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Security for the Uranium Industry – A challenge for operators and the regulator

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Overview

- Introduction - uranium in Australia
- The protection of uranium - Australia's national interests
- Australian regulatory framework - ASNO
- Australian uranium industry - threats and vulnerabilities
- Scalable threat model and scalable standardised protective security measures
- Lessons learned
- Summary

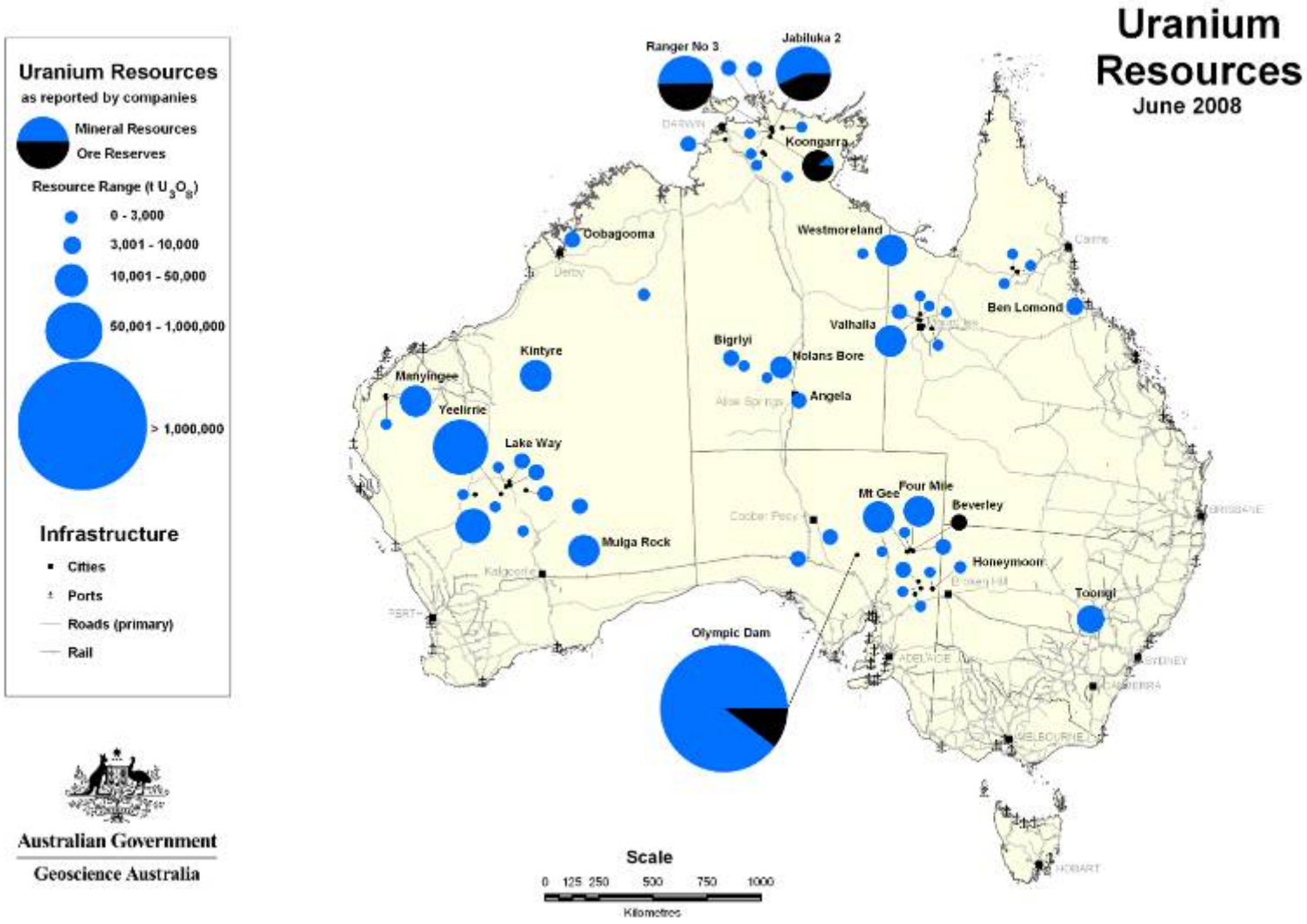
Uranium in Australia

- Worlds largest uranium resources – holds **38%** or the world's reasonably assured uranium resources recoverable at less than US$80/kg

- **7 of the 20 largest uranium** deposits are in Australia — Olympic Dam, the world's largest deposit (SA), Jabiluka & Ranger (NT), Yeelirrie (WA), Valhalla (Queensland), Kintyre (WA) and Beverley/Four Mile (SA)

- During 2008 Australia **exported approx 10,000** tonnes of UOC and valued at AUD $749 million.

