor Plutonium", *Nature*, Vol 283 (28 Feb 1980), pp 817-823.

⁵ Carson Mark J, "Reactor Grade Plutonium's Explosive Properties", Nuclear Control Institute, Washington DC, August 1990.

⁶ Barnaby, *How Nuclear Weapons Spread*, p33 and Kokoski, *Technology and the Proliferation*, p75

It is a simple fact, as pointed out by Nobel Prize winning nuclear physicist Hannes Alven that peaceful and military atoms are “Siamese twins”⁷

1.1) The Nuclear Non-proliferation Treaty

There exists widespread international consensus, at least at the level of rhetoric, that the further spread of nuclear weapons would have serious consequences for international security and needs to be prevented. The nuclear non-proliferation treaty (NPT)⁸ may be read as an attempt by the international community to codify this norm.

Almost all states are now signatories to the treaty with the exception of Israel, India and Pakistan. North Korea withdrew from the treaty in 2003. The treaty recognises two forms of state, the Nuclear Weapon States (NWS) that had tested a nuclear weapon by 1967 (USA, USSR now Russia, China, Britain, France) with the remaining state signatories designated as Non Nuclear Weapon States (NNWS). For Butfoy, one of Australia’s leading arms control specialists, “the clear intent of the treaty’s creators was to ensure that these weapons would be tightly held by members of an exclusive club of established members”⁹ The treaty can be characterised as a three way deal between the NWS and the NNWS whereby the NNWS give up the option of acquiring or developing nuclear weapons and the NWS agree to assist the NNWS in the peaceful use of nuclear science and technology whilst the NWS pledge to work to eliminate their nuclear weapons.¹⁰ This is the only treaty obligation that exists calling for nuclear disarmament. The 1996 International Court of Justice advisory opinion declaring that the pledge of disarmament is a binding legal obligation again highlighted this aspect of the NPT bargain.

1.2) NPT Articles

The treaty consists of nine articles with articles I, II, III, IV and VI being of significant importance.

⁷ Barnaby, *How Nuclear Weapons Spread*, p1. For further discussion see also Jim Falk, “The Deadly Connection: Uranium Mining, Nuclear Power and Nuclear Weapons”, Victorian Association for Peace Studies, Melbourne, April 1984.

⁸ can be found online, “The Treaty on the Non-proliferation of Nuclear Weapons”, *United States of America, Department of State* <http://www.state.gov/t/np/trty/16281.htm>. See also Appendix C in Bellany, *Curbing the Spread*. References to the text of the NPT made here are from Bellany.

⁹ Andrew Butfoy, *Disarming Proposals: Controlling Nuclear, Biological and Chemical Weapons* (Sydney: University of New South Wales Press, 2005), p27.

¹⁰ Bill Hayden, *Uranium, The Joint Facilities, Disarmament and Peace*, (Canberra: Australian Government Publishing Service, 1984), p5.

Article I

This states that no NWS is to transfer either directly or indirectly nuclear weapons or control over them “to any recipient whatsoever” or any way to assist a NNWS in manufacturing and acquiring nuclear weapons. A number of issues have arisen over the years in regards to Article I. Dispute exists as to whether NATO nuclear co-operation is compliant with the provisions of this article.¹¹ Since the end of the 1995 NPT review conference reports have appeared (more of which later) that Chinese corporations have provided Pakistan with equipment for use in the production of highly enriched uranium¹² in violation of Article I. This has occurred to the extent that there exists synergy between corporate action and state policy. Also of interest was the sale of dual-use exports by Western corporations, including those of the United States and United Kingdom, to Iraq whilst these states were supporting Iraqi aggression in Iran.¹³

Article II

Here it is stipulated that NNWS are not to receive nuclear weapons or control over them, not to manufacture nuclear weapons nor to seek or receive any assistance in the manufacture of nuclear weapons. As Dunn points out Article II, “helps to create a norm of non-proliferation, once widespread fears of a world of runaway proliferation have been checked”.¹⁴ An interesting issue here is what precisely constitutes the manufacture of nuclear weapons? There is no international consensus on this and clearly to define manufacture as the final assembly of a nuclear weapon is inadequate. The lack of consensus leaves open the possibility that a non-compliant state could make significant inroads into the construction of a bomb without it being construed as manufacture of a nuclear weapon.

Article III deals with the “safeguards” obligations of the parties, to be discussed at depth later on in the report.

Article IV

This addresses the peaceful uses of nuclear energy. This article states that states have an, “inalienable right” to use nuclear energy for peaceful purposes, “without discrimination” and in conformity with Articles I and II. This article also states that states have the right to participate in nuclear trade so long as the objectives of such trade are peaceful and, “with due consideration for the needs of the developing areas of the world”. This article makes a

¹¹ Lewis A. Dunn, “The Nuclear Non-Proliferation Treaty: Issues of Compliance and Implementation”, *Programme for Promoting Nuclear-Non-proliferation Issue Review* No.9 February 1997, p2.

¹² Dunn, “The Nuclear Non-Proliferation”, p2.

¹³ Dunn, “The Nuclear Non-Proliferation”, p2.

¹⁴ Dunn, “The Nuclear Non-Proliferation”, p2.

significant contribution to the goals of the NPT bargain by affirming an, “obligation on the part of the most advanced countries to facilitate access to the benefits of the peaceful atom”.¹⁵

Article VI

Is a perennial sticking point as it calls for the NWS to, “in good faith”, pursue negotiations on effective measures that lead toward the reduction and elimination of nuclear weapons.

The Comprehensive Test Ban Treaty (CTBT) is meant to provide one sign of a commitment to disarmament. The US and China have not ratified the CTBT. New technologies may mean that the NWS may be able to develop and test nuclear weapons-absent testing. This would be at odds with Article VI.

Perhaps a more significant disarmament measure would be a Fissile Material Cut-off Treaty (FMCT) which would halt the production of weapons grade fissile materials. A ban on the production of fissile materials would thereby place an upper bound on the number of weapons able to be produced, serving as a starting point for proceeding with Article VI. However, the US has opposed a FMCT on the grounds that it could not be verified and thereby rejects a verifiable FMCT and China has linked a FMCT in the UN Conference on Disarmament with progress on an arms control regime for space.

At any rate one still deals with the travails of Article IV because civil reactor grade plutonium can be used to develop nuclear weapons and the existence of uranium enrichment facilities and reprocessing plants would take the form of a virtual nuclear arsenal.

The NPT has rather liberal withdrawal provisions. Article X provides for the possibility for a state to break out of the treaty with only three months notice. Article IV allows states to acquire key nuclear technology and know how as part of a peaceful nuclear fuel cycle programme. As much of the technology and materials for civilian nuclear programmes can be shared with military ones, states can therefore acquire key weapons capable infrastructure, and then simply walk from the Treaty and go on and manufacture, at short notice, a nuclear weapon. In this way the NPT, rather than being a true non-proliferation treaty actually provides a framework for legitimate proliferation. This makes the treaty flawed in principle, for Article X and Article IV undermine Article I and II. It would only take a downturn in international stability to bring these contradictory aspects of the treaty to relief.

¹⁵ Dunn, “The Nuclear Non-Proliferation”, p5.

Any nuclear trade must conform to Articles I and II. This clearly implies that any such trade must carry the strictest of safeguards and that there can be no compromise between a supplier state's other commercial and strategic goals and its professed commitment to the norm of non-proliferation. Should such compromises occur then a supplier state violates Article IV in spirit, if not expressly. Australia, a supplier of uranium, is then duty bound to put in place a system of safeguards either directly or indirectly via the auspices of the International Atomic Energy Agency (IAEA).

1.3) The Broader Nuclear Non-Proliferation Regime

It would be erroneous to suppose that the NPT regime is merely a security regime. It is also an economic regime in that arising from it is a set of strictures on the conduct of nuclear trade.¹⁶ In fact, the entire regime is best understood by using an economic analogy: examining rules and obligations that seek to address the issue of nuclear proliferation both on the demand side and the supply side.

Supply side measures seek to regulate trade in nuclear materials and technology whereas demand side measures seek to deal with the underlying incentives for the acquisition and manufacture of nuclear weapons.

Supply perspective

Following the entry into force of the NPT a committee was formed, known as the Zangger Committee after its chairman, that sought to interpret the safeguards clause, Article III.2, of the NPT and to agree on common rules for the application of nuclear exports requiring safeguards. The committee agreed to establish and review such a list of nuclear materials and equipment and this list became known as the *trigger list* because the export of these items would trigger the application of safeguards.¹⁷

These materials are broadly classified as, "source or special fissile material", for instance uranium, and other technological items such as reactors, components and equipment necessary for the nuclear fuel cycle. It should be emphasised that the list did not include a ban on transfers of technologies related to enrichment and reprocessing.¹⁸ This has clear implications for Australia as a supplier of uranium.

¹⁶ Organisation for Economic Cooperation and Development Nuclear Energy Agency, *The Regulation of Nuclear Trade: Volume 1 International Aspects* (Paris: OECD, 1988).

¹⁷ OECD, *The Regulation*, p17.

¹⁸ OECD, *The Regulation*, p17 see also p77-78.

Demand perspective

Article VI is a very important demand side measure because if the NWS were to disarm then a powerful incentive for further proliferation would be eliminated.

The structure of world order, as pointed out in the recent report of the high level Blix Commission on Weapons of Mass Destruction (WMD), also plays an important part on the demand side. In an open rebuke to US policy that reserves the right to wage preventive war the commission noted that, “disarmament and non-proliferation are best pursued through a cooperative rule-based international order, applied and enforced through effective multilateral institutions, with the UN Security Council as the ultimate global authority”.¹⁹

So long as states, or the most powerful among them (that possess nuclear weapons with a permissive employment policy), do not adhere to such a rule-based international order then there would always exist demand side pressures for proliferation. Indeed the Blix commission pointed out that “the NPT is the weakest of the treaties on WMD in terms of provisions about implementation.”²⁰

The NPT is at a painful crossroad. As demonstrated by the 2005 Review Conference which failed, after four weeks, to reach agreement on further steps to deal with non-proliferation. In fact the US repudiated the commitments it made at the 1995 and 2000 NPT review conferences, crucial to gaining indefinite extension of the treaty thereby placing the provisions agreed upon there in danger. The non-aligned states, led by Egypt, did not seek to ratify this US stance at the conference hence the impasse. Iran used the conference to emphasise its rights in regards to peaceful nuclear energy.²¹

In a penetrating analysis of the conference Wade Boese noted that the conference ended, “as it began with competing agendas, widespread mistrust, and no consensus on next steps for stopping the spread of or eliminating nuclear weapons”.²² Boese goes on to suggest, “the divergence among states/parties stems in large part from tensions between the nuclear haves and have-nots over how to implement the treaty’s dual obligations”. In fact we are seeing the revelation of underlying flaw in the NPT, as discussed above.

¹⁹ Hans Blix, *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms*, p18. Report online at <http://www.wmdcommission.org>

²⁰ Blix, *Weapons of Terror*, p103.

²¹ Daryl G. Kimball, “Repairing the Regime”, *Arms Control Today*, July/August 2005.

²² Wade Boese, “Nuclear Non-proliferation Treaty Sputters”, *Arms Control Today*, July/August 2005.

The report of the UN Secretary-General's High Level Panel on Threats, Challenges and Change stated, "we are approaching a point at which the erosion of the non-proliferation regime could ... result in a cascade of proliferation".²³ Precisely when an expansion of nuclear energy programmes is being planned, and implemented. The overarching principle of non-proliferation is sound but the nuclear non-proliferation regime, with the NPT at its core, needs to be rethought and reinvigorated.

²³ United Nations, *A More Secure World: Our Shared Responsibility: The Report of the Secretary General's High Level Panel on Threats, Challenges and Change* (New York: United Nations, 2004), pp38-39.

Chapter 2

International Safeguards

Australia's system of bilateral safeguards, as with all bilateral safeguards, relies upon International Atomic Energy Agency safeguards in the first instance.²⁴ It is therefore worth looking in detail into their history, nature and effectiveness. In fact, bilateral safeguards are an add-on to IAEA safeguards and the system put in place by the IAEA provides the core of any bilateral safeguards agreement.

As noted previously, Article III of the NPT provides the safeguards provisions of the treaty. Article III states,

*each non-nuclear weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy...for the exclusive purpose of verification of the fulfilment of its obligation assumed under this Treaty with a view of preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other explosive devices.*²⁵

Article III.3 goes on to state that the safeguards,

*shall be implemented in a manner designed to comply with Article IV of this treaty, and to avoid hampering the economic or technological development of the Parties or international cooperation in the field of peaceful nuclear activities.*²⁶

Notice that according to Article III the Nuclear Weapon States, such as China, are under no obligation to accept IAEA safeguards over their nuclear facilities.

Article III stipulates that responsibility for implementing the system of safeguards arising from the NPT falls to the IAEA. However, according to the IAEA statute the agency is also charged with promoting the nuclear industry. Thus the IAEA had an inherent conflict of interest with in its directives, it is essentially self-policing.

²⁴ David Fischer and Paul Szasz, *Safeguarding the Atom: A Critical Appraisal* (London: Taylor and Francis, 1985), p7.

²⁵ Mozely, *The Politics and Technology*, p284.

²⁶ See note 65.

The IAEA operates two different safeguards systems. The pre-NPT safeguards embodied in IAEA document INFCIRC/66²⁷ still operates in those nuclear facilities that exist in states outside of the NPT, such as India. This would be an important point to consider in any assessment of possible export of Australian uranium to India.

INFCIRC/153 represents the model or classical agreement to be reached between the IAEA and NPT state parties. Following the Iraq case in 1992, which demonstrated weaknesses in this system, a number of additional protocols were adopted to strengthen the system. It should be stressed that these protocols simply added on to the classical system so the classical system of safeguards still forms the bedrock of international safeguards arising from the NPT.

