

REGULATION OF THE URANIUM INDUSTRY IN AUSTRALIA: A COMPARISON TO THE CANADIAN APPROACH AND THE NEED FOR A SINGLE FEDERAL REGULATOR

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The paper provides a comparative outline of the regulation of uranium mining and the nuclear industry by federal and state/provincial governments in Australia and Canada. The examination focuses upon the Honeymoon mine in South Australia, the Cigar Lake mine in Saskatchewan Canada, and the Darlington generating station in Ontario, Canada. Given the number and complexity of federal bodies in Australia it is recommended that a single federal nuclear regulator be adopted as in Canada. The required legislative changes are identified.

1. INTRODUCTION

1.1 Australia's Current Uranium Policy

The Australian federal Government¹ and the Australian Labor Party² separately announced new uranium policies earlier this year. One goal of the federal Government policy is to remove unnecessary constraints impeding the expansion of uranium mining into a full fuel cycle nuclear industry³ and set up an appropriate nuclear energy regulatory regime. Under the Labor Party policy, more uranium mines might be developed in South Australia (SA) and Northern Territory (NT) as its 25-year ban on new uranium mines has been overturned.

Giving Australia's abundant uranium reserves, it is not unreasonable to predict that investors will take advantage of the new uranium policies and the favourable world market.

1.2 Switkowski Report

Towards the end of 2006, the Australian government issued a report chaired by Dr Ziggy Switkowski which outlined a number of recommendations concerning uranium mining and nuclear energy in the Australian context (Switkowski Report).⁴ The report underlined the lack of

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¹ The Prime Minister of Australia, *Uranium Mining and Energy: A Way Forward for Australia* (28 April 2007), <http://www.pm.gov.au/media/Release/2007/Media_Release24284.cfm> at 20 July 2007.

² Australian Labor Party, "*National Platform and Constitution 2007*", <http://www.alp.org.au/download/now/2007_national_platform.pdf> at 20 August 2007, 55.

³ The nuclear fuel cycle can either be an "open" or a "closed" fuel cycle. An open fuel cycle commonly includes uranium mining and milling, conversion, enrichment, fuel fabrication, thermal reactor, interim spent fuel storage, spent fuel and waste conditioning and disposal. A closed fuel cycle differs from an open fuel cycle to the extent that spent fuel in a closed fuel cycle is reprocessed to separate the residual uranium and plutonium from the waste products and to fabricate the recovered uranium and plutonium into fresh fuel. See the International Atomic Energy Agency (IAEA), *Country Nuclear Fuel Cycle Profiles* (2nd ed) (2005) <www-pub.iaea.org/MTCD/publications/PDF/TRS425_web.pdf> at 8 August 2007, 1-2.

⁴ The Uranium Mining, Processing and Nuclear Energy Task Force (Task Force), *Uranium Mining, Processing and Nuclear Energy - Opportunities for Australia?*, December 2006.

uniformity in the regulation of uranium mining, and pointed to the inefficiency of the present legal framework in facilitating a nuclear industry.

The recommendations of the Switkowski Report on the topic of regulations are as follows:⁵

- (a) an efficient and transparent regulatory regime achieves good health, safety, security and environmental protection outcomes for uranium mining, transportation, radioactive waste management, and exports and imports;
- (b) regulation of uranium mining needs to be rationalised;
- (c) a single national regulator for radiation safety, nuclear safety, security safeguards, and related impacts on the environment would be desirable to over all nuclear fuel cycle activities; and
- (d) legislative prohibitions on enrichment, fuel fabrication, reprocessing and nuclear power plants would need to be removed before any of these activities can occur in Australia.

It is against the above background that the authors have prepared this article to:

- (a) identify issues in relation to, among others, uranium exploration, development, mining and exportation under Australia's current regulatory regime by undertaking a comparative case study of the uranium regulatory approval process in Australia and Canada (which is similar to Australia in terms of international obligations in relation to nuclear issues, legal system and natural uranium reserve);
- (b) propose a single federal regulator for the Australian uranium sector; and
- (c) propose legislative changes to facilitate the operations of the proposed single federal nuclear regulator in a potential full fuel cycle nuclear industry.

2. CURRENT AUSTRALIAN NUCLEAR ENERGY REGULATORY FRAMEWORK

2.1 Features of the Australian Nuclear Energy Regulatory Regime

The current regulatory framework for mining of uranium and the nuclear industry, as underlined by the Switkowski Report, is neither ideal nor efficient. In order to address all requirements to commence the development of a uranium mine, there are upwards of ten different bodies that need to be consulted in order to obtain the relevant environmental impact statement and licences.⁶ This is the result of an overlap between state and federal requirements that ensure a "complicated and restrictive process".⁷

In general, as illustrated by the Honeymoon Uranium Deposit project (Honeymoon) case study set out below, the current Australia nuclear energy regulatory regime presents the following features:

- (a) the Environmental Impact Statement (EIS) is an important initial step in the whole regulatory approval process. However, it tends to be lengthy and involves both the federal and state regulators;
- (b) licensing is a substantial component of the current regime but remains difficult for new entrants (in particular) to the uranium industry to determine and navigate the approval process;

⁵ Ibid 97, 103-104.

⁶ Ibid 99-101.

⁷ Ibid.

- (c) various regulatory bodies (six in the Honeymoon case) at federal level will be involved in the approval process;
- (d) while regulatory bodies at state level appear to be more streamlined, their functions may overlap with some of the federal bodies;
- (e) some federal regulatory bodies may functionally overlap with each other;
- (f) it is possible for the federal regulatory bodies to co-operate with the state counterparties. For example, DEWR has entered into an agreement with each of the New South Wales⁸ and the NT governments⁹ to facilitate and co-operate in the process by which the EIS must be conducted¹⁰; and
- (g) even though health and safety issues are not demonstrated in the Honeymoon case study, the Switkowski Report has found that the nuclear health and safety regime in Australia has been on par with the best international practice.¹¹

2.2 Honeymoon – Case Study¹²

In February 1997, Sedimentary Holdings NL entered into an agreement with MIM Holdings Ltd to acquire Honeymoon and two adjacent uranium deposits in SA. In September 2006, SXR Uranium One Inc (the current owner of Honeymoon) (SXR Uranium) obtained a licence from SA's Environment Protection Authority (EPA) for commercial mining operations. It is very likely that Honeymoon will commence production and export sales of uranium in 2008.

The following sets out a summary overview of the regulatory approval process that has applied to the Honeymoon development to date.¹³ Diagram 1 below provides a flowchart of the relevant approval process.

2.2.1 EIS

Generally speaking, a new uranium project commences with an environmental assessment process at both the federal and state level. In SA, an EIS may be required to consider the extent to which the potential impacts of the development are consistent with the provisions of any relevant state or federal legislation. The legislation that may require an EIS to be undertaken is the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) at the federal level, and the *Development Act 1993* (SA) at the State level.

⁸ The Department of Environment and Water Resources, *An Agreement between the Commonwealth of Australia and the State of New South Wales Under Section 45 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Relating to Environmental Impact Assessment* <<http://www.environment.gov.au/epbc/assessmentsapprovals/bilateral/nsw/pubs/nsw-agreement-signed.pdf>> at 6 August 2007.