URANIUM MINE LOCATIONS



URANIUM MINE - RANGER

URANIUM MINE – OLYMPIC DAM

URANIUM MINES: IN-SITU

BEVERLEY

HONEYMOON

Protection of Uranium – Australian National Interest

- Australia views uranium as more than a tradable commodity; it is also a **strategic commodity**
- Australia, in deciding appropriate levels of protection applied to uranium mines and UOC consider its **national interest** best served by applying **effective controls**
- Australia interprets "effective controls" as requiring adequate material accountancy and physical protection measures applied to UOC and at the mines

Uranium Mines –
Safeguards Reporting Obligations

INFCIRC/153

- **Para 33 – not required to report material in mining or ore processing activities**
- **Para 34(a) – required to report quantity, composition and destination of uranium ore concentrate exports**

INFCIRC/540

- **Art. 2.a(v) – report locations, operational status, estimated annual production capacity and current annual production of mines**
- **Art. 4.a(i) – provide Complementary Access**
  - **6 CAs to Australian mines**

Protection of Uranium – International Obligations

- CPPNM doesn't strictly apply to UOC at mines apart from requirement for protection "in accordance with prudent management practice"

- Art 1 of Australia's NPT safeguards agreement requires Australia to ensure that no nuclear material under its jurisdiction be diverted from permitted uses – that is, application of "effective controls"

- AP provides for complimentary access to mines

COMPLEMENTARY ACCESS AT OLYMPIC DAM

Australian regulatory framework – Australian Safeguards and Non-Proliferation Office (ASNO)

- National authority responsible for the administration of the *Nuclear Non-Proliferation (Safeguards) Act*, including permits for possession and transport of nuclear material – safeguards and physical protection
  - DG ASNO responsible to Minister for Foreign Affairs

- ASNO's mandate covers nuclear materials (U, Th, Pu), not general radiological materials.

Australian regulatory framework – Mines permit conditions

- **Physical protection requirements set in permits issued individually to uranium miners rather than fixed in regulation**
  - **Permit conditions balance performance-based and prescriptive requirements**

- **Permits require the formation of a security plan**
  - **describes the steps taken to achieve the basic physical protection objectives**
  - **protection against theft and sabotage**
  - **location and recovery of missing material**

Australian uranium industry – threats and vulnerabilities

- **Risk of theft from uranium mines may be relatively low, it can not be discounted entirely**
  - **adverse consequences for the theft of any quantity of UOC from a uranium mine, or in shipment**

- **Threat of sabotage**
  - **e.g. highly flammable solvents in the process cycle**
  - **UOC in transport**

Scalable threat model – risk based approach

- **ASNO adopts a qualitative risk management standard used by Australian Government agencies for all security risk management**

RISK		CONSEQUENCE						
		Negligible	Insignificant	Minor	Moderate	Major	Extreme	Catastrophic
LIKELIHOOD	Certain	Medium	Medium	High	High	V High	V High	Extreme
	V High	Low	Medium	Medium	High	High	V High	V High
	High	Low	Low	Medium	Medium	High	High	V High
	Medium	V Low	Low	Low	Medium	Medium	High	High
	Low	V Low	V Low	Low	Low	Medium	Medium	High
	V Low	Neg	V Low	V Low	Low	Low	Medium	Medium
	Negligible	Neg	Neg	V Low	V Low	Low	Low	Medium

Scalable threat model – assessing the threats and risks

- In order that the protection of UOC remains relevant it must be measured against the current threat for a given period
- A system of scalability must be devised to allow for treatment of rising threats and their associated risks
  - Measures must be capable of being implemented rapidly in response to elevated security risks
- Scalable measures are usually procedural
  - E.g. more patrols, increased access control, increased security personnel
  - Difficult to increase physical and technical measures at short notice

Scalable threat model – standardised protective security measures

- The UOC scalable threat model comprises four security alert levels and corresponding protective security levels
  - **LOW** provides base line security measures under normal operation conditions
  - **MEDIUM** introduced when attack is assessed as feasible and could well occur and able to be sustained for extended periods
  - **HIGH** introduced when attack is assessed as likely and able to be sustained for periods up to several months
  - **EXTREME** introduced when attack is assessed as imminent or occurring and be able to be sustained for several weeks

LESSONS LEARNED

- Beneficial to arrive at adequate security standards though a consultative rather than a prescriptive process
- Setting standards in permits provides necessary flexibility to set tailored security requirements and be responsiveness to legislative and policy changes
  - Performance-based approaches accommodates changes in miners operational requirements
- Constructive dialogue
- Regular inspections

SUMMARY

- **Australia considers it necessary to ensure adequate physical protection measures are applied to the uranium mining operations and UOC**

- **In setting the physical protection requirements for the miners and others, ASNO established a risk based scalable threat/security model**

  - **allows for advance plans and procedures to be implemented at very short notice to mitigate against elevated security risk**

- **ASNO would be pleased to provide additional information to those interested in Australia's experiences.**