2.1.) The Classical System of Safeguards

The term “safeguards” was first employed in 1945 by the US, UK and Canada in a joint declaration that only, “when effective enforceable safeguards” against the use of nuclear energy for weapons purposes were in place would there be any sharing of information to enable cooperation on nuclear energy.²⁸

In INFCIRC/153 the IAEA defines the objective of safeguards to be,

*the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosives or for purposes unknown, and deterrence of such diversion by risk of early detection.*²⁹

The objective of the classical system of safeguards is not the *prevention* of diversion but the detection of diversion *once it has taken place*.

In this sense the system is meant to operate much like customs operations aimed at deterring drug smuggling. Customs does not seek to prevent drug smuggling for to do so would require every traveller, on every occasion, at every occasion to be thoroughly searched. Rather, customs seeks to deter smuggling by posing a certain level of risk, too high for the rational traveller, that they would be caught out and duly punished. The effectiveness of such an operation relies on a fear of sanction, deterrence is powerless unless there are negative consequences for transgressions.

²⁷ Available online at <http://www.iaea.org/Publications/Documents/Infcircs/Others/inf66.2.shtml>

²⁸ Kokoski, *Technology and the Proliferation*, p147.

²⁹ Kokoski, *Technology and the Proliferation*, p280.

This dichotomy between prevention and deterrence renders the term “safeguards” in the context of INFCIRC/153 rather Orwellian. As Parliamentary Researcher David Anderson, in a research report for the Senate Uranium Mining and Milling Committee, stated, “public expectation, making, what some would say is, a reasonable interpretation of the word ‘safeguards’, tends to demand a performance beyond the system’s established role”.³⁰

In addition, note that the safeguards provision of the NPT, Article III as outlined above, speaks of, “preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other explosive devices”. INFCIRC/153 and the system of safeguards that derives from it does not live up to Article III, as the document itself clearly stipulates.

The IAEA essentially operates three means of employing safeguards, namely material accountancy, containment and surveillance. The IAEA has set a number of technical goals for the objective of *timely* detection of *significant* quantities of fissile material. A significant quantity refers to 8kg of plutonium, 25kg of U-235 contained in uranium enriched to 20 per cent or more and 8kg of U-233.³¹ Timely detection goals are 7–10 days for plutonium or highly enriched uranium in metallic form, 1–3 months for plutonium in irradiated fuel and approximately one year for natural or low enriched uranium. For purposes of, “risk of early detection” the agency seeks to achieve a 90–95% probability of detecting diversion and less than 5% probability of sounding a false alarm of these significant quantities in the time frames specified.³²

Material accountancy is essentially a reporting and recording system which measures the inventory and flow of nuclear material in a, “material balance area” (MBA).³³ An MBA may be a part of a nuclear plant or a whole plant where all material that passes through, or is present, in the area can be measured.³⁴ Keeping track of the material that flows through an MBA enables the construction of a book value for the amount of material in the MBA. After a specified period an operator performs a physical inventory of the amount of material present in the MBA. A discrepancy between the book value and the physical inventory is referred to as the Material Unaccounted For (MUF) and may represent possible diversion.³⁵

³⁰ David Anderson, “Nuclear Safeguards” in *The Report of the Senate Select Committee on Uranium Mining and Milling in Australia Volume 2 Research Papers*, p215.

³¹ Fischer, *Safeguarding the Atom*, p25.

³² Fischer, *Safeguarding the Atom*, p26.

³³ A Von Baeckmann, “IAEA Safeguards Technology” in Stockholm International Peace Research Institute, *Nuclear Energy and Nuclear Weapon Proliferation* (London: Taylor and Francis, 1979), p181.

³⁴ Kokoski *Technology and the Proliferation*, p150.

³⁵ Kokoski, *Technology and the Proliferation*, p150.

The system of material accountancy is complimented by containment and surveillance, but it must be stressed that these are secondary safeguards methods. To verify that material accounts of nuclear material are accurate on site inspections are allowed.

As we will see the classical system of safeguards is weak. An important consideration in their design is the desire to limit costs for the nuclear industry, particularly at the insistence of Germany and Japan. The system adopted is sometimes known as the *Karlsruhe interpretation* because the Germans' did not want the evolving safeguards system to impact their Karlsruhe fast breeder reactor programme.³⁶

The devil is always in the details and as far as safeguards are concerned these details are called subsidiary arrangements. The subsidiary arrangements are detailed action plans that govern exactly how safeguards are to be implemented in a state. Fischer and Szasz observe, "like the agreement itself, the subsidiary arrangements and their facility attachments are a crucial supplement to the safeguards agreement."³⁷

In a report by the Office of Technology Assessment of the Congress of the United States on nuclear proliferation and safeguards it was pointed out that,

*it is now generally accepted that there are unavoidable limitations [my emphasis] on material accountancy because of measurement errors ... for nuclear facilities with very large throughputs, cumulative measurement errors on nuclear material will introduce uncertainties in the material balance which exceed by several times the IAEA's own limits on significant quantities of diverted plutonium or uranium which it must detect.*³⁸

Walter Patterson, writing in a well-known study on nuclear power, refers to a report by Emmanuel Morgan, a former IAEA inspector, which concluded that, "existing safeguards were incapable of detecting diversion to weapons use of a significant quantity of nuclear material in any state with a moderate to large nuclear establishment."³⁹ In a standard textbook on the systems and processes of nuclear engineering Raymond Murray observes, "it is certain that a country that is determined to have a weapon can do so ... non-proliferation measures

³⁶ Spigelman *et al*, "The Nuclear Barons", p303.

³⁷ Fischer, *Safeguarding the Atom*, p27.

³⁸ Congress of the United States Office of Technology Assessment, *Nuclear Proliferation and Safeguards* (New York: Praeger, 1977), p206.

³⁹ Walter C. Patterson, *Nuclear Power* (Harmondsworth: Penguin, 1986), p208.

can merely reduce the chance of incident.”⁴⁰ In other words safeguards are not actually safeguards nor can they be for they are not possible in principle.

It should also be stressed that increasing evidence is emerging that indicates that the IAEA’s stipulation of significant quantities (SQ) is too high. Interestingly Hans Blix, when IAEA Director General, stated that as the SQ rates are lowered, “the cost of the safeguards and the manpower needed for safeguards would increase very quickly as that figure declined”.⁴¹ If the SQ rate is indeed too high a proliferator may be able to divert nuclear material to a weapons programme without being detected because the problem posed by measurement error becomes greater. In fact, the total weapons grade plutonium in the US stockpile is estimated to be about 93,000 kilograms. This gives an average of 3-4 kilograms of weapons grade plutonium per warhead, that is sufficient for a nuclear explosive.⁴² Notice that this is 50 per cent less than the IAEA’s SQ level for plutonium..

This is of importance because the entire system relies upon its deterrence function to dissuade proliferation. If the SQ is too high then a would be proliferator would be less dissuaded from pursuing a nuclear programme and if states are generally aware of this flaw then the confidence provided by the system of safeguards, their primary function, would be worthless.

In the 1970s Inglis stated that the most sensitive points of the fuel cycle from a proliferation perspective, “are those parts of the of the fuel processing plant where the plutonium is separated out, handled, and eventually fabricated into fuel assemblies for trial use in reactors if it does not go into storage or bombs”.⁴³ The Office of Technology Assessment report took a rather dim view of IAEA safeguards in relation to reprocessing. The report concluded that,

*the eventual effective safeguarding of a large reprocessing plant presents the greatest technological uncertainty of all safeguarding problems facing the IAEA ... the detection of diversion from a large reprocessing plant by the present materials accounting systems is not very sensitive to quantities of the order of tens of kilograms, nor, more important, is the detection timely. That is, detection would take weeks or months after the diversion.*⁴⁴

⁴⁰ Raymond L. Murray, *Nuclear Energy: An Introduction to the Concepts, Systems and Applications of Nuclear Processes Third Edition* (Oxford: Pergamon Press, 1984), p333.

⁴¹ Kokoski, *Technology and the Proliferation*, p167.

⁴² Steve Fetter, Valery A. Frolov, Oleg F. Orilutsky and Roald F. Sagdeev, “Fissile Materials and Weapon Design”, *Science and Global Security* 1990 Vol 1, pp256-257.

⁴³ Inglis, *Nuclear Energy*, p59.

⁴⁴ Office of Technology Assesment, *Nuclear Proliferation and Safeguards*, pp209-210.

Although plutonium has traditionally been of most concern from a safeguards perspective now highly enriched uranium is increasingly becoming a source of concern. Laser technology is able to selectively excite and separate isotopes of U-235 in a sample of natural uranium. The facilities needed to achieve this are much smaller than those traditionally associated with uranium enrichment, can achieve their task more easily and at much lower cost.⁴⁵ The challenge this poses for safeguards is clear because smaller enrichment infrastructure would be much more difficult to detect. At the moment, industrial level uranium enrichment by laser is a technically difficult task.

It is interesting to reflect on the economics of the situation. As technology is progressing costs associated with the sensitive aspects of the fuel cycle, such as uranium enrichment, are decreasing whilst at the same time the cost of safeguards in response are increasing.

In sum the technical aspects of safeguards have always been inadequate and although technology has progressed the technical goals of the safeguards system, already insufficient, have stalled.

2.2.) Classical Safeguards and the Iraq Case

Iraq, prior to the first Gulf War, embarked upon an ambitious nuclear weapons programme. Subsequently the recent invasion of Iraq was justified as an example of the new doctrine of preventive war (which the Australian Government supports) in order to disarm Iraq. That Iraq did not possess a WMD programme, let alone a nuclear programme, is now well documented.⁴⁶

What is of interest here is the implicit dismissal of the system of safeguards contained within the preventive war doctrine. However, as we shall see, the Government talks up the effectiveness of safeguards in relation to the export of Australian uranium. As far as the effectiveness of safeguards goes, the Iraq case demonstrates that the Government position is rather flexible.

Revelations about the pre-Gulf War Iraqi weapons programme prompted the IAEA to declare that Iraq had violated its safeguards agreements by its programmes to enrich uranium and

⁴⁵ Greenpeace Australia, *Secrets, Lies and Uranium Enrichment: The Classified Silex Project at Lucas Heights* (Sydney: Greenpeace Australia), p18.

⁴⁶ See, "Comprehensive Report of the Special Advisor to the DCI on Iraq's WMD September 30 2004" online at http://www.cia.gov/cia/reports/iraq_wmd_2004/index.html

produce plutonium.⁴⁷ The original agreement between Iraq and the IAEA specified that two inspections per year were to be carried out in four facilities at Al Tuwaitha. Prior to Iraq's invasion of Kuwait a total of 25 inspections by 13 inspectors had been carried out. After the invasion the IAEA-conducted inspections were carried out at Al Tuwaitha which gave Iraq a clean bill of health. It was subsequently discovered that Iraq had, undetected, separated a small amount of plutonium at a safeguarded facility.⁴⁸ On 9 August 1991 the IAEA announced that Iraq had clandestinely produced and separated plutonium at another safeguarded facility, the IRT-5000 reactor.⁴⁹

It should be stressed that we know of these violations of safeguards not via subsequent IAEA inspection but by the special inspections that were carried out pursuant to United Nations Resolution 687. Special inspections are permitted by INFCIRC/153 but were not carried out prior to the Gulf War. The nature of special inspections is concerned with uncovering the existence of undeclared facilities, in this case uranium enrichment facilities, but to do this the inspecting agency would naturally need to be in possession of information pointing to their existence. As Hans Blix pointed out the subsequent discovery of Iraq's programme decisively depended upon this intelligence.

The high level Blix commission, which included amongst its number William Perry (former Pentagon chief) and Gareth Evans concluded that,

*the IAEA safeguards system, created to verify that no nuclear material is diverted from peaceful uses, proved inadequate to discover the Iraqi and Libyan violations of the NPT. Iran failed for many years in its duty to declare important nuclear programmes.*⁵⁰

Libyan violations were discovered only when Tripoli decided it was in its interests to come clean.⁵¹ Furthermore, the Blix commissioners state, "while IAEA safeguards inspections revealed that declarations by North Korea regarding its holdings of plutonium were misleading, they failed to discover the efforts of Iraq and Libya to develop nuclear weapons. They also did not discover the failure of Iran to respect all its safeguards obligations".⁵²

Any rational observer would judge the effectiveness of safeguards precisely on the basis of these difficult cases. As the Blix commission attests, the system of safeguards have failed to

⁴⁷ Kokoski *Technology and the Proliferation*, p97.

⁴⁸ Kokoski, *Technology and the Proliferation*, p 101

⁴⁹ Kokoski, *Technology and the Proliferation*, p104

⁵⁰ Blix, *Weapons of Terror*, p24

⁵¹ Butfoy, *Disarming Proposals*, p44.

⁵² Blix, *Weapons of Terror*, pp52-53.

prevent but also more importantly deter determined proliferators, certainly it has a poor track record in detecting them. This provides empirical justification for in principle critiques of the classical system of safeguards. In fact after the 1981 Israeli air strike against the Osiraq nuclear reactor (supplied by France) Iraq decided upon the highly enriched uranium path to the bomb whilst, “appearing to remain in compliance with the Nuclear Non- Proliferation Treaty.”⁵³

The Iraq case is particularly disturbing because Baghdad used the NPT as a shield behind which it pursued its nuclear ambitions without being caught by the IAEA, and with a degree of knowledge by member states of the IAEA. Demonstrating that the NPT may effectively provide the means for legitimate proliferation.

Even if the system of safeguards is technically adequate wider political, economic and strategic concerns can easily render them useless. Sadly, they are not even technically adequate.

2.3) The Additional Protocols

With the Iraq case in mind the IAEA has constructed a voluntary addition to the model safeguards agreement known as the *additional protocols*. They are not root and branch changes of INCIRC/153 but contain additional measures that, it is hoped, would prevent a repeat of the Iraq case. They modify to a certain extent the Karlsruhe interpretation of INCIRC/153. The Additional Protocol makes four key modifications to the classical system of safeguards.