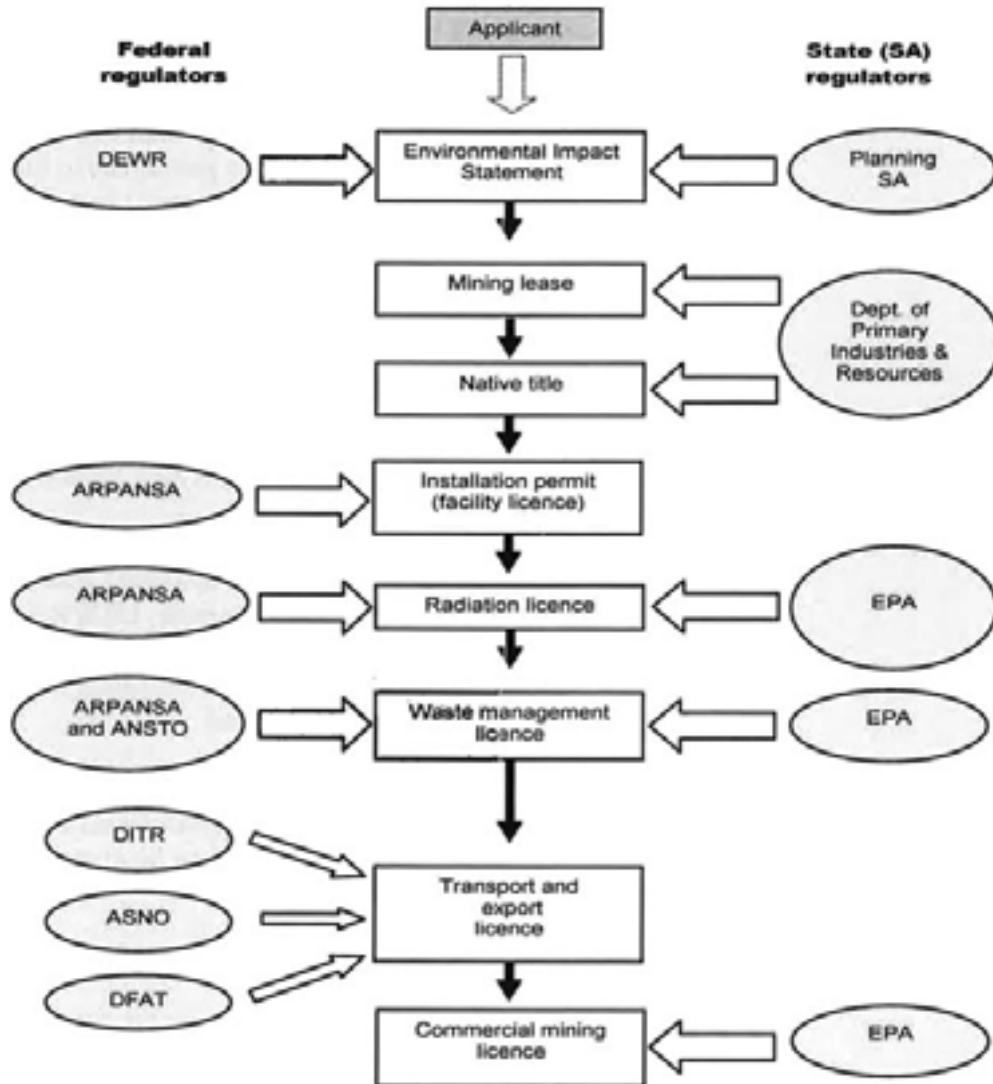
⁹ The Department of Environment and Water Resources, *An Agreement between the Commonwealth of Australia and the Northern Territory Under Section 45 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Relating to Environmental Impact Assessment* <<http://www.environment.gov.au/epbc/assessmentsapprovals/bilateral/nt/pubs/nt-principal-agreement.pdf>> at 6 August 2007.

¹⁰ See section 2.2 of this paper for more details.

¹¹ The Task Force, *Uranium Mining, Processing and Nuclear Energy - Opportunities for Australia?*, December 2006, 72.

¹² This case study is mainly based on information and materials referred to by the Wise Uranium Project, *New Uranium Mining Projects - Australia* <<http://www.wise-uranium.org/upaus.html#HONEYM>> at August 2007.

¹³ World Information Service on Energy, *New Uranium Mining Projects - Australia* <<http://www.wise-uranium.org/upaus.html#HONEYM>> at 20 July 2007.

Diagram 1 - The Honeymoon regulatory approval process¹⁴

¹⁴ In this diagram and this paper:

- DEWR means the Commonwealth Department of Environment and Water Resources;
- ARPANSA means the Australian Radiation Protection and Nuclear Safety Agency;
- ANSTO means the Australian Nuclear Science and Technology Organisation;
- DITR means the Commonwealth Department of Industry, Tourism and Resources;
- ASNO means the Australian Safeguards and Non-proliferation Office; and
- DFAT means the Australian Department of Foreign Affairs and Trade.

Honeymoon commenced its regulatory approval process by referring the project to DEWR. In accordance with the EPBC Act, a formal assessment and approval from DEWR is required for actions that are likely to have a significant impact on a matter of national environmental significance, or otherwise involve what is referred to as a “nuclear action”. The development of a uranium mine is such a matter.

In SA, Honeymoon must comply with the assessment and approval process under the EPBC Act. The EIS is an important part of DEWR’s formal assessment and approval process. The project was also required to be approved by the relevant state environmental authority. In this case, Planning SA (comprising SA’s Department of Urban Development and Planning and Department of Primary Industries & Resources) which is the SA government’s advisory agency on land use planning, development policy and strategy, the building code, and urban design and open space policy.

The timeframe of the EIS approval process may vary, depending on the specific circumstances of each case. In the case of Honeymoon, this process took 17 months. In summary:

- (i) the EIS for Honeymoon was released in June 2000. Public submissions had to be made by early August 2000;
- (ii) in November 2000, as requested by DEWR, Honeymoon released a supplementary EIS which was expected to be assessed by Planning SA and DEWR. By then Honeymoon had received 1,346 responses to its original EIS;
- (iii) in February 2001, the then federal Environment Minister, Senator Robert Hill, decided that before he could make a final decision on the Honeymoon uranium mine proposal, further detailed information was required on the hydrology of the Honeymoon aquifers. Honeymoon provided a final supplementary report in August 2001;
- (iv) in November 2001, the federal government gave the final environmental clearances to Honeymoon, subject to the conditions that the owner of Honeymoon must:
 - (A) lodge a rehabilitation bond to ensure land disturbed by mining operations would be rehabilitated; and
 - (B) ensure regular monitoring and reporting of the operational aspects of the mine, including groundwater conditions; and
- (v) about one week after the federal environmental clearances, Planning SA approved Honeymoon’s EIS.

2.2.2 Uranium export permit

Exports of uranium, thorium, monazite and materials that contain uranium and thorium are subject to control under Regulation 9 of the *Customs (Prohibited Exports) Regulations 1958* (Cth) (CR Regulations), which state that an export permit is required to be issued by DITR for the export of any of these materials.

Under the CR Regulations, the proponent must write to DITR formally requesting approval for the proposed export and include the required information in the application (including, a brief background on the exporting company, the export opportunity, the uranium and thorium content etc).

DITR also requires a statement from the intended end-user of the material. The statement must include information in respect of the:

- ownership and operations of the end-user;

- intended use and disposal of Australian nuclear material imported by the end-user; and
- ownership and location of waste containing nuclear material.

In assessing the above application, DITR works closely with ASNO.

Under sections 13 and 16 of the *Nuclear Non-Proliferation (Safeguards) Act 1987* (Cth) (Non-Proliferation Act), ASNO issues permits to possess or transport nuclear material subject to restrictions and conditions in respect of, amongst others:

- (i) the location at which nuclear material may be held and the procedures to be followed if such material is to be transported from one location to another;
 - (ii) the measures to be taken to ensure the physical security of nuclear material;
 - (iii) the persons, or class of persons, allowed access to nuclear material and the conditions of such access;
 - (iv) alteration, dispersal or disposal of nuclear material; and
 - (v) sufficient information to allow inspectors to comply with health and safety procedures at a facility,
- (together, the “ASNO Licensing Functions”).

