

**‘The UK Nuclear Renaissance’**  
ONR Delivering Innovative & Enabling Regulation  
in the Global Nuclear Environment

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Chief Nuclear Inspector



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**The UK nuclear renaissance in new nuclear build including civil reactors and defence**

- >£60bn on new reactors within the next 15 years.
- >£40bn on Dreadnaught project and maintaining the Continuous At Sea Deterrence.
- Further GDA and potential for Small Modular Reactors (SMR)

**World Class Regulation**

- Innovation – Technology neutral regulatory approach which fosters innovation in areas such as new reactor design, SMR, and decommissioning.
- Supply chain – Areva - Le Creusot – need to focus on supply chain and reinforce regulatory expectations within this area.
- Our people – need to address capability thinning through further development of core capability to ensure that we are resourced to address future demand.
- Outcome focussed safety and security regulation including development of Security Assessment Principles.
- Enabling Regulation - Through Life Safety Review



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**Outcome focused Nuclear Security Regulation**

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**Enabling Regulation - Through-life nuclear safety review and the timely implementation of reasonably practicable improvements.**

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**USNRC 29th Annual Regulatory Information Conference**

**Nuclear Security Regulation**

**Where are we now, where are we going and why?**

**Move from:**


- Prescription
- Separate safety & security
- Assertion
- Ensure (Do/Check)
- Done to ..

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**Move to:**

- Outcome focused
- Coherent & aligned safety & security
- Evidence
- Assure (Validate/Regulate)
- Owned by ...

*The goal or end state will be a regulatory framework which enables and supports industry-ownership of a comprehensive nuclear security approach.*




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**What are the Security Assessment Principles?**

- Security Assessment Principles introduce outcome focused and enabling security regulation
- A 3 year project to change the approach to regulation and culture of the UK civil nuclear security sector.
- The Security Assessment Principles provide guidance to inspectors for the assessment of security plans submitted by duty holders prior to assessment and approval.
- Aligned with International Standards including IAEA Convention and Security Fundamentals
- Based on the well established ONR Safety Assessment Principles




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**The Energy Act 2013**

- (Sect 70 – Nuclear Security Purposes)

**The Nuclear Industry Security Regulations 2003**

- Establishes Security Regulations and Offences
- Nuclear Premises (Regulation 4)
- Security of Transport (Regulation 14)
- Security of SNI (Regulation 22)


**Security Assessment Principles (SyAPs)**


Security Principles and Guidance against which dutyholders security arrangements are assessed.

- Secure by design
- Threat
- Graded approach
- Defence in depth
- Security categorisation & classification

**Requires**

**Security Plans Assessed and Approved by ONR**






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Framework & Fundamental Security Principles (FSyPs)			
<b>Strategic Enablers</b> - Objectives focused on creation of the right conditions to support high reliability, disciplined operations.		<b>Disciplined Operations</b> - Objectives focused on the implementation and maintenance of nuclear security.	
FSyP I	Leadership and Management for Security	FSyP VI	Physical Protection Systems
FSyP II	Organisational Culture	FSyP VII	Cyber Security & Information Assurance
FSyP III	Competence Management	FSyP VIII	Workforce Trustworthiness
FSyP IV	Nuclear Supply Chain Management	FSyP IX	Policing & Guarding
FSyP V	Reliability, Resilience and Sustainability	FSyP X	Emergency Preparedness and Response Arrangements
<ul style="list-style-type: none"> <li>FSyPs are not SNI and will be made available to the public.</li> <li>SyDPs are not SNI and will be made available to the public.</li> </ul>		<ul style="list-style-type: none"> <li>FSyPs are not SNI and will be made available to the public.</li> <li>Limited aspects of SyDPs supporting information are SNI and are contained within the OFFICIAL SENSITIVE Annexes</li> </ul>	

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	IAEA Convention (CPPNM) Fundamental Principles	UK Regulatory Framework Security Assessment Principles
Principle A	Responsibility of the State	The Energy Act 2013 & NISR 2003
Principle B	Responsibility during International Transport	NISR & SyAP FSyP 1,2,3,5,6,7,8,9,10
Principle C	Legislative and Regulatory Framework	The Energy Act 2013 & NISR 2003
Principle D	Competent Authority	The Energy Act 2013
Principle E	Responsibility of Licence Holders	SyAP FSyP 1 - 10
Principle F	Security Culture	SyAP FSyP 1,2,8
Principle G	Threat	SyAP FSyP 4,6,7,8,9,10
Principle H	Graded Approach	SyAP FSyP 6,7,8,9,10
Principle I	Defence in Depth	SyAP FSyP 1,2,4,6,7,8,9,10
Principle J	Quality Assurance	SyAP FSyP 1,3,4,5,6,7
Principle K	Contingency Plans	SyAP FSyP 1,5,6,7,10
Principle L	Confidentiality	NISR & SyAP FSyP 1,2,3,7,8