Firstly, states must provide an expanded declaration of nuclear activities on a much broader array of nuclear related activities. Secondly, the number and nature of facilities that the IAEA has access to must be increased to cover any location that the agency sees fit. In effect the agency has the right to conduct short notice inspection of all facilities, including undeclared facilities. Thirdly, inspectors are to be given visa's on a more prompt basis and for 12 months duration. Lastly, the agency has the right to conduct environmental sampling at both declared and undeclared sites.⁵⁴

Strengthening the system of safeguards the agency weakens state sovereignty, further demonstrating the contradiction between the over arching non-proliferation principle and the system of sovereign states. Any non-proliferation regime is effective to the extent that it

⁵³ Richelson, *Spying*, pp322-323.

⁵⁴ Cirincione *et al*, *Deadly Arsenals*, p31.

erodes state sovereignty. However, as *Deadly Arsenals* points out the Additional Protocols, “cannot prevent a determined state from acquiring a nuclear weapons capability”.⁵⁵ In this the Blix Commission supports the authors.⁵⁶

Although the classical system of safeguards is strengthened by the Additional Protocols the system is still subject to the in principle critiques of the system of classical safeguards precisely because they are simply additional to it. They do not replace it nor provide for revolutionary change. They also are limited to yesterday’s problem, like the army that is forever doomed to prepare for the last war.

The Additional Protocols do not address the in principal critique of the classical system of safeguards, nor can they given their status. In fact, as the Office of Technology Assessment of the United States Congress stated these limitations are, “unavoidable”. This is because safeguards still relies upon material accountancy which, as noted, are subject to error. They fail to address the political reasons for the failure to deal with Iraq’s nuclear weapons programme, which were of decisive importance.

2.4) Conclusion and Recommendation.

Given the complimentary relationship between the peaceful and military atom, there is only one *safeguard* against the proliferation of nuclear weapons: a global refusal to extract energy from nuclear reactions. This requires research and development into alternative sources of energy.

⁵⁵ Cirincione *et al*, *Deadly Arsenals*, p32.

⁵⁶ Blix, *Weapons of Terror*, p53.

Chapter 3

Australian Safeguards

From 1969 there were large scale uranium exploration activities by Australian mining companies. In the years immediately afterward a number of significant uranium deposits were discovered which, “galvanised Australia’s volatile stock exchanges into a frenzy. Uranium was once again the new glamour mineral.”⁵⁷ The enthusiasm of the stock market was premature for the price of uranium was quite low, in fact producers could hardly recover costs.⁵⁸ The strategy adopted by the Whitlam Government, under minerals Minister Rex Connor, in light of this was to hoard Australia’s uranium in anticipation of an upswing in the price. By 1974 the mining companies all sought a relaxation of this policy.⁵⁹ A factor in the increasing fortunes of uranium was the 1973 oil-based supply side shocks. As Broinowski points out the mining companies were none too enthusiastic about an international safeguards regime that would inhibit sales.⁶⁰ For any commercial entity, including mining companies, safeguards are a cost to business and like any other cost to business there will always exist an imperative to lower costs, were possible and to the maximum extent possible. If nuclear trade, technology and science were all conducted by private entities there would be no safeguards against diversion to weapons programmes to speak of.

This is an important point because firstly, although nuclear matters were initially dominated by the state over time commercial entities have increasingly entered and shaped the nuclear business. As we have seen the Karlsruhe interpretation of INFCIRC/153 was designed to lower costs to business, which aided violators of the NPT. Secondly, it will be a significant point to consider in the context of the decision to export uranium to China.

Although the mining industry placed pressure on the Whitlam Government to allow the mining and export of uranium as the price went up the Government was required by the 1974 *Environmental Protection (Impact of Proposals)* law to conduct an inquiry into the environmental impact, which the act defined broadly, of large development projects.⁶¹ The Government duly set up a commission toward this end in relation to uranium mining chaired by Justice Russell Fox. The incoming Government of Malcolm Fraser inherited this inquiry

⁵⁷ Alice Cawte, *Atomic Australia 1944-1990* (Sydney: University of New South Wales Press, 1992), p137.

⁵⁸ Cawte, *Atomic Australia*, p138.

⁵⁹ Cawte, *Atomic Australia*, p146.

⁶⁰ Richard Broinowski, *Fact or Fission? The Truth About Australia’s Nuclear Ambitions* (Melbourne: Scribe Publications, 2003), p102.

⁶¹ Cawte, *Atomic Australia*, p151.

and decided not to proceed with the export of uranium until this commission delivered its report.⁶² The Senate Uranium Mining and Milling Committee acknowledges “policy governing control of international aspects of exporting uranium again had its recent origins in the Fox Report.”⁶³

3.1) The Fox Report

The commissioners examined the proposal to mine and export uranium with respect to environmental, Aboriginal but also international issues. In the preface to their report the commissioners note,

*it was submitted also that extension of the nuclear power industry involved increased risks of nuclear war, flowing from the availability of plutonium, or highly enriched uranium, for atom bombs. It was submitted that because of all those considerations, and others as well, Australia should not sell its uranium, or mine it.*⁶⁴

The Fox Report’s discussion of safeguards can be divided into two parts, those that discuss the international safeguards regime and recommendations as to what safeguards should be attached to Australian uranium.

The Fox Report begins its discussion on international safeguards by noting, “IAEA safeguards have been shaped by the nature of specific problems and by the degree to which countries will permit their nuclear industries to be regulated.” Moreover, “these safeguards normally apply to particular facilities rather than to all facilities in a country.”⁶⁵ The commissioners observe, “experience with IAEA safeguards demonstrates that countries have not been prepared to accept continuous surveillance of nuclear activities by an external authority.” Therefore, “the control system established by the Agency involves accounting methods augmented by regular ‘on the spot’ inspections.”⁶⁶ Crucially, the commissioners note, “the NPT requires safeguards to be applied to all ‘source’ or ‘special fissionable material’ used in all peaceful nuclear activities within the territory of a country” but “in fact, as described later, safeguards are not applied to source material.”⁶⁷ Hence,

if Australia, being party to the NPT, were to sell a quantity of yellowcake to a non-nuclear weapon state also party to the Treaty,

⁶² Cawte, *Atomic Australia*, p151. Broinowski, *Fact or Fission*, p125.

⁶³ Senate, *Uranium Mining and Milling*, p137.

⁶⁴ Justice Russell Walter Fox, *Ranger Uranium Environmental Inquiry First Report* (Canberra: Australian Government Publishing Service, 1976), p v.

⁶⁵ Fox, *Ranger*, p119.

⁶⁶ Fox, *Ranger*, p120.

⁶⁷ Fox, *Ranger*, p120.

*such as Japan, there would be an obligation on each to report the transfer to the IAEA, but no accounting or other safeguards would be imposed. ... a state can, in this way, acquire quantities of material which are not subject to any significant controls, and which may be diverted to weapons production.*⁶⁸

For these reasons the report stated that IAEA safeguards may provide only an “illusion of protection.”⁶⁹

Having provided an outline of the system of safeguards as they then existed, the classical system as discussed above, the commissioners proceed to discuss some of the serious weaknesses inherent within them. They do so by first providing an interesting overview of Article IV of the NPT. Recall that advocates of uranium mining argue that Article IV obliges Australia to sell uranium. On this the commissioners state, “we have been advised, and we accept, that this Article does not create a binding legal obligation, and in particular does not bind Australia to mine its uranium and sell it to any particular country, or at all.”⁷⁰ However, in that section of the report that adopts a favourable position on mining it states, “a total refusal to supply would place Australia in clear breach of Article IV of the NPT and could adversely affect its relation to countries which are parties to the NPT.”⁷¹

A clear contradiction. The decision to proceed with the sale of Australian uranium is based on faulty analysis.

The liberal withdrawal provisions of the NPT particularly exercised the commissioners. They argued, “this is undoubtedly a serious limitation on the operation of the NPT and of most safeguards arrangements.” They point out “there are in existence, however, an increasing number of agreements which provide additional or ‘back-up’ safeguards if the state which has received nuclear materials or facilities does withdraw from NPT and IAEA safeguards.”⁷² We will return to this point later, which is of relevance in relation to China.

The Fox Report notes that, “the NPT does not prohibit the further transfer of materials by a receiving state to a third state, and is not entirely satisfactory in the provision it makes for safeguards on such retransfers.”⁷³ If a NNWS party to the NPT decides to re-transfer

⁶⁸ Fox, *Ranger*, p131.

⁶⁹ Fox, *Ranger*, p147.

⁷⁰ Fox, *Ranger*, p126.

⁷¹ Fox, *Ranger*, p180.

⁷² Fox, *ranger*, p128.

⁷³ Fox, *Ranger*, p130.

yellowcake to another such state no safeguards need be attached to this transaction, the commissioners note alarmingly.

The Report also makes a number of interesting remarks on demand side issues, for instance, “for many states in Africa, Asia and the Middle East, there is a genuine fear that the United States might actively interfere upon their territory.”⁷⁴ A consistent Australian non-proliferation policy would seek to dampen this aspect of the proliferation problem. Instead Australia contributes to the problem to the extent that it is a willing partner of such active interference and structures its military capacity with a view to making it inter-operable with forwardly engaged US forces.

The commissioners finally conclude by pointing out “not only must Article IV be more restrictively interrelated, but Article III must be replaced by a more complete set of safeguards requirements.”⁷⁵

The Fox Report therefore recommended

*any nuclear resources transferred by one state to another should be subject to international safeguards. ... safeguards should be extended in practice to cover source material (including yellowcake). ... Australian uranium should not be retransferred by a recipient state to a third state under conditions less stringent than those imposed by Australia on the first recipient state. ... we conclude that nuclear materials should be supplied to a state only on the basis that its entire industry is subject to back-up safeguards that cannot be terminated by unilateral withdrawal.”*⁷⁶

Australia should not “supply countries which are not parties to the NPT.”⁷⁷ This includes “any country not party to the NPT.”⁷⁸

The commissioners also recommend that, “to enable discretion to be exercised in the selection of the countries to be supplied and in the extent to which they should be supplied.” In so recommending, “we recognise that the exercise of such discretion may create problems in international relations.”⁷⁹ In couching this recommendation in such terms the commissioners

⁷⁴ Fox, *Ranger*, p139.

⁷⁵ Fox, *Ranger*, p147.

⁷⁶ Fox, *Ranger*, pp148-149.

⁷⁷ Fox, *Ranger*, p179.

⁷⁸ Fox, *Ranger*, p185.

⁷⁹ Fox, *Ranger*, p182.

are perhaps recognising that discrimination is not allowed by the terms of the NPT (Article IV). So, the recommendation for mining is based on a desire to avoid Australia being “in clear breach” of Article IV by precisely violating Article IV.

There is much to be said for a discriminatory policy from a non- proliferation perspective but notice that once a decision is made to supply nuclear material, such as uranium, one cannot discriminate to remain compliant with the NPT. To avoid the dilemma it would be best not to mine and export at all. On what basis should Australia discriminate? This is not spelled out in detail.

3.2) The Fraser Government’s Response

In 1977 the Fraser Government both formally responded to the Fox Report and announced its decision to allow the mining and export of Australian uranium. In so doing it announced a number of safeguard policies that have formed the philosophical core of Australian policy since. According to the Senate Uranium Mining and Milling Committee, “the Fox conclusions formed the basis of policy on bilateral safeguards outlined to the House of Representatives by the then Prime Minister, Mr Malcolm Fraser on 24 May 1977.”⁸⁰

Mr Fraser stated to Parliament, “the Government has taken its decision with a deep sense of international responsibility.” Furthermore, “commercial considerations were not the dominant motive in our decision. In themselves they would not have been sufficient.”⁸¹ Fraser cited the contradictory passage of the Fox Report cited above to note, falsely, that the export of uranium would “give effect” to Australia’s “obligations” under Article IV.⁸² However, in so doing “the Government accepts that uranium is a special commodity, the export of which would involve important considerations of a kind not involved in the export of other commodities. This implies a requirement for selectivity in the choice of customer countries and the closest attention to ensuring adequate safeguards.”⁸³ In his speech Fraser went on to claim, “regarding existing nuclear weapon states, they are not obliged under the NPT to renounce nuclear weapons or accept international safeguards.”⁸⁴

⁸⁰ Senate, *Uranium Mining and Milling*, p138.

⁸¹ Malcolm Fraser, “Statement by the Prime Minister the Right Honorable Malcolm Fraser” in *Uranium: Australia’s Decision* (Canberra: Commonwealth of Australia, 1980), p3.

⁸² Fraser, “Statement”, p2

⁸³ Malcolm Fraser, “Government Policy on Nuclear Safeguards” in *Uranium: Australia’s Decision* (Canberra: Commonwealth of Australia, 1980), p2.

⁸⁴ Fraser, “Government Policy”, p3.

Falsely claiming Australia must supply uranium because it is obligated by Article IV. In a selective fashion violating Article IV whilst operating under the assumption that Article VI does not exist at all. The legal position adopted by the Government was not valid.

The specific component of the Government's policy of particular significance were:

- Sales of uranium would be made to non-nuclear weapon states party to the NPT and to nuclear weapon states that provide assurance that Australian uranium would not be diverted for military use.⁸⁵ Note that the Fox Report recommended that only states party to the NPT should be eligible for Australian uranium. Yet Fraser was able to assert that the Government, "introduces a requirement additional to those recommended" by the Fox Report.⁸⁶ This is false. The requirement is less stringent.

- Australian uranium should attract IAEA safeguards as soon as they leave Australian ownership.

- Australia would require that a recipient country of Australian uranium sign a bi-lateral safeguards agreement with Australia. "These bilateral agreements will provide a framework for direct and binding assurances by importing countries to the Australian Government in relation to the use and control of uranium supplied by Australia or nuclear material derived from its use."⁸⁷

- Australian uranium or material derived from its use should be safeguarded throughout the full life of the material. Bilateral agreements are to have a provision dealing with fall back safeguards in case of NPT withdrawal.