Honeymoon was successful in its application process. In November 2001, the then DITR Minister, Mr Nick Minchin, announced that he would issue an export permit for the Honeymoon project.

2.2.3 Mining Lease 6019 and Native Title

In SA, the right to mine uranium is authorised pursuant to a mining lease issued under the *Mining Act 1971* (SA) (Mining Act). The relevant mining lease is granted on the condition that a native title mining agreement or native title mining determination has been registered under Pt 9B of the Mining Act.

In February 2002, Southern Cross Resources Inc (former name of SXR Uranium) announced that its 100% owned subsidiary Southern Cross Resources Australia Pty Ltd had concluded and registered a Native Title mining agreement with the Adnyamathanha people. Mining Lease 6019 was then granted by the SA Minister for Primary Industries & Resources.

2.2.4 Approval under the Radiation Protection Act

Under section 24(1) of the *Radiation Protection and Control Act 1982* (SA) (RPC Act), a licence is required for carrying out operations for the mining or milling of radioactive ores.

While Honeymoon had secured all the significant approvals and licences, it had not applied to the EPA for the necessary licence under the RPC Act. This failure became publicly known in October 2002.

Even though this licence is administrative in nature, the failure to obtain it almost turned into an obstacle to Honeymoon moving from trial status to full commercial production.

In May 2006, SXR Uranium submitted an application to the EPA for a commercial licence to mine and mill radioactive ore at Honeymoon.

In September 2006, the EPA announced that, following advice from the statutory Radiation Protection Committee, the EPA had determined to issue a licence under the RPC Act to SXR Uranium for commercial uranium mining operations at its Honeymoon site.

On 4 January 2007, the DITR Minister has granted SXR Uranium a new ten year licence to export uranium from the Honeymoon mine. This was the final step in the regulatory approval process for Honeymoon to proceed with its commercial mining and exportation in 2008.

3. THE CANADIAN REGULATORY MODEL

3.1 Features of the Canadian Regulatory Framework

The Canadian regulatory environment is characterised by a single federal body which is intended to oversee the regulatory process from the initial application to establish a uranium mine or nuclear power plant to decommissioning. The *Nuclear Safety Control Act 2000* (Canada) (NSC Act) is the federal Canadian legislation overseeing the regulation of nuclear energy and nuclear substances. It establishes the Canadian Nuclear Safety Commission (CNSC) which implements this legislation and coordinates the licensing process.¹⁵

Regulation of the construction, operation and conclusion of nuclear plants follows a similar process to the application for the construction of a new uranium mine or mill. The main differences concern the content of the licence application. Specifically the *Uranium Mines and Mills Regulations* set out the requirements for its licences, and the *Class I Nuclear Facilities Regulation* sets out the information required in an application for a nuclear power plant licence.

An appeal can be made to the CNSC by any person who is directly affected by the stipulated decisions of the CNSC.¹⁶

In brief, as shown in Diagram 2 below and the following two Canadian case studies, the features of the Canadian nuclear regulatory regime are:

- (a) both the federal and provincial governments are involved in the nuclear industry licensing process;
- (b) a single regulator (CNSC) has been established at the federal level under specific enabling legislation to administer the whole licensing process for nuclear full fuel cycle activities, including mining, producing, transferring, importing and exporting a nuclear substance,¹⁷ starting from the environment assessment (EA) stage.¹⁸ Various provincial government departments are responsible for granting uranium mining exploration permits and mining leases;

¹⁵ *Nuclear Safety Control Act 2000* (Canada) s 8.

¹⁶ *Ibid* s 43(1).

¹⁷ *Ibid* s 26.

¹⁸ An EA is a planning tool used by Canadian federal authorities – ministers, departments, departmental corporations (eg CNSC) and agencies of the government of Canada – to ensure that the environmental effects of a proposed initiative are identified and evaluated, as well as to provide the public with an opportunity to participate in the process. The current EA system is a decentralized system because it is based on the principle of self-assessment and, consequently, departments and agencies have their own discrete environmental assessment responsibilities to execute. Some EA processes may involve both the federal and provincial counterparts. See CNSC, “*Regulatory-related Information*” (2007) <http://www.nuclearsafety.gc.ca/eng/resource/current_regulatory/backgrounder_EA.cfm> at 11 October 2007; see also CEAA, “*2006-2007 Reports on Plans and Priorities*” (2007) <http://www.tbs-sct.gc.ca/rpp/0607/CEAA-ACEE/ceaa-acee01_e.asp#n1c> at 11 October 2007.

- (c) there appears to be no substantial overlap between CNSC and the various provincial regulators other than the EA stage which may be required to be conducted at both the federal and provincial level;
- (d) the federal and provincial governments co-ordinate in a wider range of the nuclear related regulatory process to streamline the licensing process. For instance, the government of Canada and the government of Saskatchewan have entered into an environmental assessment co-operation agreement in 2005 which allows projects that require an EA by these two governments to undergo a single assessment, administered co-operatively by both governments.¹⁹ Further, the government of Saskatchewan and the CNSC have signed an agreement in February 2003 to protect the health and safety of Canadians by harmonizing the regulatory requirements, and optimizing the participation of the CNSC, the Department of Environment and the Department of Labour of Saskatchewan in the uranium mining and milling licensing processes;²⁰ and
- (e) the Canadian nuclear regime is generally regarded as flexible, transparent, effective and efficient. A new entrant into the Canadian nuclear industry is easily able to identify the relevant regulatory approval process.

A summary of the Canadian regulatory regime (based on the Saskatchewan case study in section 3.2) is set out in Diagram 2 below.

3.2 Cigar Lake Uranium Mine – Case Study²¹

3.2.1 Background

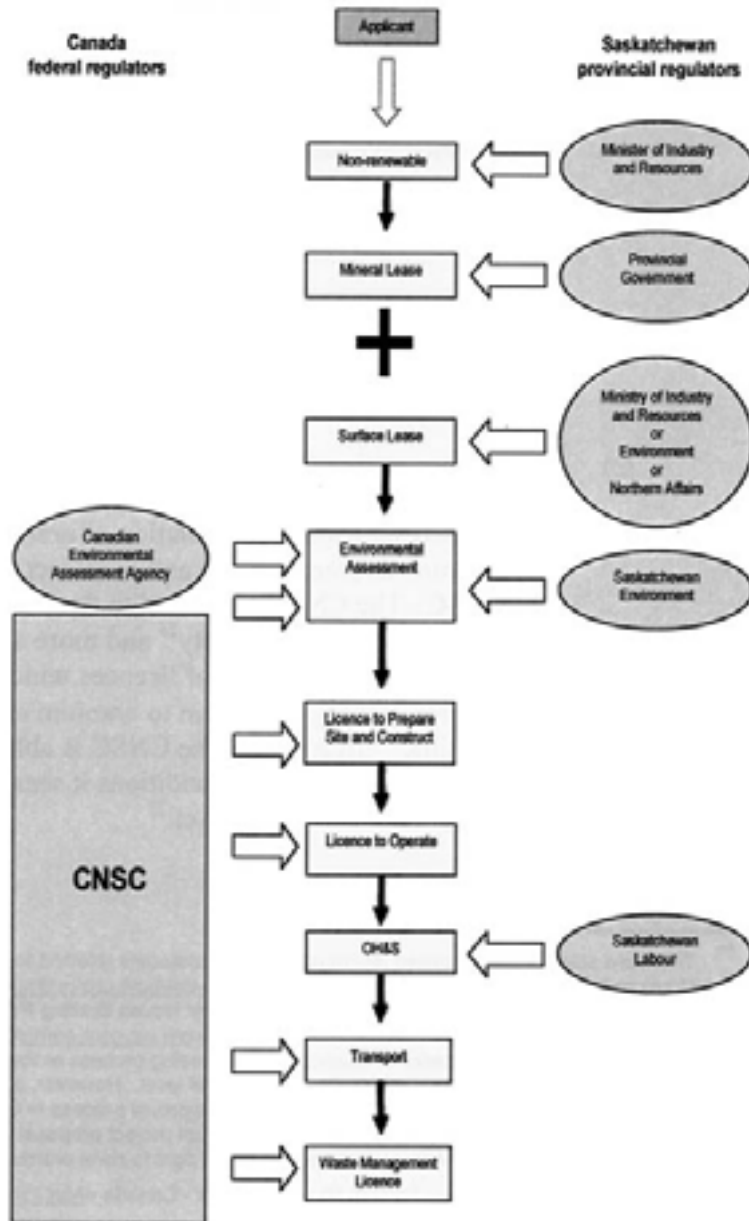
Cigar Lake is located in northern Saskatchewan which began as an underground test mine. In April 1998 the government of Canada and government of Saskatchewan gave approval to the proposal to convert Cigar Lake to a commercial uranium mine (in which Cameco Corporation (Cameco) has owned a controlling interest since 1999). The uranium mine is not operational as yet due to a rock fall in October 2006. The rock fall caused water to occupy the entirety of the Cigar Lake mining project and as a result severely impeded the construction and thus production start-up which was planned for 2008. The start-up is now scheduled for 2010.

