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Bob Anderson

Nuclear Cybersecurity Specialist

Cybersecurity for Advanced Reactors and Cyber Informed Engineering

Advanced Reactors & Cybersecurity

- Extensive use of digital technology
 - New I&C smart sensors being developed w/diagnostics built-in, new protocols
 - Wireless technology increase
 - FPGAs
 - More frequent upgrades
 - Smart grid interactions with intermittent power (wind/solar)
- Digital twins
- More reliance on remote communications & autonomous operations, load following
 - AI/ML
 - Increased monitoring
- Supply chain – SMR/MR vendor and all sub-suppliers



How Will Regulators Address – AR Cybersecurity?

- Prescriptive vs performance-based guidance
- Harmonization of regulation for the international market
- Design Basis Threat updates
- Staffing qualifications – Competent Authorities and Operators



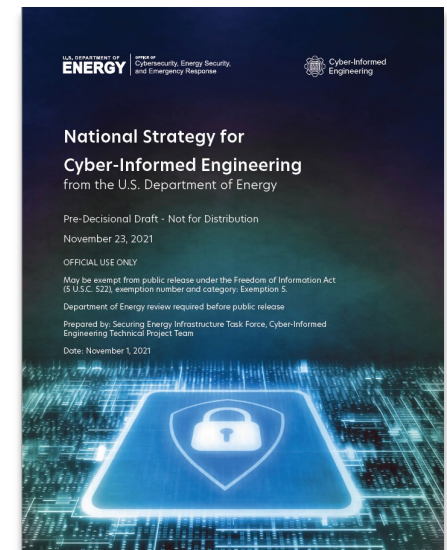
Cyber-Informed Engineering



- Cyber-by-design concept
- Cybersecurity as a foundational element of risk management for functions supported by digital technology
- Focused on engineers and technical support personnel
- Engineering approach or perspective, not an IT perspective
 - Opportunities to “engineer out” cyber risk, saving cost and potentially applying more effective cybersecurity approaches
 - Built into the design rather than bolted on later
- Entire systems engineering lifecycle
- Stimulate an engineering culture of security, similar to safety

DOE National Strategy – Cyber-Informed Engineering

- 2020 National Defense Authorization Act directed DOE to develop a DOE National Cyber-Informed Engineering Strategy
- Cybersecurity as a foundational element of **risk management** for functions aided by digital technology – throughout the entire system engineering lifecycle
- Five strategic pillars
 - Awareness
 - Education
 - Development
 - Current Infrastructure
 - Future (R&D) Energy Systems



Website: <https://inl.gov/cie>

For Further DOE CIE National Strategy Information

DOE POC:

Cherylene Caddy

Senior Advisor for Cybersecurity

DOE's Cybersecurity, Energy Security and Emergency
Response organization

Cherylene.Caddy@hq.doe.gov

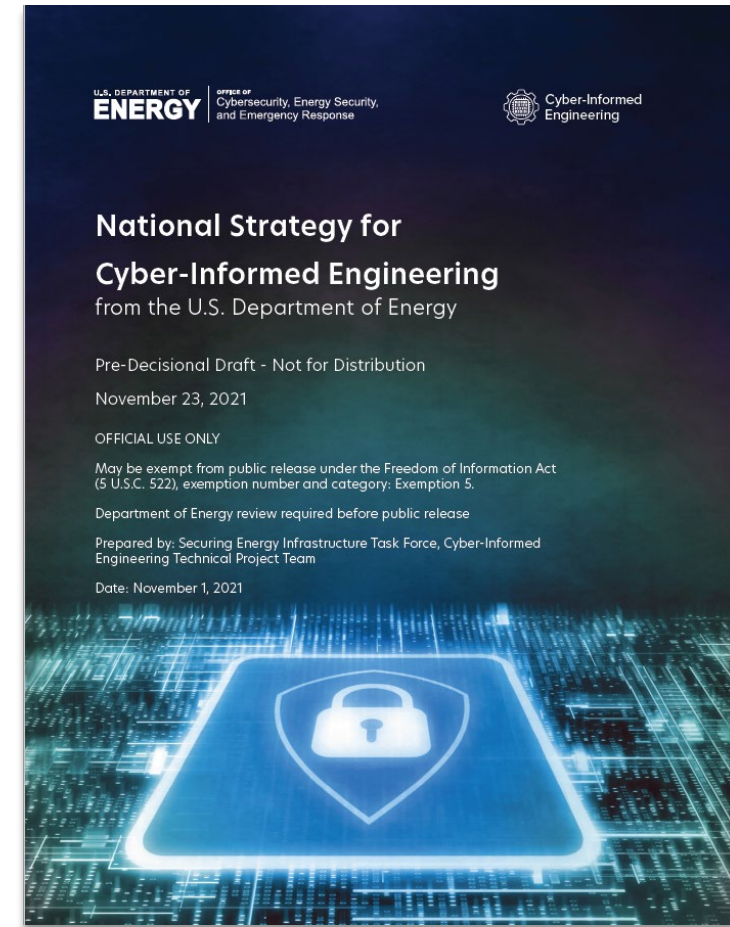
INL POC:

Bob Anderson

Nuclear Cybersecurity Specialist

Idaho National Laboratory

Robert.Anderson@inl.gov





Idaho National Laboratory