- The transfer of Australian uranium to a third party would require Australian consent.

Although Malcolm Fraser did not go on to stipulate that the third party should have safeguards at least as stringent as the recipient party.⁸⁸ This would, in principle, enable a NNWS to transfer Australian material to a NWS with a more permissive safeguards regime.

- Uranium is not to be enriched beyond 20 per cent U-235 without Australia's consent. This would apply to such things as uranium for use in research reactors. No verification procedures

⁸⁵ Fraser, "Government Policy", p3.

⁸⁶ Fraser, "Government Policy", p3.

⁸⁷ Fraser, "Government Policy", p3.

⁸⁸ Fraser, "Government Policy", p4.

are attached to this clause, other than IAEA safeguards that, as shown, have too high SQ objectives. Furthermore, the provision is symbolic only. A proliferator won't seek Australia's consent to engage in weapons manufacture. Recall the discussion on new enrichment technologies.

- Any reprocessing of nuclear material derived from the use of Australian uranium is to be conducted only on the basis of Australia's prior consent. It should be stressed that this occurs in the context of a Government policy that opposes "excessive stockpiling of plutonium in a way that could pose future proliferation dangers."⁸⁹ In this way Australia does not necessarily restrict the sale of uranium to countries with a once through fuel cycle which one would expect if international obligations were to outweigh commercial considerations. Who would buy Australian uranium if a blanket ban were put in place on reprocessing? We will revisit this issue. Notice that prior consent clearly implies consent on a case-by-case basis. A sensible option from a non- proliferation perspective.
- Importing countries are to put in place adequate physical protection and control measures
- Contracts between commercial entities are to contain a clause stating that the export of uranium is subject to Australia's safeguards policy as contained in bilateral agreements.

These provisions provide the principles that underpin Australia's bilateral safeguards policy.

3.3) The 1984 ASTEC Review

The newly elected Labor Government of Prime Minister Bob Hawke in 1983 commissioned a report by the Australian Science and Technology Council on *Australia's Role in the Nuclear Fuel Cycle*. The report was rather unremarkable, it's main political function serving to buttress the export policy of the previous Government within a deeply divided Labor Party, at least as far as uranium policy was concerned.

The ASTEC Review concluded,

overall 1977 policy is comprehensive and meets the objectives of providing a high degree of assurance that Australia's uranium will not be used for nuclear explosives or diverted to military use and that it

⁸⁹ Fraser, "Statement", p6.

*will remain within the jurisdiction of those countries with which we have a bilateral safeguards agreement in force.*⁹⁰

Given this contention the Review could not and did not recommend any significant changes to Australia's safeguards policy.

However, there does appear a fascinating discussion about administrative arrangements that is surely of relevance in the China context. The Review notes, "the Administrative Arrangement is a little known aspect of Australia's safeguards approach, although the development of detailed arrangements is an Australian idea."⁹¹ These Administrative Arrangements are "government to government" agreements "of less than treaty status". They are also, "a manual of procedures" that, "ensures that each party knows what it must do to meet its obligations and that the other party will be satisfied with this."⁹² In essence Administrative Arrangements "specify in detail how the relevant safeguards agreement is to be implemented."⁹³

It should be stressed "they are also working documents which can be changed at short notice as the practices and processes they address are changed."⁹⁴ These AA's are "little known" because they are "classified as safeguards in confidence."⁹⁵ That is they are state secrets.

The ASTEC Review recommended that they should be made public, arguing that neither non-proliferation nor commercial reasons should prevent public disclosure.⁹⁶ That being the case the only plausible reason for non-disclosure must be fear of public opinion. Administrative Arrangements are still secret documents. Government's have claimed that this is at the unfortunate insistence of Australia's bi-lateral partners but Canberra has always claimed that uranium should be exported because this gives Australia leverage to advance non-proliferation goals.

The continued secretive nature of Administrative Arrangements, if indeed at the insistence of Australia's uranium trading partners (most especially Japan), suggests where this leverage really lies.

⁹⁰ Australian Science and Technology Council (ASTEC), *Australia's Role in the Nuclear Fuel Cycle* (Canberra: Australian Government Publishing Service, 1984), p171

⁹¹ ASTEC, *Australia's Role*, p168.

⁹² ASTEC, *Australia's Role*, p168.

⁹³ ASTEC, *Australia's Role*, p168.

⁹⁴ ASTEC, *Australia's Role*, 170.

⁹⁵ ASTEC, *Australia's Role*, p168.

⁹⁶ ASTEC, *Australia's Role*, p170.

3.4) The Nuclear Non-proliferation (Safeguards) Act 1987

The 1987 *Nuclear Non-Proliferation (Safeguards) Act* gives legislative effect to Australia's domestic obligations under the NPT, under its safeguard's agreement with the IAEA, Australia's bi-lateral agreements on the transfer of nuclear material and the Convention of the Physical Protection of Nuclear Material.⁹⁷

The main effect from our perspective of this legislation is that it does not alter the philosophical core of the 1977 safeguards policy and places the Director of Safeguards in the Department of Foreign Affairs and Trade on a statutory footing.⁹⁸

3.5) The Operation and Effectiveness of Australian Safeguards Policy

How does Australia's safeguards policy work in practice and how effective are they? The physical basis of Australian safeguards policy can be found in two principles, known as the principles of equivalence and proportionality. The Australian Safeguards Office in its submission to the Senate Uranium Mining and Milling Committee provided detailed description of the workings of these principles. It bears quoting at length from this submission.

The ASO declared, "the large scale physical and chemical processes which nuclear material from a variety of sources must undergo at a limited number of processing facilities means that it is impossible to track the identity of individual atoms or quantities of nuclear material." Hence, "this circumstance has led to the development of two principles used universally in the industry and in the application of safeguards: equivalence and proportionality." The equivalence principle "provides that where AONM (Australian Obligated Nuclear Material) loses its separate identity because of process characteristics, e.g., mixing, an equivalent quantity is designated as AONM, based on the fact that atoms or molecules of the same substance are indistinguishable, any one atom or molecule being identical to any other of the same substance." The principle of proportionality "provides that where AONM is mixed with other nuclear material, and is processed or irradiated, a proportion of the resulting material will be regarded as AONM corresponding to the same proportion as was AONM initially."⁹⁹ In the ASTEC Review's terms, "if a core loading of a light water reactor comprises half Australian uranium and half of another origin, then half the spent fuel is designated to be

⁹⁷ The Act is online at http://www.austlii.edu.au/legis/cth/num_act/nnal987a81987391/

⁹⁸ Anderson, "Nuclear Safeguards", p227.

⁹⁹ Senate, *Uranium Mining and Milling*, p143.

Australian origin and any products separated from such spent fuel are apportioned in the same manner.”¹⁰⁰

The submission goes on to state “a simple banking analogy illustrates these principles. Individual depositors use an accounting system to be sure that they are correctly credited with their share of a bank’s assets, but they do not expect to withdraw the exact notes and coins they originally deposited. Nuclear materials accountancy tracks exports of Australian uranium in the same way.” So, “the application of the equivalence and proportionality principles provides Australia with the assurance that at all times a quantity of nuclear material precisely equivalent to the quantity exported is identified as being subject to Australian safeguards and treated and accounted for as AONM.”¹⁰¹ Uranium, like money, is taken to be a fungible commodity

It should be stressed that the banking analogy does not apply, in fact, is “grossly misleading” according to Richard Leaver. This is because banks operate “within an economic environment in which there are clearly laid out government parameters that regulate their operations” hence when a bank depositor is faced with a bank that “has no superior authority and is indulging in commercial practices that undermine prior undertakings given to customers regarding the uses to which their monies would be put. Under these circumstances, bank depositors are quite right to be worried about fungibility.”¹⁰² These circumstances applied in the “NUKEM scandal” involving Australian uranium, to be discussed below.

But first it is important to stress a number of points about the principle of equivalence and proportionality. Firstly, it does not actually track Australian uranium or Australian Sourced Nuclear Material (ASNLM) but an amount equivalent to the amount exported, hence the phrase obligated nuclear material. One would not notice this by looking at the public record as Leaver points out “ever since the export of uranium was permitted by the Fraser Government, all statements on the issue of safeguards by successive governments have created the impression - wrong though it now turns out to be - that ‘physical tracking’ of AONM is possible and is ensured through safeguards policy.”¹⁰³

Undoubtedly the over-selling of safeguards has occurred under the backdrop of great public concern about the international implications of uranium mining. The purpose of such

¹⁰⁰ ASTEC, *Australia’s Role*, p170.

¹⁰¹ Senate, *Uranium Mining and Milling*, p143.

¹⁰² Richard Leaver, “The NUKEM Scandal and Australian Safeguards” (Canberra: ANU Peace Research Centre, 1988), p42

¹⁰³ Leaver, “The NUKEM Scandal”, p45

statements are to compel the public to support Government policies that they would not normally endorse in a democracy shaped by open and balanced access to information.

Nothing has changed in this respect. So, the Howard Government's own public memorandum (what is called here "the talking points memo") on the export of uranium to China states that the two agreements (more of which later) "ensure that any nuclear material transferred between Australia and China will be used solely for peaceful, non-military purposes."¹⁰⁴

Clearly the principles of equivalence and proportionality do not provide for this, as the above discussion outlines. Only an amount equivalent and proportional to that exported, allegedly, is to be safeguarded. The actual material transferred itself cannot be characterised in the above terms, as the Government would have it. This is particularly the case given that in the talking points memo it defines AONM as "Australian uranium and nuclear material derived from it, which is subject to obligations pursuant to Australia's bilateral safeguards agreements."

AONM, according to the ASO's own submission to the Senate, is not "Australian" uranium.

Given the principles of equivalence and proportionality David Anderson, the Senate Committee's own researcher, was able to point out "it does seem that Australian governments have been, on occasions, simplistic in major public statements on this matter of peaceful use, and have given unrealistic assurances." Moreover, "*it is likely that most people interpret the 'peaceful purposes' requirement in literal terms, and believe that uranium mined in Australia could never enter a weapon.*"¹⁰⁵ The 1984 ASTEC review stated that, because of equivalence and proportionality, "some people" argue, "that Australian uranium cannot be accounted for as such. This view is understandable. However, in practical terms, the argument is not sustainable".¹⁰⁶

In May 2004 the United States alleged, based on uranium forensics, that Libya obtained uranium from North Korea. This was based on the analysis of the isotope U-234. Although the ratio of U-235 and U-238 is the same for "virtually all" natural uranium the "abundance of U-234 varies among uranium mines, allowing the origin of the uranium to be determined, in principle." However, "the concentration of U-234 can be varied enough to obscure the origin of the uranium."¹⁰⁷ This means that, contrary to the ASTEC report, the argument is quite sustainable. Australian origin uranium cannot be accounted for as such.

¹⁰⁴ Department of Foreign Affairs and Trade, "Australia-China Nuclear Cooperation Agreement: Frequently Asked Questions", online at <http://www.dfat.gov.au/geo/China/treaties.faq.html>

¹⁰⁵ Anderson, "Nuclear Safeguards", p223.

¹⁰⁶ ASTEC, *Australia's Role*, p169.

¹⁰⁷ Lucas Royland, "Commentary on Uranium Forensics", Federation of American Scientists at www.fas.org/main/content.jsp?formAction=297&contentId=489

The way in which the principles of equivalence and proportionality work are set out in the Administrative Arrangements. This means that their application in relation to Australia's uranium exports are secret and, as noted, "can be changed at short notice."

In the 1980s a scandal involving Australian uranium, known as the "NUKEM scandal", exposed serious deficiencies in the operation of Australia's safeguards principles. The scandal contains a number of important lessons of direct relevance to the export of uranium to China. More scandals have erupted subsequently involving NUKEM, a German based corporation.¹⁰⁸ One aspect of the scandal involved the bribing of officials in Belgium that led to the storage of wrongly labelled wastes, which showed traces of plutonium and highly enriched uranium.¹⁰⁹ During the course of the political fallout surrounding this scandal the Hawke Government, for the first time, was forced to elaborate on the principle of equivalence.¹¹⁰ The ASTEC Review did make mention of these principles but it did not go into specifics, nor could it given that their operation, via the secretive AA's, are state secrets.

The scandal involves a number of NUKEM practices that were brought to light via leaked internal documents. NUKEM had a contract to supply a joint British-French research reactor with highly enriched uranium. NUKEM was interested in finding some nuclear material to facilitate this contract. Now, NUKEM's Luxembourg affiliate had 2.9 tonnes of "uranium scraps". These scraps are essentially a mixture of uranium oxides enriched to 2.25% U-235 and which are due to be converted to Uranyl Nitrate Hexahydrate. It is proposed that these scraps will be loaned to NUKEM, and exchanged for 1.29 tonnes of Australian origin uranium hexafluoride (UF₆) and 2.4 tonnes of unenriched uranium. However, the obligations attached to these materials are also to be swapped so that NUKEM's quantity of Australian UF₆ is no longer covered by Australian safeguards. NUKEM seeks to do this because it does not want to gain Australian consent for the transfer because of the 20% enrichment clause in Canberra's safeguards policy. This is done purely for commercial reasons. In exchange, Australian safeguards are to be applied to the uranium scraps rather than to the Australian UF₆.

When this and other aspects of the scandal were brought to the public's attention by diligent Parliamentary activism on the part of Australian Democrats Senator Sanders the Government sought to restore confidence in Australia's uranium export policy via the principle of

¹⁰⁸ See Campaign for Nuclear Disarmament on NUKEM at <http://www.cnduk.org/pages/bioinfo/nukem.html>

¹⁰⁹ Leaver, "The NUKEM Scandal", p2.