¹⁹ The Government of Saskatchewan, News Release, “Canada-Saskatchewan Signed Renewed Agreement on Environmental Assessment Cooperation” (2005) <<http://www.gov.sk.ca/news?newsId=412d51dc-265b-4067-aa08-21578136ced7>> at 12 October 2007. Under the bilateral agreement, projects that require a review under both federal and provincial environmental assessment legislation will undergo a single, co-operative assessment, meeting the legal requirements of both governments.

²⁰ Colin G Hunt, Canadian Nuclear Association, *Nuclear Canada: Canadian Nuclear Association Electronic Newsletter* (20 February 2003) <<http://www.cna.ca/english/Newsletters/2003/NC0407.pdf>> at 6 August 2007.

²¹ This case study is mainly based on information and materials referred to by the Wise Uranium Project, New Uranium Mining Projects - Canada <<http://www.wise-uranium.org/upcdncl.html>> at August 2007, in addition to the Uranium Information Centre, Australia, “Nuclear Issues Briefing Paper.# 3 - Canada’s Uranium Production and Nuclear Power” (June 2007) <<http://www.uic.com.au/nip03.htm>> at 23 August 2007. Due to the lack of sufficient information in relation to the licensing process at the provincial level, this case study mainly focuses on the licensing process at the federal level. However, it is important to note that a number of provincial regulators are involved in the uranium approval process in Canada. For example, as shown in Diagram 2 of this paper, an applicant of a new uranium project proposal would need to obtain a Mineral Lease from the Saskatchewan government to obtain right to mine uranium.

Diagram 2 - Canadian nuclear energy regulatory system



3.2.2 Federal licensing process

Cameco was issued with a Uranium Mine Site Preparation Licence for Cigar Lake in December of 2001. Cameco was required then to embark on the EA process for the Cigar Lake site. The EA guidelines were made available to the public in May 2003, a one-day hearing held in July 2003 and in August 2003 the CNSC approved the guidelines. By June 2004 the CNSC had made its decision that after consideration of the EA results at a public

hearing in early June 2004 that the proposed uranium mine would not be “likely to cause significant adverse environmental effects”.²² A construction licence was issued to Cameco in December 2004 and construction began in 2005.

3.2.3 *Functions of the CNSC*

At the federal level, the regulation of uranium mining begins with an application to prepare a site and construct a new uranium mine or mill to CNSC. The CNSC is entitled to deal with the application for licences by a proposing party²³ and more specifically allows for the CNSC to establish classes of licences which authorise an otherwise prohibited activity in relation to uranium and nuclear energy generation.²⁴ In addition, the CNSC is able to issue these licences and attach any terms and conditions it sees fit to the licence in order to fulfil the objects of the Act.²⁵

The CNSC is a court of record whose decisions may be enforced by an order of the Federal Court of Canada.²⁶ In accordance with its objects, the powers of the CNSC are principally:

- (i) entering into arrangements with government of Canada bodies, and foreign and international bodies to provide training;²⁷
- (ii) establishing programs to provide the CNSC with scientific information and advice in addition to disseminating scientific information to the public;²⁸
- (iii) establishing advisory, standing and other committees, offices and laboratories;²⁹
- (iv) providing information to Canadian government departments and international bodies;³⁰ and
- (v) certifying and decertifying equipment and persons for the purposes of the NSC Act.³¹

3.2.4 *EA requirements*

Before a licensing decision can be made an EA must be undertaken under the *Canadian Environmental Assessment Act* (CEA Act) by the relevant federal authorities including the CNSC³² and overseen by the Canadian Environmental Assessment Agency (CEAA). An EA is a prerequisite to licensing both uranium mines and nuclear power plants.³³

- (i) Overview

Once the licence application is lodged with the CNSC the applicant must undertake an EA under the CEA Act. A uranium mining or milling EA is undertaken by the CNSC which may involve other federal authorities if required and the construction of

²² Wise Uranium Project, New Uranium Mining Projects - Canada <<http://www.wise-uranium.org/upcdncl.html>> at 20 August 2007.

²³ Sections 24, 25 and 26 of the *Nuclear Safety Control Act 2000* (Canada) stipulate in what ways the CNSC can deal with licences and specifically section 24(2) allows for applications.

²⁴ Section 24(1) allows licensing and section 26(a) to (f) stipulate prohibited activities.

²⁵ Ibid s 24 (2) and (5).

²⁶ Ibid s 20(8).

²⁷ Ibid s 21(a).

²⁸ Ibid s 21(b) and (e).

²⁹ Ibid s 21(c) and (d).

³⁰ Ibid s 21 (f).

³¹ Ibid s 21(g), (i) and (j).

³² *The Canadian Environmental Assessment Act* s 5(d).

³³ Canadian Nuclear Safety Commission, “*Licensing process for new nuclear power plants in Canada*” (February 2006), 5.

a new uranium mine or mill constitutes a project that is required to undertake a comprehensive study as part of its EA.³⁴

Although the Canadian EA process for the nuclear industry is led by the CNSC, there may be provincial or territorial requirements for EA's which are outside the CNSC's jurisdiction and need to be considered in the EA process. The potential for overlap is relieved somewhat by the CEAA allowing the federal Minister of Environment to enter into agreements between two governments in order to ensure that any overlap between two EA statutory requirements is managed.³⁵

(ii) Draft Guidelines

The CNSC draft guideline provide a scope for the comprehensive EA to ensure that the process is focused. The guidelines provide the scope for the project and give the licence applicant guidance on the substance of the EA for the particular licence being sought.³⁶ Beyond guidance for the applicant, the draft guidelines provide an avenue for public involvement. These guidelines are circulated to the community for public review and comment. This signals the first consultation with the public and gives the community an opportunity to prepare for the one-day hearing.

