Knowledge Exchange on Licensing and Certification Testing Practices Workshop

Operator Licensing in the U.S

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U.S.NRC
United States Nuclear Regulatory Commission
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10 CFR Part 55 Power Reactor Operator Licensing & Proposed Part 53 Operator Licensing Approach

Disclaimer: the contents of this presentation do not necessarily indicate the Nuclear Regulatory Commission's views.

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Overview

- Background of Operator Licensing
- Current Regulations for Power Reactors
- Examination Process Overview
- Considerations Under NEIMA and Part 53
- Preliminary Approach under Part 53
- Additional Information

History and Legal Background

- The NRC has been licensing reactor operators since the 1950s.
- The Atomic Energy Act of 1954, as amended (AEA), requires the NRC to prescribe uniform operator licensing conditions.
- The Nuclear Waste Policy Act of 1982, as amended (NWPA), directs the NRC to establish regulations for the training and qualifications of nuclear power plant operators, supervisors, technicians and other operating personnel.

Part 55 Operator Licensing

- Operators are licensed at the Reactor Operator (RO) and Senior Reactor Operator (SRO) levels
- The examination process for power reactors does not vary in scope between facilities
- License exams are approved and administered by NRC staff; facilities may prepare exams
- NUREG-1021 provides exam *process* guidance
- Knowledge & Ability catalogs (derived from expert input) provide exam *content* guidance

NUREG-1021 Exams - Written

- Exams have two portions; written and operating
- Written exams include a 75 question RO portion
- SRO applicants also take an additional 25 question section that is specific to their license level (i.e., emphasizes administrative functions)
- Questions are multiple choice (4 options)
  - Technical and psychometric requirements
- Overall passing score is 80%; SROs applicants must score at least 70% on the SRO portion

NUREG-1021 Exams - Operating

- Operating tests are subdivided into walkthrough & simulator scenario portions
- The specific composition depends on the license level being sought (RO vs. SRO)
- Walkthroughs consist of 4-5 administrative and 10-11 systems Job Performance Measures
- Dynamic simulator tests include 1-3 scenarios
  - Simulator scenarios are administered to a 3-person crew (generally all applicants)

NEIMA and 10 CFR Part 53

- Under the Nuclear Energy Innovation and Modernization Act (NEIMA), the NRC staff have been engaged in efforts to establish a risk-informed, technology-inclusive regulatory framework for optional use by nuclear plant applicants
- NRC staff are currently developing preliminary, proposed rule language for 10 CFR Part 53, along with associated regulatory guidance documents (including for operator licensing)
- Preliminary, proposed rule language has been released incrementally for stakeholder feedback; Part 53, Subpart "F" covers areas associated with plant operations

Part 53: Human-System Integration

- An integrated approach to human-system interactions is taken
- Preliminary Part 53 requirements in areas of human factors engineering (HFE), staffing, and operator licensing are directly linked to design-specific safety functions and their fulfillment
- HFE is required where needed to support safety functions, versus being limited to a control room
- Operator staffing is required to the extent necessary to support design-specific needs for safety function fulfilment, versus relying upon a prescribed number of ROs and SROs
- The fundamental role of the licensed operator centers around the management and fulfilment of safety functions, manipulating facility controls, and protecting public health

Part 53: Operator Licensing Goals

- This workshop will help inform potential approaches to operator licensing examinations under Part 53
- Overall Part 53 operator licensing objectives include:
  - Compliance with applicable statutory requirements
  - Conformance with accepted testing standards
  - Facilitation of consistent and reliable licensing decisions
  - Efficient use of NRC and vendor/facility licensee resources
  - Providing reasonable assurance that operators will
    - Manage plant-specific safety functions
    - Protect public health from harmful radiation

Additional Information

- Preliminary, proposed rule language covering the areas of staffing, training, personnel qualifications, and human factors have been made publicly available for stakeholder engagement via the NRC's Agencywide Document Access and Management System (ADAMS) Accession No. ML22024A066
- A related white paper on "Risk-Informed and Performance-Based Human-System Considerations for Advanced Reactors" is available at ADAMS Accession No. ML21069A003
- ADAMS link: https://www.nrc.gov/reading-rm/adams.html
- Stakeholder meetings, other public meetings, and opportunities to comment are posted on the NRC's public website; see https://www.nrc.gov/pmns/mtg for meetings

Questions?

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