¹¹⁰ Leaver, "The NUKEM Scandal", p9.

equivalence.¹¹¹ The principle was invoked because at all times, it was maintained, an amount equivalent to the amount exported was subject to Australian safeguards.¹¹² Very early on in the debate surrounding the scandal the Government maintained that the French civil and military fuel cycles (France was the ultimate destination for the Australian UF6) were separate, but after probing questions by Senator Sanders, was forced to admit that no such distinction applies.¹¹³ The Howard Government repeats the mantra in relation to the export of uranium to China.¹¹⁴ In relation to the NUKEM scandal this coupling between the military and civil fuel cycles means that one cannot guarantee that the Australian UF6 was not used in the French military programme even though some other amount of uranium was designated as “Australian” under the principle of equivalence.

The NUKEM scandal does have important lessons directly bearing on the China case. This is because the scandal was brought to light by an internal whistleblower and via the German news periodical *Der Spiegel*. China is an authoritarian state with a poor track record on human rights. Any internal whistleblower is likely to face serious consequences for revealing what Chinese authorities would regard to be as state secrets. It is quite possible that any Chinese that should reveal the secretive Administrative Arrangements with Australia could face the death penalty. Also, there is no free media in China so if any documents revealing corrupt practices with AONM in China should surface they are hardly to be published, further deterring any whistle blowing.

It is interesting to reflect that the head of the Australian Safeguards Office, John Carlson, claims that the Australian safeguards system ensures that AONM is “always” accounted for, “never” used for weapons purposes and in “no way” contributes to military programmes.¹¹⁵ Australia’s safeguards are not good, or highly effective, rather they are perfect. Not even God, logically, can do better.

In reality, there does exist a perfect safeguards policy that meets Carlson’s three criteria, namely a refusal to mine and export Australian uranium.

¹¹¹ Leaver, “The NUKEM”, p34

¹¹² Leaver, “The NUKEM”, p35.

¹¹³ Leaver, “The NUKEM”, p39.

¹¹⁴ In its talking points memo. See note 144.

¹¹⁵ Broinwski, *Fact or Fission*, p257.

3.6.) Australian Safeguards and Commercial Considerations.

Despite the fact that Australia's decision to export uranium was couched in moralistic terms in reality commercial considerations have always been the dominant concern, if necessary to the detriment of safeguards policy.

One can see this clearly in the very first pillar of Australian safeguards policy announced by Malcolm Fraser. Recall that this stipulated that uranium is to be exported to NNWS states to the NPT and to NWS that have a safeguards agreement with the IAEA. The Fox Report called for uranium to be exported only to states party to the NPT. This policy of diluting the Fox recommendation was made clearly with the aim of allowing the sale of uranium to France.¹¹⁶ Because France had a large scale nuclear power industry it was always going to be one of the main buyer states on the world uranium market. Adopting the Fox recommendation would have excluded Australia from this market.

One of the most serious dilutions of Australian safeguards policy occurred in relation to reprocessing. As noted above the clear implication of the policy announced by the Fraser Government was that the end product of the use of Australian uranium was to be reprocessed into plutonium (Australian Obligated Plutonium or AOPu) with Australia's consent on a case-by-case basis. This is of course sensible from a non-proliferation viewpoint but a ban on reprocessing would have been more stringent. In 1981 the Fraser Government decided to provide advanced consent for reprocessing, known as "programmatic consent", following pressure from recipient states, especially Japan.¹¹⁷ It is of significance that Broinowski should find that support for this was greatest in the Trade ministry and least in the Foreign Affairs Department.

Recall that Fraser stipulated that Australia opposed the stockpiling of plutonium. But programmatic consent to reprocessing has enabled Japan, supplied with Australian uranium, to do this. In the literature the stockpiling of plutonium is presented as a grave proliferation risk, indeed Inglis claims that the problem becomes "staggering".¹¹⁸ In fact it should be taken for what it is, namely a form of proliferation itself. This is because the stockpiling of plutonium constitutes a virtual nuclear arsenal that seriously complicates the strategic planning of neighbouring states who perceive that they are in a position of existential

¹¹⁶ Broinowski, *Fact or Fission*, pp144-145.

¹¹⁷ Broinowski, *Fact or Fission*, pp150-151 and p179.

¹¹⁸ Inglis, *Nuclear Energy*, p161.

deterrence with the stockpiling state. This is particularly the case with Japan.¹¹⁹ It is quite possible, in part, that the North Korean nuclear programme has proceeded with Japanese stockpiling in mind.

By exporting large amounts of uranium to Japan and allowing for the stockpiling of plutonium Australia has made an important contribution to nuclear proliferation in Asia and deleteriously impacted the security environment in Northeast Asia. All for commercial gain.

Although the issue of the mid-1980s terms of trade crisis and the sale of uranium to France has attracted great attention and debate over the years a much more interesting case that arose in this context is of direct relevance to the China case. Broinowski points out that “driven by a parlous current account deficit, Australian ministers wanted every possible option for selling uranium to Taiwan examined.”¹²⁰ The Foreign Affairs Department initiated an interdepartmental committee to examine the issue. It recommended a number of ways to sell uranium including “a framework safeguards agreement with China embracing provisions for Taiwan.”¹²¹ However the then Minister for Foreign Affairs, Bill Hayden, wrote to the Trade Minister, John Dawkins, that he could find no way to export uranium to Taiwan that was “neither contrary to the law nor a blatant evasion of our legal obligation.”¹²²

On April 4 2006 *The Financial Times* reported that “two Australian mining companies have signed contracts to sell uranium to Taiwan, it was revealed Tuesday, a day after Canberra had sealed an agreement paving the way for uranium exports to China.”¹²³

In a press release announcing the decision to allow the sale of uranium to Taiwan the Minister for Foreign Affairs, Alexander Downer, announced that “Australia does not recognise Taiwan as a state and it is therefore not possible to negotiate a bilateral safeguards agreement with Taiwan.”¹²⁴

Taiwan is not a party to the NPT and Australia has refused to sign a bilateral safeguards agreement with Taiwan. These are two very basic violations of Australian safeguards policy. They provide an interesting precedent for the principle of commercial consideration

¹¹⁹ See Selig S. Harrison (ed), *Japan's Nuclear Future: The Plutonium Debate and East Asian Security* (Washington DC: Carnegie Endowment for International Peace, 1996).

¹²⁰ Broinowski, *Fact or Fission*, p181.

¹²¹ Broinowski, *Fact or Fission*, p182.

¹²² Broinowski, *Fact or Fission*, p182.

¹²³ “China ‘Comfortable’ with Australia-Taiwan Nuclear Ties”, *The Financial Times* April 4, 2006.

¹²⁴ Alexander Downer, “Safeguards Arrangements for Uranium Exports to Taiwan 13 August 2001”, Media Release. Online at http://www.dfat.gov.au/media/releases/foreign/2001/fa124_01.html

outweighing non-proliferation concerns in the China case. This is because Canberra has refused to sign a bilateral safeguards agreement with Taiwan in order to appease Beijing, given China's strong stance on any form of recognition of Taiwan.

It also sets precedent for the much speculated possibility of proceeding with the sale of uranium to India. *The Age* has reported that "competition between the super-charged growth economies of India and China for long-term secure uranium supplies is heating up, with India's state owned Nuclear Power Corp revealing it has approached uranium companies in Australia and Canada."¹²⁵ Furthermore, Prime Minister John Howard has recently suggested, "that Australia's ban on sales to India could be lifted, because of US plans for India to come under international supervision." This would require a further basic repudiation of long standing Australian safeguards and non-proliferation policy.¹²⁶ The US deal with India of course refers to the recent nuclear co-operation agreement between New Delhi and Washington which most of the world's leading nuclear analysts argue seriously dents the global nuclear non-proliferation regime.

The export of uranium to India would violate Article I of the NPT because it would free up India's own uranium supplies for weapons programmes.

One interesting aspect of the deal that weakens the regime is the provision of the Nuclear Suppliers Group that calls for nuclear trade only with non nuclear weapon states that accept full scope safeguards. The US has announced that it will seek to obtain clearance from the NSG to exempt India from this rule. If so, Australia could block the deal by voting against it at the NSG. It will be interesting to see how Australia will eventually vote on the issue.

Secondly, the US deal with India will entail sweeping changes to a whole raft of US non-proliferation laws. Most importantly, however, under the deal India would be treated as a de facto nuclear weapon state outside of the NPT. Recall that the NPT calls for the nuclear weapon states to pursue disarmament. As Butfoy points out the aim of the Treaty was to restrict nuclear weapon status to "an exclusive club of members". With the US-India deal the NPT would have failed to even achieve this limited objective.

In an interesting foretaste, perhaps, to what lays ahead Australia's safeguards chief, John Carlson, does not share this sentiment. In questioning before the Senate Carlson stated that, in

¹²⁵ "India, China Vie For Fixed Slice of Australian Yellowcake", *The Age* May 31, 2006.

¹²⁶ George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 1999).

his opinion, the New Delhi pact does not undermine the NPT. When asked to expand on this he responded, “I do not think I should.”¹²⁷

There has been a long history of successive Australian governments placing commercial consideration over and above the overarching principle of non-proliferation and its own safeguards policy.

3.7) Conclusion and Recommendation

Australian safeguards policy in the first instance relies upon the “illusion of protection” provided by the IAEA. Australia’s system of bilateral safeguards does little to enhance IAEA safeguards, for instance they have no verification provisions. They at any rate do not actually safeguard Australian uranium because they cannot in principle. Australian safeguards are also thereby subject to “unavoidable limitations”. Australian safeguards, such as they are, have been progressively weakened because of commercial considerations. There can exist only one true Australian safeguard policy: Australia should refuse to mine and export uranium.

¹²⁷ Hearing of the Senate Foreign Affairs, Defence and Trade Legislation Committee 29 May, 2006. Transcript online at www.aph.gov.au/hansard/senate/committee/S9349.pdf, p116.

Chapter 4

Australian Non-proliferation Policy and the Export of Uranium to China

On 16th August 2004 the vice-chairman of China's National Development and Reform Commission, Zhang Guobao, told the Australian Minister for Foreign Affairs that he wanted to raise an issue, "that might be sensitive for Australia."¹²⁸ That issue was the export of Australian uranium to China. On 1st December 2005 the Chinese Ambassador to Australia, Madame Fu Ying, indicated to a Mining Conference in Melbourne that while China has enough uranium resources for its military programs, China would need to import uranium to meet its nuclear power program.

On 3rd April 2006 the Government of Australia and the Peoples Republic of China signed a bilateral safeguards agreement that opened the door for the export of Australian uranium to China. The Dow Jones Energy Service reported that, "while Australia's policy of not selling its uranium for weapons had been mooted as a likely stumbling block to the deal, safeguards that proved acceptable in Canberra were formed in just 18 months, instead of five years as first suggested by the Government."¹²⁹

Four days after the agreement was signed the Governor of China's Development Bank toured BHP Billiton's Olympic Dam uranium mine in South Australia which is expected to become the primary source of uranium exports to China.

4.1) The Bilateral Agreements With China

Australian safeguards in the first instance will rely upon the IAEA's safeguards in China it is worth having a look at how the IAEA structures them in China. Beijing is a NPT recognised nuclear weapon state so it does not necessarily have to sign a safeguards agreement with the agency. It may voluntarily submit to limited safeguards. The Australian Safeguards Office, in its submission to the Senate Uranium Mining and Milling Committee, acknowledged that one of the main purposes that a NWS state has in signing a Voluntary Offer Agreement (VOA) with the IAEA is to facilitate nuclear imports. It states, "this emerges most clearly in the case of China ... whose nuclear cooperation agreement with Japan requires the application of

¹²⁸ "China's Secret Uranium Bid", *The Age* October 17, 2005.

¹²⁹ "Uranium Deal Fuels Speculation", *Dow Jones Energy Service* April 25, 2006.

safeguards. ... Similar considerations are understood to have applied to the supply of the Daya Bay nuclear power station to China by France.”¹³⁰

In other words, China does not see its safeguards arrangement with the IAEA in terms of non-proliferation policy, rather the arrangement is entered into primarily for trade and commercial reasons, as the Australian Safeguards Office concedes. This means that for Beijing safeguards are a cost to business and like any cost to business they may be minimised to the maximum extent possible. Recall the NUKEM scandal around the use of Australian uranium. In so doing China need not fear whistle blowing or investigative journalists, providing greater freedom of manoeuvre for the state to breach the spirit and the letter of the Australian safeguard agreement.

China has a powerful economic incentive to dilute Australian safeguards. This is of significance when one takes into account that, as outlined, the way in which Australian safeguards in China are to operate will be subject to a secret Administrative Arrangement, yet to be negotiated. Beijing is likely to drive a hard bargain. The history of Australian diluting of safeguards in favour of commercial considerations suggests that Canberra is likely to oblige.

In 1988 China signed a safeguards agreement with the IAEA. It still remains in force. Article 1(c) stipulates “China may, in accordance with the procedures set forth in this Agreement, withdraw nuclear material subject to safeguards under this agreement.”¹³¹ In Article 33 the agreement stipulates that safeguards are not be applied to nuclear material “in mining or ore processing activities” as well as to uranium until it has reached the stage of the fuel cycle where it may be fabricated or enriched.¹³²

Article 5 b (I) stipulates that the Agency will not communicate to any party whatsoever any information, which it should obtain during the course of its activities in China. This would of course limit information available to the Australian Government.

The provisions of China’s VOA seriously limit the jurisdiction and application of IAEA safeguards in comparison to that applied to non-nuclear weapons states. While China has ‘signed’ the Additional Protocols two of the four fundamental measures are not to be applied

¹³⁰ Submission by the Department of Foreign Affairs and Trade and The Australian Safeguards Office to The Senate Uranium Mining and Milling Committee, p33, 1996.