(iii) Public Hearing

Transparency and consultation in the licensing process is a key concern of the CNSC and as a result public involvement is encouraged. The CNSC's tribunal at this stage in the EA process offers an avenue where the public become directly involved in the EA process after the initial review and comment on the draft guidelines.³⁷ In the case of the Cigar Lake EA process, the CNSC held a one-day hearing to deal with the results of the EA of this project.³⁸ The public was invited to attend and comment or write a written submission regarding the results of the EA.³⁹

After consultation between the public, the CNSC and a one-day hearing at the CNSC tribunal a "Comprehensive Study Track Report" is sent to the Minister of Environment for a decision as to whether the report will be continued to form a "Comprehensive Study Report" (CSR).⁴⁰

(iv) CSR

The CSR is the final product of the EA process which is submitted to the federal Minister of Environment. It is at this stage that the EA process culminates in a statement from the Minister of Environment that according to the CSR the project will not have any significant adverse environmental effects.⁴¹ The effect of this determination is that it allows the CNSC to proceed with the process of granting a licence to the applicant.⁴²

³⁴ *Comprehensive Study List Regulations 1994* (Canada) s 19.

³⁵ *Op cit* n 19.

³⁶ Canadian Nuclear Safety Commission, "Licensing Process for New Uranium Mines and Mills in Canada" (March 2007), 5.

³⁷ *Ibid* 13.

³⁸ CNSC, "Notice of Public Hearing" <[http://www.suretenucleaire.gc.ca/eng/commission/pdf/04H-9\(e\)-CigarLakeEA.pdf](http://www.suretenucleaire.gc.ca/eng/commission/pdf/04H-9(e)-CigarLakeEA.pdf)> at 23 August 2007.

³⁹ *Ibid* 1.

⁴⁰ *Op cit* n 36, 6.

⁴¹ *Ibid*.

⁴² *Ibid*.

3.2.5 Licensing requirements

The licensing process requires a number of licences for the mine to fully comply with its regulatory requirements. These are a licence to:

- (i) prepare a site and construct;
- (ii) operate;
- (iii) decommission; and
- (iv) abandon.⁴³

Fulfilling the requirements of each individual licence requires consideration of the technical requirements contained in the relevant regulations.⁴⁴ This part of the regulatory process is the most rigorous as it requires compliance with all relevant provisions to the licence. There are general requirements that are applicable to all licence applications, and then there are more specific requirements that arise out of specific regulation of a particular licence.⁴⁵

Regulation of nuclear activities does not stop with the granting of a licence. Once a licence is granted to an applicant, that party is responsible for meeting ongoing reporting requirements that are imposed on all licensees.⁴⁶ Beyond general reporting requirements there are more specific requirements stipulated where events occur in the operation of the nuclear facility.⁴⁷ For example where there is a release of a quantity of radioactive nuclear substance into the environment.⁴⁸

3.2.6 Current status

Currently the Cigar Lake project is still in its remediation stages, with Cameco anticipating that the process will extend beyond 2007. Due to this Cameco anticipates that an application for an extension of the construction licence that it currently holds will have to be made to the CNSC.⁴⁹

3.3 Darlington Nuclear Generating Station – Case Study

3.3.1 Background⁵⁰

The Darlington Nuclear Generating Station is the newest addition to the 22 operating nuclear reactors⁵¹ in Canada. It began operation in 1989 and was subject to the regulatory

⁴³ *Nuclear Safety Control Act 2000* (Canada) s 26(e).

⁴⁴ *The General Nuclear Safety and Control Regulations* s 3, *the Uranium Mines and Mills Regulations* ss 3-7, *the Nuclear Security Regulations*, *the Radiation Protection Regulations*, *the Packaging and Transport of Nuclear Substances Regulations*, *the Nuclear Non-Proliferation Import and Export Control Regulations* and *the Nuclear Substances and Radiation Devices Regulations*.

⁴⁵ OECD, “*Nuclear Legislation in OECD Countries - Regulatory and Institutional Framework for Nuclear Activities (Canada)*” (2003) <<http://www.nea.fr/html/law/legislation/canada.pdf>> at 23 August 2007, 6.

⁴⁶ *Ibid* 7.

⁴⁷ *The General Nuclear Safety and Control Regulations* (Canada) ss 27-32.

⁴⁸ *Ibid* s 29(1)(c).

⁴⁹ Cameco Corporation, “*Cameco updates progress on Cigar Lake Remediation*” (11 July 2007) <http://www.cameco.com/media_gateway/news_releases/2007/news_release.php?id=189> 20 August 2007.

⁵⁰ This case study is mainly based on information and materials referred to by the Wise Uranium Project, *New Uranium Mining Projects - Canada* <<http://www.wise-uranium.org/upcdncl.html>> at August 2007, in addition to the Uranium Information Centre, Australia, “*Nuclear Issues Briefing Paper # 3 - Canada’s Uranium Production and Nuclear Power*” (June 2007) <<http://www.uic.com.au/nip03.htm>> at 23 August 2007.

⁵¹ *Op cit* n 45, 5.

regime of the Atomic Energy Control Board (AECB). In May 2000 the CNSC replaced the AECB.

Ontario Power Generation Inc, which owns the Darlington Nuclear Generating Station, has applied to place additional reactors next to the existing nuclear generating station. They are the first company to submit an application under the new regime for licensing nuclear power generation facilities, and will therefore be the first to have this kind of licence processed by the CNSC. This application, submitted in September 2006, would result in the first new nuclear power reactor in decades if approved⁵².

3.3.2 *Licensing process*

(i) Application to the CNSC

An application for a nuclear power station is basically similar to an application for a uranium mine.⁵³

(ii) EA requirements

As with any licence that falls under the NSC Act, an EA must be undertaken in order for the licence to be considered by the CNSC.⁵⁴ This process is the same, whether the assessment is for a nuclear facility or a uranium mine or mill.

(iii) Licensing requirements

The licensing process requires a number of licences for the nuclear power plant to fully comply with its regulatory requirements. These are a licence to:

- prepare a site and construct;
- operate;
- decommission; and
- abandon.⁵⁵

The licensing requirements for a nuclear power generating facility are comparable to that of a uranium mine or mill.⁵⁶

3.3.3 *Current status*

A Notice of Commencement of an environmental assessment for the Proposal by Ontario Power Generation to construct and operate new nuclear reactors was issued at the Canadian Environmental Assessment Registry.⁵⁷ This notice stipulates that as of 1 June 2007 the CNSC is required to ensure that the comprehensive study is conducted commencing on 17 May 2007.⁵⁸

⁵² Canadian Nuclear Safety Commission, *2005-2006 Annual Report* (2007), 11.

⁵³ See section 3.2 of this paper.

⁵⁴ See section 3.2 of this paper on the process of obtaining an EA for the purposes of applying for a licence.

⁵⁵ *Nuclear Safety Control Act 2000* (Canada) s 26(e).

⁵⁶ See section 3.2 of this paper.

⁵⁷ The Canadian Environmental Assessment Registry provides basic information on federal environmental assessments starting in November 2003. See Canadian Environmental Assessment Registry, “*About the Canadian Environmental Assessment Registry*” (2007) <http://www.ceaa-acee.gc.ca/050/about_ceil_e.cfm> 12 October 2007.

⁵⁸ Canadian Environmental Assessment Registry, “*Proposal by Ontario Power Generation to Construct and Operate New Nuclear Reactors*” (2007) <http://www.ceaa-acee.gc.ca/050/Viewer_e.cfm?CEAR_ID=29525> at 22 August 2007.

4. ESTABLISHING A SINGLE FEDERAL NUCLEAR INDUSTRY REGULATOR FOR AUSTRALIA

4.1 Comparing the Australian Nuclear Industry Regulatory Regime and the Canadian Regime

The previous case studies highlight the key features of the Australian and Canadian nuclear regulatory regime. A brief comparison of their similarities and differences is summarised below.

