Agenda for the Workshop on the Security of Small Modular Reactors

OTTAWA, CANADA | 20 - 21 NOVEMBER 2019

KEY OBJECTIVES

The purpose of this workshop is to review and discuss all security matters related to the design, commissioning and operation of small modular reactors (SMRs). The overall objective is to identify solutions and good practices. Topics to be addressed include:

- **SMR technologies and their impact on security**
- **The impact of SMRs on the regulatory framework, including challenges, opportunities and possible solutions**
- **Effective security by design: Interfaces among nuclear safety, safeguards and security**
- **Cybersecurity challenges**
- **Security issues in the supply chain and fuel manufacturing facilities**
- **Successful engagement with stakeholders on SMR security**

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DAY 01 WEDNESDAY 20TH NOVEMBER 2019

08:30 – 09:00 **Registration / Coffee & Tea**

OPENING SESSION

09:00 - 09:30 **Welcome remarks and objectives of the workshop**

- The global context for SMRs, Canadian perspective. Challenges and opportunities for the security of SMRs. Opening remarks from:
  - Kathleen Heppell-Masys, Director General Security and Safeguards, CNSC (Canada)
  - Rumina Velshi, CEO and President of CNSC (Canada)
  - Fred Dermarkar, CEO of COG (Canada)
- Dr Roger Howsley, WINS Executive Director (International)

09:30 - 10:00 **Participant introductions and expectations** (Facilitator)

10:00 - 10:30 **Keynote presentation** on *Security Considerations for Small Modular Reactors* by Anita Nilsson from AN & Associates (Sweden)

10:30 - 10:45 **Coffee break**

SESSION 01 SMR TECHNOLOGIES AND THEIR IMPACT ON SECURITY

Key issues:

- What SMR technologies are currently under development (LWR, MSR, FNR, etc)?
- How does the choice of technology impact security needs? Why? What other key security considerations are related to the deployment of SMRs?
- To what extent do these security needs differ from the ones for existing nuclear facilities?

10:45 - 11:15 **Overview** of *the Status of Different SMR Technologies, Changing Technology and Security* by Frank Saunders from Nuclear Innovation Institute (Canada)

11:15 - 11:45 **Presentation** on *Threats and Security Requirements* by Christopher Lamb SNL (USA)

11:45 - 12:15 **Table discussion** on key security concerns

- What are the key security concerns about deploying SMRs? (cost, proliferation, cyberattacks, other vulnerabilities, transport?)

12:15 - 13:15 **Lunch**

SESSION 2 IMPACT OF SMRs ON THE REGULATORY FRAMEWORK

Key issues:

- What is the expected impact of SMRs on the existing regulatory framework?
  - What is the current status of regulations for SMRs?
  - What considerations are being given to new regulations?
  - Are regulations likely to be prescriptive- or outcome-focused?
- How would the size of Emergency Planning Zones (EPZ) be affected by SMRs? Would there be a new assessment of Loss of Large Areas (LOLA) and Integrated Response Planning (IRP)?

13:15 - 13:45 **Presentation** on *Security Regulations* by Duncan Barley from ONR (UK)

13:45 - 14:15 **Presentation** on *Addressing the Licensing Process* by Brian Holian from NRC (USA)

14:15 - 15:15 **Panel discussion**

Remarks from:

- Miguel Santini from IAEA (International) – An international perspective
- Daniel Côté and David Dickey from OPG (Canada) – An operator perspective
  - How to ensure inclusive consideration of SMRs to inform any required modifications to nuclear security regulations
  - How to effectively enhance nuclear security regulations

15:15 - 15:30 **Coffee break**

15:30 - 16:00 **Table discussion** to consolidate the next steps for the regulator

SESSION 3 IMPLEMENTING SECURITY BY DESIGN MANAGING INTERFACES WITH SAFEGUARDS AND SAFETY

Key issues:

- To what extent can the design basis threat (DBT) be taken into account in the design process? How do we anticipate and incorporate long-term threats?
- How can we implement security by design during the siting, design, construction, operation and decommissioning of SMRs?
- To what extent can safety methodologies be used to calculate and justify security arrangements? How can we optimise security, safety and safeguards synergies?

16:00 - 16:30 **Presentation** on *Security by Design* by Adrian Prior from Frazer-Nash Consultancy (UK)

16:30 - 17:00 **Presentation** on *Simulation and Analysis of the Security Systems* by Neil Todreas from MIT (USA)

17:00 - 17:30 **Table discussion** to identify good practices for developers and potential operators to address security in the early stages of the design

17:30 - **Workshop cocktail**

DAY 02 THURSDAY 21ST NOVEMBER 2019

09:00 - 09:15 **Key findings** of Day 1 and objectives of Day 2 (Facilitator)

SESSION 03 CONTINUED: IMPLEMENTING SECURITY BY DESIGN MANAGING INTERFACES WITH SAFEGUARDS AND SAFETY

09:15 - 09:45 **Presentation** on *Security Interfaces with Safeguards and Safety* by Dr. Bryan van de Ende from CNL (Canada)

09:45 - 10:15 **Table discussion** to identify how to effectively manage security, safety and safeguard interfaces to reduce the cost of nuclear security

10:15 - 10:30 **Coffee break**

10:30 - 11:00 **Case study** on *Assessing Security Effectiveness, a Technology-Neutral Methodology* by Michael Sleigh from Westinghouse Electric Company (USA)

11:00 - 11:30 **Panel discussion** on *Reducing Security Costs* (Developers)

- How will SMRs reduce security costs compared to traditional NPPs?
- What is the expected cost of security?
- What needs to be achieved in terms of security expenditures (capital and operating budgets) to make SMRs cost competitive?

SESSION 04 INTEGRATED APPROACH TO CYBERSECURITY

Key issues:

- What potential threats do cyberattacks pose to SMRs?
- Are there cybersecurity challenges from an insider threat perspective?
- Are cyberattacks any more significant or of greater concern for SMRs than for conventional LWRs?
- How do we mitigate against cyberattacks?

11:30 - 12:00 **Presentation** on *Implementing an Integrated Approach to Cybersecurity* by David Trask from CNL (Canada)

12:00 - 12:30 **Presentation** on *Cybersecurity of SMRs* by Kevin Lei from CNSC (Canada)

12:30 - 13:00 **Table discussion**

- What are the specific risks related to IT/OT at SMR facilities?
- What are the cybersecurity challenges from an insider threat perspective?
- What needs to be put in place to mitigate cybersecurity threats?

13:00 - 14:00 **Lunch**

SESSION 5 IMPACT OF SMRs ON THE SECURITY OF THE FUEL CYCLE

Key issues:

- What are expected changes in fuel cycle processes and practices? Do they have any security implications?
- What transport needs are foreseen? Does the transport of SMRs present any new security challenges?
- Could international transport be an issue? Should new international transport agreements be created between States when transporting SMRs?

14:00 - 14:45 **Presentation** on *Key Relevant Impacts of the SMR in the Fuel Cycle* by Dr. Jeremy Pencer from CNL (Canada)

14:45 - 15:15 **Table discussion** to review security implications of new processes and practices associated with the operation of SMRs

15:15 - 15:30 **Coffee break**

CONCLUSION THE WAY FORWARD

15:30 - 16:15 **Group discussion**

16:15 - 16:40 **Reviewing key findings of the workshop and way forward**

- What are the key lessons that have arisen from this workshop? What are the main takeaways for vendors, operators and regulators?
- What questions and challenges remain unaddressed?
- How can we ensure a follow-up to the key findings?

16:40 - 17:00 **Evaluation of the workshop and closing remarks**

END OF WORKSHOP