¹³¹ “Agreement of 20 September 1988 Between the Peoples Republic of China and the International Atomic Energy Agency for the Application of Safeguards in China”, p2. Online at <http://www.iaea.org/Publications/Documents/Infcirc/Others/infcirc369.pdf>

¹³² As above, p11.

to China. The IAEA does not have access to facilities other than a limited number of listed sites and can not conduct environmental sampling at other nuclear facilities or undeclared sites across the country.

How many facilities are safeguarded in China? According to the latest IAEA Annual Report *only three facilities* are actually subject to Agency safeguards in China. These are a power reactor, a research reactor and a uranium enrichment plant.¹³³ This list has been confirmed to the author by the IAEA as being accurate at time of writing. In its talking points memo on the deal with China the ASNPO (Australian Safeguards and Non-proliferation Office as it now known) states that a number, for good reason unspecified, is subject to IAEA safeguards. The ASNPO states that this will most likely increase. The current situation does not provide confidence that all relevant Chinese facilities will become governed by IAEA safeguards and subsidiary arrangements.

What is more not all of these facilities attract a subsidiary arrangement with the IAEA. It is possible for a facility to be listed as “safeguarded” but does not have a subsidiary arrangement in place. On this basis both Beijing and Canberra could play a cynical game with the Australian public whereby they declare that a facility is safeguarded, and is duly recorded in the IAEA report as being so, but that is not subject to a subsidiary arrangement. This is an unacceptable state of affairs from a non-proliferation perspective but is potentially useful to China from their economic perspective.

As far as China’s three facilities are concerned only one of them currently has a subsidiary arrangement in force, that being the nuclear power reactor. Neither the research reactor nor the enrichment plant has a subsidiary arrangement in force. A research reactor may use enriched uranium to greater than 20% U-235. It is of concern that of the three facilities the two that are most interesting from a proliferation standpoint do not have an IAEA subsidiary arrangement in force.

Australia has signed two agreements with Beijing, a safeguards agreement and a nuclear cooperation agreement., that require Ratification by the Federal Parliament before they can come into effect. The proposed Australian safeguards agreement recognises that China “concluded a safeguards agreement with the Agency on 20 September 1988 for the application of safeguards in China.” This refers to the VOA agreement cited above.

¹³³ International Atomic Energy Agency, *Annual Report: The Agency and the World in 2004*, (Vienna:IAEA, 2005). See the relevant table in the annex to this report especially table A20 “facilities under safeguards” at http://www.iaea.org/Publications/Anrep2004/annex_tables.pdf p8.

Article III [b] encapsulates the principle of equivalence for it stipulates that the Agreement shall apply to “all forms of nuclear material prepared by chemical or physical processes or isotopic separation from nuclear material subject to the Agreement; if nuclear material subject to the Agreement is mixed with other nuclear material, the quantity of nuclear material so prepared which falls within the scope of this Agreement shall be an amount equivalent to the proportion which the nuclear material subject to this Agreement bears to the total quantity of nuclear material.”

Article III [c] similarly encapsulates the principle of proportionality for it applies to “all generations of nuclear material produced by neutron irradiation of nuclear material subject to the Agreement: if nuclear material subject to the Agreement is irradiated together with other nuclear material, the proportion of nuclear material so produced which falls within the scope of this arrangement shall be equal to the proportion of the nuclear material irradiated that is subject to this Agreement.”

In Article V China provides assurance that “nuclear material subject to this agreement shall not be used for, or diverted to, the manufacture of nuclear weapons or other explosive devices, research on or development of nuclear weapons or other nuclear explosives, or be used for any military purpose.”

Article VI (2) stipulates, “where nuclear material subject to this Agreement is within the territory of China, compliance with Article V of this Agreement shall be ensured by a system of safeguards in accordance with the Safeguards Agreement concluded on 20 September 1988 between China and the Agency for the application of safeguards in China.”

Article VII states that if “for whatever reason at any time” the Agency “is not administering the safeguards referred to in Article VI of this Agreement” the Parties “shall forthwith arrange for the application of safeguards” that would “provide reassurance equivalent to that intended to be secured by the safeguards system they replace.”

Article VIII deals with the physical protection of nuclear material subject to the agreement, applying the recommendations specified in the IAEA’s INFCIRC/225/Rev.4.

Article IX outlines a number of other aspects of Australian safeguards policy. Article IX (1) is a clause that provides no retransfer of nuclear material without the consent of the supplier. Article IX (2) provides that nuclear material shall not be enriched to greater than 20%, or

reprocessed without the prior written consent of the supplier state. Article IX (3) stipulates that nuclear material shall be used (a) “only within the Delineated Chinese Nuclear Fuel Cycle Program defined in accordance with Annex B.”

The relevant provision in Annex B shall be “by mutual decision of the designated authorities.” These facilities would be included in the list of facilities given by China in accordance with its VOA with the IAEA. These facilities would include “facilities for enrichment, facilities for conversion to UO₂, facilities for fuel fabrication, reactors, development and demonstration projects, storage and “others”. Notice that facilities for re-processing are not mentioned specifically.

Article X provides for the parties to “establish an Administrative Arrangement to ensure the effective fulfilment of the obligations of this Agreement.” Furthermore, “the Administrative Arrangement established pursuant to this paragraph may be changed with the mutual consent in writing of the designated authorities of both Parties.” Parliament, as befitting a democracy, should be allowed to examine this process especially given that the AA in this case is to be negotiated with an authoritarian state.

Article XV states that “the Agreement shall remain in force for an initial period of thirty years.” However, according to Article XIV “the terms of this agreement may be amended at any time by arrangement of the parties.” Canberra’s record of compromising non-proliferation policy in favour of commercial considerations makes Article XIV seem rather ominous.

Although Article IX (2) speaks of prior written consent for reprocessing the effect of the Annex to the treaty, which Article XV (4) states, “form an integral part of this Agreement”, is to seriously dilute this clause. Annex C specifically states, “the Parties acknowledge that the separation, storage, transportation and use of plutonium require particular measures to reduce the risk of nuclear proliferation.” This refers to Inglis’ “staggering” risk of proliferation.

Moreover, “Australia also recognises the interest of China in reprocessing as part of its civil nuclear energy program in order to ensure efficient energy use and management of substances contained in spent fuel.” As we will see in the section on China’s energy strategy this represents a significant diminution of Australia’s non-proliferation policy.

Given this, “Australia shall provide consent on a long term basis to reprocessing”. That is “programmatically” consent rather than case-by-case consent. Long term presumably refers to the

life time of the Agreement, that is, 30 years. Annex C (b) provides that such reprocessing shall occur in facilities subject to China's VOA with the IAEA.

It is important at this point to consider how the bilateral safeguards agreement will work in practice. Australian safeguards are essentially a book keeping device that relies upon knowledge of the fissile material accountancy system and the nuclear fuel cycle in the importing state.

Of central importance therefore is the effectiveness and nature of China's fissile material accountancy system. However as a nuclear weapon state China is not subject to IAEA regulations on fissile material accountancy. There is no international accountability or independent verification of fissile material accountancy in China.

As Nathan Busch explains, "Material Control and Accountancy (MC&A) systems are designed to detect a theft of nuclear materials by closely measuring the amounts of materials in each facility and ascertaining whether any materials are moved or taken."¹³⁴ The first thing to take into consideration in relation to China's MC&A system is that it is characterised by "rigorous laws but lax enforcement."¹³⁵

Furthermore, "the international arrangements to which China has committed itself are of relatively limited use in establishing uniform, rigorous and enforceable MPC&A standards in China, and do not apply to military use material at all."¹³⁶

Goes on to observe that, "because Chinese nuclear facilities were probably not designed to take reliable physical inventories, China may not even have a precise inventory of the amount of nuclear materials in its facilities. This is the most basic step in any MC&A system, for without this knowledge there is no way to detect the disappearance of any material." Indeed, a states MC&A system "will be seriously defective unless its facilities are designed to measure the amount of fissile materials accurately, easily, and frequently. Given its apparent reliance on designs and procedures derived from those used in the Soviet Union, there is no reason to believe China has designed its facilities in this manner."¹³⁷

In sum, China's system of fissile material accountancy is characterised by lax enforcement and need not and does not fully met IAEA criteria. It would seem that China does not even

¹³⁴ P91

¹³⁵ Nathan Busch, "China's Fissile Material Protection, Control and Accounting: The Case for Renewed Collaboration", *The Non-proliferation Review* Fall/Winter 2002, pp95-96.

¹³⁶ Busch, "China's Fissile Material", pp91-94.

¹³⁷ Busch, "China's Fissile Material", p96.

have an adequate physical inventory of fissile materials within its territory thereby seriously eroding the book keeping exercise of Australian safeguards policy.

If Beijing does not have a precise inventory of nuclear material it becomes difficult to accept the proposition that Canberra can do better. In fact, China's nuclear facilities more likely than not have not even been designed to allow the effective accounting of fissile materials.

These factors will have their consequences for how the bilateral safeguards agreement with China will be implemented and how effectively and accurately the Australian Safeguards and Non-proliferation Office will be able to track AONM in China.

4.2) China's Energy Strategy

In an analysis of the proposed sale of uranium to China it is important to consider precisely to whom we are selling. In this regard one would want to know such things as the nature of China's energy policy, the role of nuclear power therein, the nature of the Chinese nuclear industry and the Chinese nuclear fuel cycle. One would also like to know the current status and future plans of China's military programme and the potential for conflict in Northeast Asia. One would also like to know a little bit about Australia's relationship with Beijing in order to gauge where the greater leverage in the relationship lies.

In 1978 the Communist Party of China began an economic reform programme¹³⁸ that promises to not only change China but also to have wider implications for international relations.. China's real GDP has increased by some 10% per year since 1978, although per capita GDP remains relatively low. Accompanying this economic growth has been greater industrialisation, urbanisation and motorised transportation all of which significantly increases internal energy demand. Peng notes, "such increases in energy demand have emerged as severe strains for China's development."¹³⁹ Peng further notes that in 1993 China became an oil importer rather than an oil exporter.¹⁴⁰

A Lawrence Berkeley National Laboratory study points out that Chinese policymakers are increasingly alarmed at China's oil deficit. In 2000 China imported 37% of its oil. It is predicted by 2020 that this level will rise to some 63-70%. As Peng argues, a point conceded

¹³⁸ Department of Foreign Affairs and Trade, *China Embraces the Market: Achievements, Constraints and Opportunities* (Canberra: AGPS, 1997).

¹³⁹ Chao Yang Peng, *Challenges to China's Energy Security* (Adelaide: The University of Adelaide Chinese Economy Research Unit, 1996) p7.

¹⁴⁰ Peng, *Challenges*, p7.

by the Berkeley study, this would result in a tighter link between China (and East Asia more broadly) and the Middle East, the world's major source of oil.

The Chinese White Paper on sustainable energy outlines the “major components of China’s strategy for sustainable development” that “include changing present energy production and consumption patterns, diversifying energy sources and the structure of power production.” One means by which this can be achieved, the White Paper outlines, is by expanding China’s nuclear power industry.

These factors have important implications for non-proliferation.

The Washington Post reports “a new alliance is emerging between Iran and China that threatens to undermine US ability to pressure Tehran on its nuclear program”. This “emerging relationship is reflected in two huge oil and gas deals between the two countries that will deepen the relationship between the two countries for at least the next 25 years.” These deals refer to a \$70-100 billion Chinese purchase of Iranian oil and assistance to develop the Yadavaran oil field and a \$20 billion liquefied natural gas deal. The article notes, “China’s trade with Iran is weakening the impact on Iranian policy of various US economic embargoes.” The report goes on “Beijing has also provided Iran with advanced military technology, US officials say.” It would seem that “the Iran-US ties may be partly in response to the United States.”

Daniel A Pinkston observes, in testimony to the US Senate,¹⁴¹ that in 2004 Chinese firms were sanctioned 50 times by the Bush administration for proliferation reasons. During the entire 8 years of the Clinton administration Chinese firms were sanctioned 17 times. Pinkerton notes that the upsurge has occurred because of the Iran Non-proliferation Act of 2000 for 38 of these 50 sanctions apply for violations of the Act. It would seem that China’s energy demands and Iran’s status as a source of oil not subject to US control are increasingly seeing the emergence of a strategic relationship similar to that which existed between China and Pakistan.¹⁴²

Deadly Arsenals states “the continuing nature of China’s role as an international supplier of nuclear technology for weapons programs is still in question.” The authors point out that a

¹⁴¹ “Testimony of Daniel A. Pinkston Before the US-China Economic and Security Review Commission Hearing on China’s Proliferation Practices and Its Role in the North Korean Crisis March 10, 2005.

¹⁴² Mary D. Davis, *The Military-Civilian Nuclear Link: A Guide to the French Nuclear Industry* (London: Westview Press, 1988).

2004 US intelligence survey concluded “the proliferation behavior of Chinese companies remains of great concern.” In the past China sold nuclear materials to Argentina, India, Pakistan, and South Africa, without requiring that the items be placed under IAEA safeguards.”¹⁴³ In relation to Pakistan, “China’s assistance” may have “been critical to Pakistan’s nuclear weapons breakthroughs in the 1980s.” This assistance included plans for weapons and highly enriched uranium.¹⁴⁴ The authors point out that the Chinese do not appear to have supplied any new nuclear weapons technology to Pakistan in recent times but the point here is that it really does not need to. The damage has been done.

China’s energy situation is a cause for concern, both for their future international performance on non-proliferation and their accountability to the safeguards terms of the Australian bilateral agreement. China has an increasingly voracious appetite for global energy resources, especially in developing areas such as Iran.. One need not be well versed in the theory of comparative advantage to see where the economics of this may lead. Recall the corrupt practices involving Australian uranium in the NUKEM scandal.

4.3) China and Nuclear Energy

The Energy Information Administration of the United States Government points out that no nuclear industry is as difficult to write about as China’s.¹⁴⁵ The global debate on energy supply has a particular focus on China and on India as the only countries with a proposed major expansion in nuclear power. However this expansion is still of a limited scale with the Australian Department of Foreign Affairs acknowledging that nuclear power is only proposed to increase from at present two per cent to four per cent of Chinese electricity supply by 2020.