4.1.1 Similarities

Similarities between the Australian and Canadian nuclear regulatory regimes are found in their international obligations, constitutional arrangements and the overall nuclear regulatory process. Namely:

- (i) both countries are parties to the main international treaties and agreements on nuclear safety and non-proliferation, including the Treaty on the Non-Proliferation of Nuclear Weapons⁵⁹ and the Convention on the Physical Protection of Nuclear Material⁶⁰;
- (ii) both countries have two levels of government. Namely, the federal and the state or territory (or provincial) governments.⁶¹ The legislative power of the federal and the state (or provincial) parliaments is prescribed by the relevant constitutions;⁶²
- (iii) both Australia and Canada have similar scales of uranium deposits and, theoretically, their nuclear industry should be at same scale; and
- (iv) both regulatory regimes have two main components. Namely, a regulatory approval process at both the federal and the state (or provincial) level. The relevant federal regulators are responsible for regulating EIS (or EA), nuclear installation, waste management, transport and export. The state or provincial regulators oversee the areas of EIS (or EA), uranium mining and milling, safety and health.

4.1.2 Differences

A number of disparities also exist between these two regimes, including:

- (i) in Australia, the federal regulatory functions are spread over a number of regulators (eg, six federal regulators in the Honeymoon case) whereas one single federal regulator (CNSC) exercises those functions in Canada (except for the EA process which may involve other federal authorities and provincial authorities);
- (ii) CNSC has been established and operates under one single enabling legislation, as opposed to the various Australian regulators which have been established and operate under separate pieces of legislation; and
- (iii) the Canadian regime is transparent, effective, efficient and flexible in terms of regulating and facilitating the development of the full fuel cycle nuclear industry. However, the Australian regime appears more complicated, time-consuming and inflexible.

⁵⁹ Australia and Canada have become parties to this treaty on 27 February 1970 and 29 July 1968 respectively.

⁶⁰ Australia and Canada have ratified this treaty on 22 February 1984 and 23 September 1980 respectively.

⁶¹ *Constitution Act 1987* (Canada) ss 9-16 and 58-68; see also *Constitution of the Commonwealth of Australia* (Cth) s 61 and Ch V.

⁶² *Constitution Act 1987* (Canada) ss 91 and 92; see also *Constitution of the Commonwealth of Australia* (Cth) s 51 and Ch V.

4.2 A Single Federal Nuclear Regulator for Australia

No doubt one main reason for the differences between the Australian and Canadian nuclear regulatory regimes is historical. However, giving that those historical impediments have been, or will be, removed as a result of the new uranium policies of the Australian federal government and the Australian Labor Party, there is no reason for Australia not to overhaul the current nuclear regime and establish a single federal nuclear industry regulator which is comparable to the CNSC in terms of regulatory effectiveness, efficiency, transparency and flexibility.

A summary of such a model, named here as the Australian Nuclear Industry Commission (ANIC), is shown in Diagram 3 below.⁶³

4.3 Overview of the Proposed Model

4.3.1 Features of the proposed model

The proposed model would comprise a number of key features:

- (i) it is consistent with the current constitutional law principles of Australia and hence the two level regulatory system remains unchanged;
- (ii) the model anticipates that the bilateral agreements between the federal government and the state or territory government will be further adopted to make sure that the nuclear energy related EIS process will not duplicate. Under the proposed model, ANIC will become the primary federal regulator of the EIS process for the nuclear sector;
- (iii) the proposed ANIC will be the only federal regulator for the nuclear sector. It will exercise those functions which are currently performed by various federal authorities including ARPANSA, ASNO, DITR and DEWR; and
- (iv) with necessary legislative support, ANIC would be well placed to regulate Australia's nuclear industry with much approved transparency, effectiveness, efficiency and flexibility.

4.3.2 Establishment and functions of ANIC

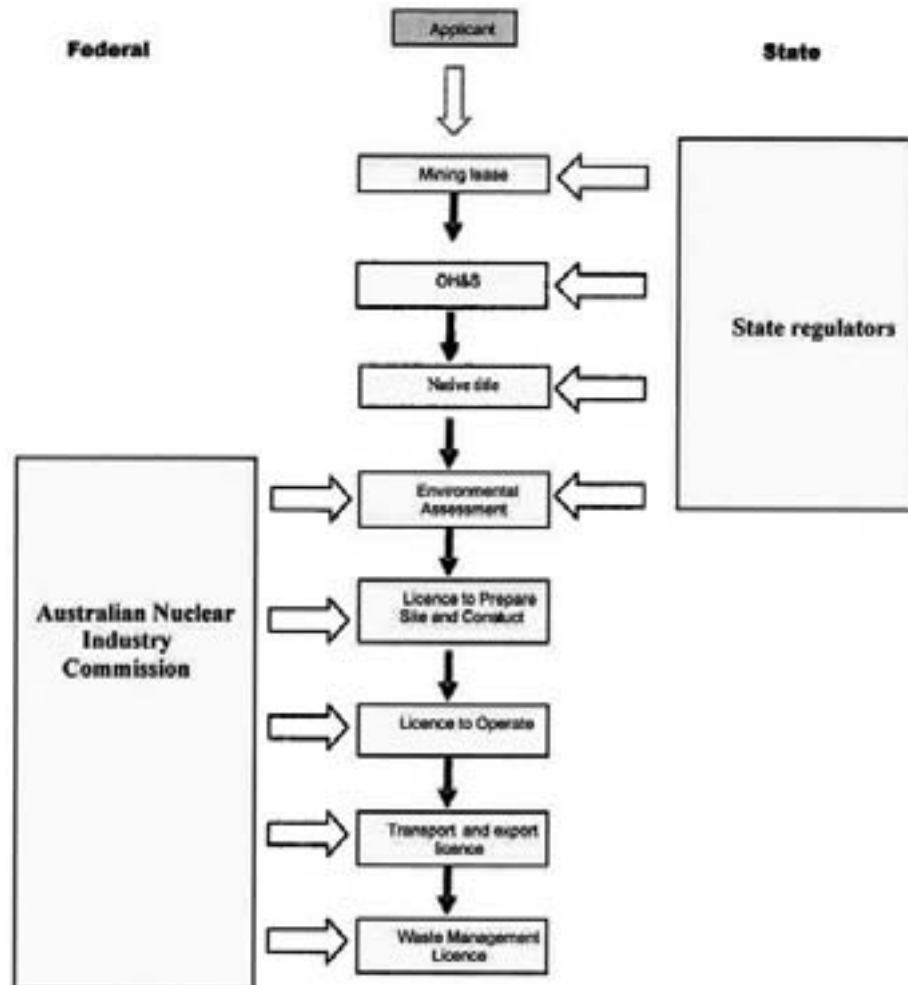
ANIC would need to be established by specific enabling legislation. Like the CNSC, we would propose that ANIC be given the power to regulate the following areas:⁶⁴

- (i) nuclear fuel cycle activities relating to a nuclear substance ranging from preparing a site for uranium mining to nuclear waste management;
- (ii) nuclear substances and radiation devices for the purposes of health care and research;
- (iii) import and export of nuclear materials, equipment and technology;
- (iv) nuclear reactors for research purposes;
- (v) nuclear power plants (assuming a full fuel cycle nuclear industry is established in Australia); and
- (vi) Australia's international obligations in relation to the nuclear industry (including the bilateral agreements arrangement), (together, the "Key ANIC Functions").

⁶³ We have not reviewed the further streamlining the various state regulators, which is outside the scope of this paper.

⁶⁴ The Canadian Nuclear Safety Commission, *2005-2006 Annual Report* (2007), 9.

Diagram 3 - The Proposed ANIC model



The authors submit that ANIC would be an “appropriate body to license and monitor the construction and operation of nuclear facilities to ensure that high standards in health, safety and environmental performance are maintained”⁶⁵ and can be regarded as a “better integration of health, safety and environment assessment and licensing processes”,⁶⁶ as proposed by the Switkowski Report.