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**Nuclear Site Security Plan Goals**

- Security Arrangements 'owned' by dutyholder
- Risk described in terms of categorisation for theft, sabotage and compromise of Sensitive Nuclear Information
- Demonstrates the physical and cyber protection systems achieve the required security outcome
- Sets expectations and guidance to address identified security outcome shortfalls

**Should outcome focused nuclear security regulation be the Global Standard? – What is stopping us?**

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## Enabling Regulation

### Through Life Safety Review & Timely Implementation of Reasonably Practicable Improvements

'A UK, European and International Approach'

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### Through Life Safety Review Timely Implementation of Reasonably Practicable Improvements

#### Some Nuclear Safety Challenges Facing Operators & Regulators

- Safety requirements for NPP's are being updated based on the operating experience, safety research and advances in science and technology
- New Reactors are designed to meet higher levels of safety than existing ones
- In some cases it will be reasonably practicable to enhance safety to reach a higher safety level but sometimes further enhancement towards a benchmark is not reasonably practicable
- The need for improvements can occur anytime between PSR's and significant issues and need to be identified and addressed without delay
- There will remain a difference between the safety levels of the oldest and newest reactors

How do we regulate the wide range of designs, innovation and advances in technology through the life cycle of NPP's to ensure high standards of nuclear safety are maintained?

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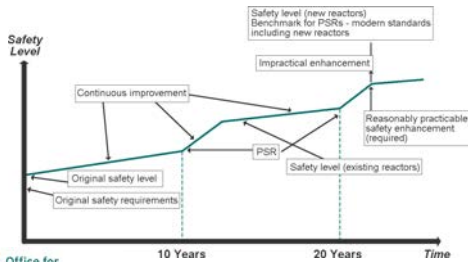
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### Through Life Safety Review Timely Implementation of Reasonably Practicable Improvements

*The Concept of Continuous Improvement & Through Life NPP Safety*



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Through Life Safety Review  
Timely Implementation of Reasonably Practicable Improvements

**Our overall approach and key principles for NPPs and other operational facilities**

- PSR processes (10 years) and in some cases Long Term Operation reviews are used to identify potential safety improvement through a culture of continuous improvement.
- Potential improvements identified by comparison against current national/international regulations and standards.
- A proportionate approach is adopted when deciding whether a safety improvement is reasonably practicable.
- Appropriate to implement "second best" improvements if they can be implemented more quickly than a full solution thereby providing an overall reduction in risk when the remaining plant life is taken into account.



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Through Life Safety Review  
Timely Implementation of Reasonably Practicable Improvements

- Importance of engineering judgement and relevant good practice in deciding what is reasonably practicable and that numerical risk based inputs are used in support of those judgements rather than prime inputs in their own right.
- What is being sought is "equivalence in safety outcomes" rather than adoption of exactly the same measures at all NPPs. Each NPP design needs to be treated on a "case by case" basis to make sure its individual circumstances were properly taken into account.



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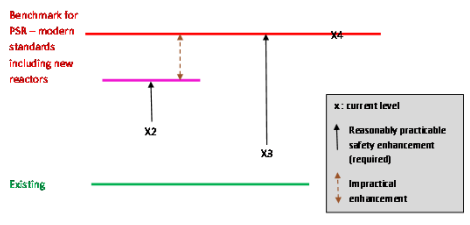
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Through Life Safety Review  
Timely Implementation of Reasonably Practicable Improvements

The conceptual model



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**A Framework for Implementation**

- ✓ Defence in Depth
- ✓ Probabilistic Safety Analysis
- ✓ Equivalence of outcomes and proportionality
- ✓ Regulatory Decision making
- ✓ Timely Implementation
- ✓ Role of Cost

**Should Through Life Safety Review and Continuous Improvement be the Global standard? – What is stopping us?**



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**Should outcome focused nuclear security regulation be the Global Standard?**

**Should Through Life Safety Review and Continuous Improvement be the Global standard?**

**What is stopping us?**

**‘THANK YOU’**



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