There exists a great deal of interest and competition among the world’s nuclear supplier nations and companies to win Chinese contracts for nuclear materials, technology and reactors. The Bush Administration is lobbying on behalf of US corporations, Westinghouse and GE, to sell their reactor technologies, and BHP Billiton and Rio Tinto are lobbying to sell Australian uranium to China.

The Energy Information Administration points out that between 1996 and 2003 not a single new reactor was brought on line in the United States whilst since the start of 2002 China has brought 6 reactors on line in China and one in Pakistan. The Japanese *Yomiuri Shimbun* reports that China is planning to construct 30 nuclear reactors “in a quest for energy security

¹⁴³ Cirincione *et al*, *Deadly Arsenals* ,p171.

¹⁴⁴ Cirincione, *Deadly Arsenals*, p172.

¹⁴⁵ Department of Energy Energy Information Administration, “China’s Nuclear Industry”, online at http://www.eia.doe.gov/cneaf/nuclear/page/nuc_reactors/china/china.html

for its booming economy.”¹⁴⁶ Ron Sinard, of the Nuclear Energy Institute, states “looking at the market over the next decade, it’s probably the biggest piece of the pie.”¹⁴⁷ Jean-Christophe Delvallet of the French energy company EDR points out, “the stakes are huge. These are big contracts with a lot of implications.”

The Energy Information Administration points out that nowhere in the world other than in China can one observe as large a variety of commercial nuclear technologies, with Canadian (CANDU reactors), French reactors, Russian reactors and of course Chinese reactors. China’s existing mainland reactors are as follows (with capacity in Megawatts, reactor type, and country of origin of reactor design):

Reactor

Daya Bay 1&2	994Mwe(PWR)	France
Qinshan 1	279Mwe(PWR)	China
Qinshan 2&3	610MWe(PWR)	Canada (CANDU reactor)
Lingao 1&2	935MWe(PWR)	France
Qinshan 4&5	665MWe(PWR)	China
Tainwan (2007)	1000MWe(PWR)WER	Russia

The following nuclear power plants are under construction (years refer to when they are expected to come online):

Tianwan 2	1000MWe(PWR)WER	2007	Russia
Lingao 3	935MWe(PWR)	2010	France
Lingao 4	935MWe(PWR)	2011	France
Qinshan 6	610MWe(PWR)	2010	China
Qinshan 7	610MWe(PWR)	2010	China

Two enrichment plants, namely the Lanzhou enrichment plant in Gansu province and an enrichment plant at Hanzhong, Shaanxi province, service these reactors. The Lanzhou enrichment plant was first used for military purposes and was based on Russian gaseous diffusion technology but has since been replaced with Russian gas centrifuge technology. It is not under IAEA safeguards. The Hanzhong facility is a smaller gas centrifuge plant, supplied by Russia. It is one of the three facilities subject to IAEA safeguards, but attracts no subsidiary arrangement. According to the Nuclear Threat Initiative¹⁴⁸ Chinese officials have announced that only Chinese origin uranium will be enriched at Hanzhong although the

¹⁴⁶ “China Seeks Nuclear Powered Energy Security”, *Yomiuri Shimbun* May 8, 2006.

¹⁴⁷ “US Wrestles Its Rivals for China Nuclear Deal: Proliferation Concerns Take a Back Seat With Contract for 4 Power Plants”, *The New York Times* March 10, 2004.

¹⁴⁸ Claimed at <http://turnerfund.org/db/china/uenrich.htm>

World Nuclear Association claims that 30% of the uranium enriched here comes from Europe.

What role does the supply of uranium play in all this? The OECD 2005 survey of the world uranium market notes that uranium was produced in 19 countries although less than half of these produced significant quantities. It lists the seven leading producing countries as Canada (29%), Australia (22%), Kazakhstan (9%), Russia (8%), Niger (8%), Namibia (8%), Uzbekistan (5%).¹⁴⁹ These 7 countries together account for 89% of world production and Australia and Canada together account for 51% of world production. The OECD points out that only Canada and South Africa produced sufficient uranium to meet domestic demand.¹⁵⁰

China's uranium deposits are relatively small and are low to middle grade so that (along with other factors) "the mining costs turned out to be much higher than those acceptable to the commercial nuclear reactor operators."¹⁵¹ China will only be able to meet the demand of its nuclear reactors from domestic sources of uranium in the short term, with uranium use currently at 1,500 tons a year. The Department of Foreign Affairs cites projected Chinese demand for uranium at 8 000 tonnes a year by 2020.

Consider the level of 'Reasonable Assured Resources' (in tonnes) of uranium that Australia has in comparison with China. For Australia we have:

US\$40/KgU	US\$80/KgU	US\$130/KgU
701 000	714 000	747 000

The OECD's 2003 uranium survey lists these figures for China as:

US\$40/KgU	US\$80/KgU	US\$130/KgU
36 900	49 200	49 200

These figures demonstrate the reason why China has sought to purchase, explore, mine and invest in Australian uranium.

As China's Ambassador to Australia Madame Fu Ying has indicated, Beijing does not have enough uranium to meet *both* its potential military program and the projected expansion in the nuclear power industry. Australian uranium exports would at a minimum facilitate further

¹⁴⁹ Organisation for Economic Cooperation and Development (OECD), *Uranium 2005: Resources, Production and Demand: A Joint Report By the OECD Nuclear Energy Agency and the International Atomic Energy Agency* (Paris: OECD, 2005), p60.

¹⁵⁰ OECD, *Uranium 2005*, p66.

¹⁵¹ OECD, *Uranium 2005*, p138.

diversion of China's limited domestic uranium supply to their military and indirectly support their nuclear weapons program.

The Chinese nuclear fuel chain

At a 1987 IAEA conference China announced that it was formulating a 'closed' nuclear fuel cycle which involves the reprocessing of spent nuclear fuel and the separation of plutonium.¹⁵² Analysts refer to a closed nuclear fuel cycle as a "plutonium economy" which carries "staggering" proliferation risks. China's commitment to a plutonium economy follows on from its energy policy.

Eavis states that large reprocessing plants pose grave dangers because of the large amounts of plutonium dealt with per year. The IAEA can only account for 97% of this plutonium. Now at a large reprocessing plant such as the THORP facility in the UK (7000kg throughput of Pu per annum) this amounts to 210kg of Pu unaccounted for, enough to manufacture many nuclear weapons per year.¹⁵³

In conjunction with this closed nuclear fuel cycle strategy China is building an experimental fast breeder reactor on the outskirts of Beijing. A fast breeder reactor would produce plutonium from a blanket of natural uranium as potential additional nuclear fuel and as fissile material for a nuclear weapons program.

The Chinese nuclear fuel cycle currently has a UF₆ conversion plant at Lanzhou, 2 enrichment plants mentioned previously, and two fuel fabrication plants, one at Yibin and one at Baotou.¹⁵⁴ None of these, bar one of the enrichment plants, are under IAEA safeguards. A reprocessing facility is under construction in Lanzhou.

The World Nuclear Association estimates that based on claimed projected expansion targets of 20GWe by 2010 and 40GWe by 2020 the amount of spent fuel arising would be 600 tonnes in 2010 and 1000 tonnes in 2020 with the cumulative amounts increasing to 3800 tonnes and 12 300 tonnes respectively. That represents a very large amount of significantly dangerous material, from both a safety and proliferation perspective.

¹⁵² International Atomic Energy Agency, *Country Nuclear Fuel Cycle Profiles*, (Vienna: IAEA, 2005),p1.

¹⁵³ Paul Eavis, "The Case Against Reprocessing" in Frank Barnaby (ed), *Plutonium and Security: The Military Aspects of the Plutonium Economy* (New York: St. Martin's Press, 1992), p24.

¹⁵⁴ Taken from China's profile in the above.

The above figures on China's nuclear power expansion and reprocessing should put all this in perspective. These are sobering numbers. If China achieves its declared goals the large values of spent fuel arising will ensure that China's reprocessing facilities will have large annual throughputs of plutonium and the error rates resulting from inevitable accountancy errors would represent potential fissile material for very many nuclear weapons per year, even at the IAEA's significant quantity of 8kg of plutonium.

No safeguards policy can prevent proliferation on these numbers other than a decision not to mine and export uranium to China. That Australia's proposed bilateral safeguards agreement has given prior "programmatic" consent to the reprocessing of AONM on a long term basis is contrary to Australia's claimed non-proliferation policy aims. . Australian Obligated Nuclear Material cannot be adequately safeguarded in China for these reasons.

The way in which the nuclear industry is organised in China is also of concern. The IAEA nuclear fuel cycle evaluation of China shows that the China National Nuclear Corporation controls all aspects of the nuclear fuel cycle in China. All of the facilities across uranium conversion, enrichment and fuel fabrication plants and also uranium exploration and mining, reprocessing nuclear waste disposal, Research and Development and nuclear engineering design are under the control of the CNCC.¹⁵⁵

It is clear that the China National Nuclear Corporation is all pervasive as far as the nuclear industry in China is concerned. According to *Deadly Arsenals*, which gained its information from US National Laboratory sources, the CNCC "produces, stores, and controls all fissile material for civilian as well as military applications."

The Australian Government's 'talking points' memo on the proposed agreement has claimed that the civil and military aspects of the nuclear industry in China are distinct, this claim is clearly false. In reality we may say that Australia has signed a bilateral safeguards agreement with the CNCC.

4.4) The Balance of Leverage and Safeguards

According to the Department of Foreign Affairs and Trade China is Australia's second largest trading partner, our second largest export market and our second largest source of imports. By contrast Australia is China's eleventh largest trading partner, eleventh largest import source and thirteenth largest export destination. Chinese economic growth has played a large part in

¹⁵⁵ See note 187

rising global commodity prices, a factor that has been crucial in recent Australian economic performance.

The Chinese leadership would expect that these relationships would have political and strategic implications for Australian policy. Macroeconomic indicators demonstrate that, on balance, greater leverage would lie in Beijing rather than Canberra.

A Department of Foreign Affairs and Trade fact sheet¹⁵⁶ informs us that the value of Australia's merchandise trade with China in 2005 was: exports of A\$16,054 million, a 45.8% increase over 2004, and imports of A\$21,347 million a 19.1% increase over 2004. If a similar rate of increase in exports were to continue China could in time become Australia's leading trading partner.

By category (top four respectively) the major exports were Iron Ore 5 721, Wool 1 327, Copper Ores 628 and Coal 531; and the major imports were Clothing 3 055, Computers 2 406, Toys & Games ect 1 095, and Telecommunication 1 073 (A\$m).

It would be difficult from the above figures to discern which is the developing state and which is the developed state.

The New York Times reports that "China's rapid growth is sucking up resources and pulling the region's varied economies in its wake" but "more and more China is leveraging its economic clout to support its political preferences". *The Times* warns, "Beijing is pushing for regional political and economic groupings it can dominate, like a proposed East Asia community grouping that would cut out the United States and create a global bloc to rival the European Union." Evidence for this is that China is "dispensing aid and in ways not seen before, pressing countries to fall in line on its top foreign policy priority; its claim over Taiwan."

Taiwan provides a fascinating test case to examine the question of leverage in Australia-China relations. A day after China approached Australia for a deal on uranium the Minister for Foreign Affairs and Trade, Alexander Downer, said that the ANZUS treaty between Washington and Canberra did not apply in a Taiwan contingency, opening up the prospect of US forces fighting in the Pacific without Australian assistance.¹⁵⁷ For the ANZUS treaty which had been a non negotiable pillar of Australian strategic and foreign policy to go writhe status of symbolism is a startling downgrade. The Prime Minister rebuked the Minister but the

¹⁵⁶ available online at <http://www.dfat.gov.au/geo/fs/chin.pdf>

¹⁵⁷ "Downer Flags China Shift", *The Age* August 18, 2004.

whole affair raised eyebrows in Washington and provides powerful insight into the leverage that Chinese economic growth is buying in Canberra. .

The anticipated increase in uranium demand in China could be supplied through the proposed expansion of BHP Billiton's Olympic Dam uranium and copper mine, which accounts for some 30% of the world's known uranium reserves, and this proposed \$7 billion mine expansion could be underwritten by long term supply contracts with China.

Clearly, BHP Billiton stands to profit from the large scale export of uranium to China. Moreover, trade with China underwrites BHP Billiton's recent financial performance. BHP Billiton estimates that some 80% of recent growth comes from commercial activity in China. The sale of Australian uranium to China means that BHP Billiton will in effect sell uranium to the China National Nuclear Corporation. The leverage here clearly lies with Beijing.

Even if large scale uranium sales were to go ahead Canberra will continue to be in a weak position in the balance of leverage over safeguards with Beijing as China will not be solely dependent upon Australian uranium and is expected to diversify its sources of supply. Australia will be dependent upon China to provide the demand for the projected greater level of output from Australia's uranium mines, the prospects for which are fuelling the increasing price of uranium equities in the Australian share market. In other words, the Australian nuclear (i.e. uranium) industry will be more dependent upon China than the Chinese nuclear industry will be on Australia.

This question of relative influence over uranium is of long term importance as the bilateral agreement does not lock China into a set system of safeguards over the 30 year term of the agreement. It has been demonstrated that successive Australian Governments have eroded safeguards in favour of commercial considerations. The balance of leverage in the relationship with Beijing means that should the safeguards agreement be revised, as the agreement itself allows for, it is to be expected that the revision will again continue the trend of weakening Australian safeguards policy for commercial interest.

4.5) The Potential for Conflict

US strategic policy, and China's response to them, may increase the threat of an accidental nuclear exchange between Washington and Beijing.