Other issues relating to establishing ANIC would include:

⁶⁵ Op cit n 4, 124-125.

⁶⁶ Ibid 125.

- (i) identifying the legislative changes required to enable ANIC to undertake the Key ANIC Functions;
- (ii) independence;
- (iii) accountability;
- (iv) funding of ANIC's operations;
- (v) the organization structure;
- (vi) staffing; and
- (vii) performance appraisal.

Most of the establishment issues listed above do not require further discussion in this paper, however, the following section does briefly identify some of the key legislative changes which may be required to enable ANIC to perform the Key ANIC Functions.

4.4 Identifying the Legislative Changes to Facilitate ANIC

4.4.1 Overview

Identifying the legislative changes required for the purpose of administering the Key ANIC Functions is critical for establishing ANIC. For the purposes of this paper, the authors will confine the identifying task to federal legislation only. Specifically, the following areas are examined:

- Australia's international obligations under treaties and bilateral agreements; and
- the legislation governing the various current federal nuclear industry regulators.

4.4.2 Australia's international obligations

Australia's principal international obligations in relation to nuclear materials arise under the *Non-Proliferation Act* and the *South Pacific Nuclear Free Zone Treaty Act 1986* (Cth) which have incorporated Australia's obligations under various international treaties.⁶⁷ Further, Australia can only export uranium to countries which have entered into a bilateral safeguards agreement with Australia.⁶⁸

(i) The Non-Proliferation Act

This Act mainly provides for the control of nuclear material and related items and facilities⁶⁹ by the Commonwealth within its constitutional powers⁷⁰. It sets out the scope of nuclear activities within which the Commonwealth can regulate. This scope is broad enough to cover all the activities which a full fuel cycle nuclear industry may need to undertake and therefore is consistent with the Key ANIC Functions.

⁶⁷ The main purpose of the *Non-Proliferation Act* is to give effect to Australia's obligations under the Treaty on the Non-Proliferation of Nuclear Weapons to which Australia has been a party since 23 January 1973, the Agreement between Australia and IAEA for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons dated 10 July 1974, other supplementary agreements between Australia and IAEA, the bilateral agreements as listed in Sched 5 of the *Non-Proliferation Act* and the Convention on the Physical Protection of Nuclear Material which Australia ratified on 22 September 1974.

The purpose of the Free Zone Act is to give effect of Australia's obligations under the South Pacific Nuclear Free Zone Treaty to which Australia has been a party since 11 December 1986.

⁶⁸ The Australian Government, Department of Foreign Affairs and Trade, *Australia's Uranium Export Policy* <http://www.dfat.gov.au/security/aus_uran_exp_policy.html> at 8 August 2007.

⁶⁹ *Nuclear Non-Proliferation (Safeguards) Act 1987* (Cth) Pt II.

⁷⁰ *Ibid* s 8(3).

(ii) The South Pacific Nuclear Free Zone Treaty Act

This Act mainly prohibits any nuclear explosive devices related activities, including manufacturing, acquiring, researching and developing, testing and possessing.⁷¹ As those activities are outside of the definition of the full fuel cycle nuclear industry and the proposed ANIC will not, and should not, authorise any of those activities, this Act does not affect the Key ANIC Functions and therefore could remain unchanged.

(iii) Bilateral agreements

To date there are 19 bilateral agreements between Australia and 36 other countries.⁷² The bilateral agreements mainly apply the IAEA safeguards to nuclear information, technology, materials, equipments and components transferred between Australia and those countries.⁷³ They would form an important part of the Key ANIC Functions.

ASNO is currently administering those bilateral agreements.⁷⁴ The authors suggest that such administration should be transferred to ANIC.

4.4.3 Potential legislative changes to the current regulatory enabling legislation

In addition to the international obligations discussed above, other federal legislation governing the current nuclear regulatory regime include the:

- *Australian Nuclear Science and Technology Organisation Act 1987* (Cth) (ANSTO Act);
- *Australian Radiation Protection and Nuclear Safety Act 1998* (Cth) (ARPANS Act);
- *Customs Act 1901* (Cth) (Customs Act);
- *Environment Protection (Alligator Rivers Region) Act 1978* (Cth) (Alligator Rivers Act);
- *Environment Protection (Sea Dumping) Act 1981* (Cth) (Sea Dumping Act); and
- *EPBC Act*.

There are corresponding regulations⁷⁵ made under the above Acts and various codes of practice⁷⁶ developed by the ARPANSA which also form part of the current regulatory regime.

⁷¹ *South Pacific Nuclear Free Zone Treaty Act 1986* (Cth) ss 8-13.

⁷² The Australian Government, Department of Foreign Affairs and Trade, *Australia's Uranium Export Policy* <http://www.dfat.gov.au/security/nuclear_safeguards.html> at 8 August 2007.

⁷³ For example, the Agreement between Australia and the United States of America Concerning Peaceful Uses of Nuclear Energy (5 July 1979) Articles 4.1 and 9.1, the Agreement between the Government of Australia and the Government of the French Republic Concerning Nuclear Transfers Between Australia and France (12 September 1981) Articles I(a) and V(1) and V(2) and the Agreement between the Government of Australia and the European Atomic Energy Community concerning Transfers of Nuclear Materials from Australia to the European Atomic Energy Community (15 January 1982) Articles I(a) and V.

⁷⁴ The Australian Government, Department of Foreign Affairs and Trade, *Nuclear Non-proliferation, Trade and Security* <http://www.dfat.gov.au/security/nuclear_safeguards.html> at 8 August 2007.

⁷⁵ Examples of those regulations include the *Nuclear Non-Proliferation (Safeguards) Regulations 1987* and the *Customs Regulations*.

⁷⁶ ARPANSA, the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Process (2005) <<http://www.arpansa.gov.au/pubs/rps/rps9.pdf>> and *The Code of Practice for the Safe Transport of Radioactive Materials* (2001) <<http://www.arpansa.gov.au/pubs/rps/rps2.pdf>> at 9 August 2007.

(i) The ANSTO Act

This Act provides for, among others, ASNO's functions and powers,⁷⁷ corporate governance,⁷⁸ staffing⁷⁹ and funding.⁸⁰

In addition to undertaking research and development of nuclear science and technology, ASNO may:

- condition, manage and store radioactive materials and waste under certain circumstances;⁸¹
- commercialise its technology and expertise;⁸² and
- do anything incidental to any of its functions and powers including designing, producing, constructing and operating equipment and facilities.⁸³

Under the proposed ANIC model, those functions would fall within the Key ANIC Functions. The authors submit that, although ASNO's above functions should be transferred to ANIC, ASNO would continue to conduct its research and development activities.

Further, it is important to note ANSTO also performs the ANSTO Licensing Functions⁸⁴ under the Non-Proliferation Act. We propose the ANSTO Licensing Functions be transferred to ANIC.

(ii) The ARPANS Act

This Act establishes ARPANS⁸⁵ which is to perform functions relating to the protection of the health and safety of people, and protection of the environment, from the harmful effects of radiation.⁸⁶ Those functions include, among others:

- promoting uniformity of radiation protection and nuclear safety policy and practices across jurisdictions of the Commonwealth, the states and the territories;⁸⁷
- advising on radiation protection, nuclear safety and related issues;⁸⁸
- accrediting persons with technical expertise for the purposes of the ARPANS Act;⁸⁹
- issuing, cancelling, suspending or reviewing facility licences to controlled persons⁹⁰ to prepare, construct, possess, operate or de-commission controlled facilities;^{91 92} and

⁷⁷ *Australian Nuclear Science and Technology Organisation Act 1987* (Cth) ss 5-6.

⁷⁸ *Ibid* ss 8-17.

⁷⁹ *Ibid* s 24.

⁸⁰ *Ibid* ss 27-36A.

⁸¹ *Ibid* s 5(1)(a)-(bd).

⁸² *Ibid* s 5(1)(c).

⁸³ *Ibid* s 6(1)(h).

⁸⁴ See section 2.2.2 (i)-(v) of this paper.

⁸⁵ *Australian Radiation Protection and Nuclear Safety Act 1998* (Cth) s 14.

⁸⁶ *Ibid* s 3.

⁸⁷ *Ibid* s 15(a).

⁸⁸ *Ibid* s 15(b).

⁸⁹ *Ibid* s 15(e).

⁹⁰ *Ibid* s 13. "Controlled person" means "a Commonwealth entity, a Commonwealth contractor, a person in the capacity of an employee of a Commonwealth contractor or a person in a prescribed Commonwealth place".

⁹¹ *Ibid* s 13. "Controlled facility" means a nuclear installation or a prescribed radiation facility.

⁹² *Ibid* s 30.

- issuing, cancelling, suspending or reviewing source licences to controlled persons to deal with controlled material⁹³ or controlled apparatus.^{94 95}

Under the proposed ANIC model, radiation protection and nuclear safety would be part of the Key ANIC Functions. Accordingly, ARPANS's above functions would need to be transferred to ANIC and the ARPANS Act amended or repealed accordingly.

(iii) The Customs Act

Regulation 9 of the *Custom Regulations* provides that export of nuclear materials is prohibited unless a permit is obtained from the Minister of the DITR.

The authors propose that the DITR transfers this power to ANIC in order to streamline the approval process. Regulation 9 of the *Custom Regulations* would need to be amended to the effect that export of nuclear materials is prohibited unless a licence is obtained from ANIC.

(iv) The Alligator Rivers Act

For the purpose of protecting the environment in the Alligator Rivers Region⁹⁶ (Region) of the NT, this Act establishes a Supervising Scientist (SS) to, among others:

- devise, develop, coordinate, promote, assist and supervise programs for research into, and assessing the effects on the Region's environment, of uranium mining operations in the Region;⁹⁷
- develop, and supervise the implementation of, standards, practices and proceedings in relation to uranium mining operations in the Region for the protection of the environment of the Region;⁹⁸ and
- advise the Minister of DEWR on relevant environmental and technical issues.⁹⁹

The Act also sets up an Advisory Committee,¹⁰⁰ a Technical Committee¹⁰¹ and an Alligator Rivers Region Research Institute.¹⁰² They play supportive roles to SS' functioning.¹⁰³

The SS is an environmental regulator in the Region which focuses on the ongoing environmental protection. As in the case of the CNSC, this function could be primarily performed by ANIC. Given the federal government's constitutional power¹⁰⁴ to combine the functions of the SS into the proposed ANIC, the authors propose:

- that all the functions of the SS and the relevant committees and research institutions be transferred to ANIC; and
- that the Alligator Rivers Act be repealed.

⁹³ Ibid s 13. "Controlled material" means "any natural or artificial material whether in solid or liquid form, or in the form of a gas or vapour, which emits ionizing radiation spontaneously".

⁹⁴ Ibid s 13. "Controlled apparatus" means an apparatus that produces ionizing radiating when energised or because it contains radioactive material or an apparatus which is prescribed by the regulations made under the ARPANSA Act.

⁹⁵ Ibid s 31.

⁹⁶ *Environment Protection (Alligator Rivers Region) Act 1978* (Cth) Sched 3.

⁹⁷ Ibid s 5(a) and (b).

⁹⁸ Ibid s 5(c) and (d).

⁹⁹ Ibid s 5(e).

¹⁰⁰ Ibid s 16.

¹⁰¹ Ibid s 22A.

¹⁰² Ibid s 23.

¹⁰³ Ibid ss 17, 22B and 24.

¹⁰⁴ *Commonwealth of Australia Constitution Act* s 122.

(v) The Sea Dumping Act

This Act prohibits dumping of radioactive material¹⁰⁵ into Australian waters¹⁰⁶ unless the dumping is exempted¹⁰⁷ or a permit has been obtained from DEWR.¹⁰⁸

For the sake of streamlining the regulatory approval process, the federal government would need to consider transferring DEWR's licensing power in relation to radioactive materials to ANIC.

(vi) The EPBC Act

This Act is administered by DEWR. It prohibits any "nuclear action"¹⁰⁹ which "has, will have or is likely to have a significant impact on the environment"¹¹⁰ unless an approval is obtained from the Minister.¹¹¹ Currently the functions of DEWR in relation to "nuclear action" include:

- entering into and suspending bilateral EIS agreements with states or territories so that the EIS process can be better coordinated;¹¹²
- deciding whether approval of action is needed;¹¹³
- assessing impacts of a "nuclear action";¹¹⁴ and
- approving a "nuclear action".¹¹⁵

Under our proposed ANIC model, ANIC would perform those functions in relation to the EIS for the full fuel cycle nuclear activities. The above relevant provisions under the EPBC Act should be amended accordingly.

4.4.4 ANIC's roles in regulating nuclear facilities

As noted in section 4.3 above, ANIC would have the flexibility to regulate all of the nuclear full fuel cycle activities including nuclear facilities, should a full fuel cycle nuclear industry be developed in Australia.

Such development would require a number of legislative reforms which are not the subject of this article. However, we note that the federal government has planned to repeal the prohibition on a Ministerial declaration that nuclear actions (including nuclear installations) do not need approval under the EPBC Act, even though this initiative has not gained support from the states¹¹⁶.

¹⁰⁵ This Act incorporates Australia's international obligations under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter signed by Australia on 7 July 1996. This treaty prohibits dumping of "wastes or other matters" which are not listed in Annex 1 to the treaty. Radioactive materials are not listed in that Annex.

¹⁰⁶ *Environment Protection (Sea Dumping) Act 1981* (Cth) s 10A.

¹⁰⁷ *Ibid* s 5.

¹⁰⁸ *Ibid* ss 10A, 18 and 19.

¹⁰⁹ *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 22.

¹¹⁰ *Ibid* s 21.

¹¹¹ *Ibid* ss 66, 67 and 133.

¹¹² *Ibid* Ch 3.

¹¹³ *Ibid*, Pt 7.

¹¹⁴ *Ibid*, Pt 8.

¹¹⁵ *Ibid*, Pt 9.

¹¹⁶ Ben Bradstreet, "Natural Resources and Energy law Update October 2007", Mallesons' Publications. In response to the proposed repeal to the EPBC Act, Queensland, Western Australia and SA passed legislation to specifically deal with the potential outcomes of federal amendments. Consequently, each

5. CONCLUSIONS

Even though Australia and Canada share similar international obligations, legal systems and natural uranium resources, the Canadian nuclear industry is regulated at the federal level by the CNSC which has transparency, effectiveness, efficiency and flexibility, as opposed to the complex and overlapping various federal nuclear industry regulators in Australia. As the Switkowski Report rightly points out, this is more due to social and historical reasons than any economic drivers.

The authors propose that a single federal nuclear energy industry regulator, ANIC, should be established to regulate Australia's potential full fuel cycle nuclear industry. With the introduction of ANIC, investors in Australia's nuclear industry will not only benefit from a simpler and more co-ordinated approval process but, more importantly, there will be established a regulatory body which has the flexibility to accommodate the potential development of a full fuel cycle nuclear industry in Australia.

State in Australia has legislation or planned legislation to prohibit the commercial development of nuclear facilities (New South Wales and Victoria rely on existing prohibitions).