The size and nature of China's nuclear forces are uncertain and much analysed and discussed. China's ICBM missiles are of vintage design, are not armed with Multiple Independently

Targetable Re-entry Vehicles (MIRV) or multiple nuclear warheads, and are approaching a point of diminished strategic utility in the face of US military modernisation and the continuing risk of war over Taiwan.

According to the latest Pentagon report on Chinese military power China has 20 silo-based liquid fuelled missiles (the CSS-4 ICBM) for deterring the United States and 20 intermediate range liquid fuelled missiles (the CSS-3 ICBM) for attacking targets in Asia. China also has a number of theatre nuclear forces (so called IRBMs and MRBMs -intermediate and medium range missiles respectively).¹⁵⁸ Robert Norris and Hans Kristensen, writing in *The Bulletin of the Atomic Scientists*, estimate that in total Beijing has 200 nuclear warheads.¹⁵⁹

China has an ICBM modernisation program centred on introducing two new ballistic missiles, a road mobile DF-31 solid fuelled missile with a launch time of some 10-15 minutes able to hit targets on the US west coast and a longer range DF-41 missile able to hit targets across the US.

A problem complicating Chinese planning however is US plans to construct a Ballistic Missile Defense system. A ballistic missile defence system would seek to intercept incoming ballistic missiles in flight and destroy any nuclear payload before hitting the United States. The Chinese quite rightly take this to be a threat to their deterrent force and to their national security, on the grounds that a ballistic missile defence would act as a “shield” operating under the rubric of “escalation dominance” enabling the United States to throw its weight around in East Asia, especially in contingencies involving Taiwan.¹⁶⁰

Many aspects of US strategic planning no doubt alarm defence force officials in Beijing.¹⁶¹ Traditionally the US nuclear war plan, the Single Integrated Operational Plan (SIOP), has been directed against Soviet, now Russian, targets. The SIOP has always consisted of a number of Major Attack Options¹⁶² involving the desired destruction of key targets with a view to successfully achieving a disarming first strike. It has also had a number of Limited

¹⁵⁸ Department of Defense, *Military Power of the People's Republic of China 2006: Annual Report to Congress*, p26. Online at <http://dod.mil/pubs/pdfs/China%20Report%202006.pdf>

¹⁵⁹ Robert S. Norris and Hans M. Kristensen, “Chinese Nuclear Forces 2006”, *The Bulletin of the Atomic Scientists* May/June 2006, pp60-63.

¹⁶⁰ Robert S. Ross, “Navigating the Taiwan Strait: Deterrence, Escalation Dominance and US-China Relations”, *International Security* Vol 27 No 2, pp48-85.

¹⁶¹ See Karl A Lieber and Daryl G. Piers, “The Rise of US Nuclear Primacy”, *Foreign Affairs* March/April 2006.

¹⁶² For supercomputer simulations see Matthew G. McKinzie, Thomas B. Cochran, Robert S. Norris and William Arkin, *The US Nuclear War Plan: A Time for Change*, Natural Resources Defense Council <http://www.nrdc.org/nuclear/warplan/index.asp>

Attack Options (LAO) against Russian targets that are less than an all out attack, reflecting dubious thinking about waging a controlled nuclear war. US nuclear war planning is not, and never has been, concerned with “deterrence”. It has been concerned with war fighting.¹⁶³

China historically has also figured in US nuclear war planning but following the split between the Soviet Union and China and the thawing of US relations with Beijing, China was taken out of the war plan. During the Clinton administration China was again placed in the SIOP in the form of two Limited Attack Options which targeted China’s leadership, nuclear capabilities and key industries.¹⁶⁴ It should be stressed that these are in reality Major Attack Options for that is how they would be perceived in Beijing, given their own limited nuclear capabilities.

Given these facts considerable thinking has occurred in Beijing concerning the status of its nuclear doctrine. China increasingly perceives the need to deploy a force that reflects a “credible” minimum deterrent.¹⁶⁵ The former deputy commander of China’s nuclear force, Major General Yang Huan, outlines that to meet this doctrine Beijing requires a nuclear force that is survivable including “highly automated mobile missiles”, that are credible in the sense that they are highly accurate and thirdly they must be able to penetrate ballistic missile defences and other space weapons. That is, “in an era when space technology is developing rapidly and a defense system with many methods and many layers is appearing, we should pay special attention to the study of break-through technology.”¹⁶⁶

US plans to construct a multi-layered ballistic missile defence system and deploy offensive weapons in space increase the threat of nuclear war, as Jeffrey Lewis outlines, for “the only risk that China's current nuclear arsenal poses to the United States is an unauthorized nuclear launch--something the intelligence community has concluded "is highly unlikely" under China's current operational practices. That might change, however, if China were to adopt the "hair trigger" nuclear postures that the United States and Russia maintain even today to demonstrate the "credibility" of their nuclear deterrents. China might also increase its

¹⁶³ Desmond Ball and Jeffrey T. Richelson (eds), *Strategic Nuclear Targeting* (Ithaca, NY: Cornell University Press, 1986).

¹⁶⁴ Marko Beljac, *US Nuclear Deterrence and International Security: Extended Deterrence, Escalation Dominance and World Order* (Monash University), p225.

¹⁶⁵ Evan S. Medeiros, “Evolving Nuclear Doctrine” in Paul J. Bolt and Albert S. Willner (eds), *China’s Nuclear Future* (Boulder: Lynne Rienner, 2006), p53.

¹⁶⁶ General Yang Huan, “China’s Strategic Nuclear Weapons”, online at <http://www.fas.org/nuke/guide/china/doctrine/huan.htm> the original text appeared in *Defence Industry of China 1949-1989* (Beijing: National Defence Industry Press, 1989).

strategic forces or deploy theatre nuclear forces that could be used early in a conflict--developments that might alarm India, with predictable secondary effects on Pakistan.”

The potential for China to upgrading its missiles, modernising its warheads and changing its force doctrine, has direct relevance here to issue of production of fissile materials. In its talking points memo on the bilateral nuclear deal with China the Department of Foreign Affairs and Trade states that “open sources” suggest that China has ceased to produce fissile materials for nuclear weapons and that the sale of Australian uranium to China would not free up China to use its own uranium for military basis because of this.

It must be stressed that during the negotiations with Beijing on the uranium deal Australia directly asked China whether it in fact had ceased to produce fissile material. John Carlson, appearing before the Senate, stated that China refused to pass on this information.

However, there exists further uncertainty. Albright and Kramer write that, “China’s military plutonium stock remains highly uncertain. It reportedly continued to produce plutonium in at least one military reactor after Chinese officials unofficially acknowledged that plutonium production for weapons ceased in 1991.”¹⁶⁷

Because China’s nuclear modernisation partly reflects a desire to penetrate US spaced based weapons China will need to place multiple warheads on its DF-31 and DF-41 missiles. Most likely it will deploy 3 warheads per missile should Beijing go down this road, although much uncertainty exists as to how China will actually do this. US “miniaturised” warheads, such as the W 88, have a beryllium reflected plutonium fissile core for the primary. So we would expect that any Chinese warhead modernisation programme would shift the burden from highly enriched uranium to plutonium as the key fissile material for its nuclear weapons.

Wright and Gronlund write in the journal, *Science and Global Security*, that “the size of China’s plutonium stocks could have implications for future expansion of its nuclear arsenal, either as part of its modernization plans or in response to a US deployment of a ballistic missile defence system. For example, if China were to increase the number of warheads on long range missiles from the current level of roughly 20 to a level of 75-100, as suggested by the December 2001 US National Intelligence Estimate, that could require 0.2 to 0.4 tonnes of plutonium, assuming these warheads contained 3 to 5 kilograms of plutonium each. A buildup

¹⁶⁷ David Albright and Kimberley Kramer, “Plutonium Watch: Tracking Plutonium Inventories”. Institute for Science and International Security Global Fissile Material Inventories June 2004. Online at http://www.isis-online.org/global_stocks/plutonium_watch1004.html

to 200 warheads on long range missiles - a number reportedly suggested by the 2000 NIE - would require 0.6 to 0.9 tonnes of plutonium.” These numbers “place an upper bound on how much” China “could expand its long range arsenal without restarting plutonium production. This may be an important consideration to China if it wants to keep open the option of expanding its strategic nuclear forces in response to possible US missile defense deployments.”¹⁶⁸

In fact the situation is worse than this analysis would suggest for US policy, as the Bush administration’s National Security Presidential Directive 23 (NSPD23) accordingly states, "the Defense Department plans to employ an evolutionary approach to the development and deployment of missile defenses to improve our defenses over time. The United States will not have a final, fixed missile defense architecture. Rather, we will deploy an initial set of capabilities that will evolve to meet the changing threat and to take advantage of technological developments."¹⁶⁹ As other states respond to the US system by increasing their forces so the US will counter this by expanding the ballistic missile force. In this way the US would effectively have created a dynamic for a mini arms race and Beijing will be presented with powerful incentive to resume the production of weapons grade fissile materials.

The Australian Government’s claims of confidence in Chinese assurances under the the bilateral agreement are further weakened by the fact that this treaty is supposed to last for 30 years. Who can say what China will choose to do in 30 years? Australians are being asked to trust decisions by every future Chinese Government on use of fissile materials derived from Australian uranium.

On this basis the sale of Australian uranium to China would free up China’s uranium for military production as China does not have enough uranium to both meets its ambitious nuclear energy plans and to modernise its strategic nuclear forces.

In fact, China may seek to divert nuclear materials derived from its civil programmes to its military programmes in order to retain its status as a state that is credited with maintaining a moratorium on the production of fissile materials for nuclear weapons whilst pursuing warhead modernisation, should the need arise. In this way China could seek to maintain its

¹⁶⁸ David Wright and Lisbeth Gronlund, “Estimating China’s Production of Plutonium for Weapons”, *Science and Global Security* Vol 11 No 1, p25.

¹⁶⁹ NSPD23 online at <http://www.fas.org/irp/offdocs/nspd/nspd-23.htm>

non-proliferation credentials but still modernise nuclear warheads. This is a possibility that cannot be discounted.

Australia, in both providing key backing for US policies on space weapons and selling uranium to China, would not only contribute to proliferation in Asia but would contribute to increasing the likelihood of nuclear war, the “major hazard” of the uranium industry according to the Fox Report.

This is especially so when one considers that Taiwan provides a potential flashpoint between Washington and Beijing. The Limited Attack Options of the SIOP directed against China assume a conflict over Taiwan.

What is more the well informed analyst, William Arkin, writing for *The Washington Post* has revealed that the Pentagon has just finished constructing a full fledged conventional war plan directed at China (OPLAN 5077). Arkin writes, “the 5077 plan to defend Taiwan from a Chinese attack dates back from the Reagan administration, and has been successively updated and expanded over the years.

Moreover, “Pacific Command OPLAN 5077-04, as it is currently known, includes air, naval, ground/amphibious, and missile defense forces and "excursions" to defend Taiwan. Options include maritime intercept operations in the Taiwan straits, attacks on Chinese targets on the mainland, information warfare and "non-kinetic" options, even the potential use of American nuclear weapons.”¹⁷⁰ It would be naïve to assume that Beijing does not have similar plans.

What this means is that strategic interaction between Beijing and Washington is leading to the threat of accidental nuclear war precisely at a time when both states are planning for a potential war over Taiwan. The sale of Australian uranium in such a strategic environment flies against the spirit and tenets of the Fox Report and is contrary to Australia’s national interest.

¹⁷⁰ William Arkin, “America’s New China War Plan”, http://blog.washingtonpost.com/earlywarning/2006/05/americas_new_china_war_plan.html

4.6) Chapter four Conclusion

Australia has signed a bilateral safeguards agreement with China that encapsulates all the flaws of both IAEA and Australian safeguards policies. China's ambitious nuclear plans flow directly from its broader energy strategy. The large throughputs in a plutonium plant and the large amount of uranium proposed to be exported to China means that Australian fissile material could be diverted to military programs.

The nature of the strategic and economic relationship between Australia and China demonstrates that China has greater leverage over Canberra than Canberra has over Beijing. The practical implication of this balance of leverage is that claimed safeguards assurances in the bilateral agreement can not be relied upon in practice.

US missile defence plans have given China incentive to resume the production of fissile materials for warhead modernisation. There also exists the potential for a nuclear exchange involving China and the US over Taiwan.

The proposed export of uranium to China is not in Australia's national interest.

Chapter four Recommendations:

- IAEA safeguards should be strengthened through universal, mandatory and permanent application, including the full application of Additional Protocols, to Nuclear Weapon States including China in the same degree as to Non-Nuclear Weapon States;
- Australia should withdraw from agreement to export uranium to Taiwan and fully enforce and maintain restrictions against nuclear trade including uranium sales to any non NPT signatory states including India and Pakistan;
- Proposed "Administrative Arrangements" to enact the Australian bilateral safeguards agreement in China must be made public and be subject to Parliamentary scrutiny as part to the process of formal consideration of the proposed Nuclear Cooperation Treaty with China;
- The Australian Government must withdraw consent in existing bilateral treaties, and not provide any future agreements or consent including to China, for reprocessing of Australian Obligated Nuclear Materials or for any use of such materials in MOX or other Plutonium based fuels;

- Australia should require support for a Fissile Materials Cut-Off Treaty that prohibits reprocessing and the separation of weapons capable fissile materials, from all countries with which Australia currently has bilateral nuclear cooperation treaties;
- Application of IAEA safeguards must be extended to fully apply to mined uranium ores, to refined uranium oxides, to uranium hexafluoride gas, and to uranium conversion facilities, prior to the stages of enrichment or fuel fabrication;
- Australia must not enter into additional bilateral agreements allowing for conversion and enrichment of Australian uranium in countries including China and India where such arrangements are not in place;
- Australia should withdraw uranium sales from all Nuclear Weapon States that continue to fail to comply with their nuclear disarmament obligations under the Non-Proliferation Treaty, and that fail to ratify and abide by the Comprehensive Test Ban Treaty including verifiable closure of nuclear weapons testing facilities;