Industry Input to NRC's Smarter Program for Fuel Cycle Facilities

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Overview

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***Inspection*:** Industry Bases, Justification for Modifications to Inspection Manual Chapter 2600, Appendix B, Table 1 (submitted to NRC 6/24/19; public meeting held 6/27/19), e.g.,

- Revised Frequencies
- Revised Hours
- Integrated/Combined Inspection Procedures
- Credit for Good Performance

***Licensing*:** Industry Suggested Efficiency Improvements in Licensing Process, e.g.,

- Clear Bilateral Communication
- Need for Licensing Review Milestones
- Increased Use of Site Visits

INSPECTION PROGRAM

Inspection Program Principles

- Comprehensive NRC Oversight Program is Key Attribute of NRC's Principles of Good Regulation
- Risk and Performance-Based Insights Justify Efficiencies to Current Core Program
- Continued Use of Special or Reactive Inspections

Potential Relevant Reactor Oversight Enhancements Ongoing

Operating Experience

- ***Low Number**** of Violations, e.g., zero in Environmental Program
- ***Zero Escalated**** (Level III or above) Violations in Fire Protection; Material, Control & Accounting (MC&A); Radiation Protection (RP); Waste Management (WM); Transportation; Maintenance/Surveillance (M/S); and Permanent Plant Modifications (Mods)
- ***Comprehensive*** Corrective Action Programs (CAPs)
- ***Low Number**** of Reportable Safety Significant Issues & Decreasing
- ***Licensee Performance*** Reviews Show Improved Performance
- ***Routine Use*** of Benchmarking, Sharing of Operational Experience

* Based on Industry Review of Inspection Data for 2014-2018

Current Effective Licensee Programs

- Mature & NRC-Accepted Integrated Safety Analysis (ISA) Programs
  - Reduced the Risk Profile of Operations
  - Strong Defense in Depth
- Comprehensive CAP
- MC&A
- Emergency Preparedness (EP)

- Radiation Protection
- Criticality Safety
- Physical Security, INFOSEC, Control of Classified Info
- Plant Modifications
- Comprehensive and Formal Reporting, e.g., Incidents, Results
- Fire Protection
- Chemical Safety

Fleet Risk Profile

Low Risk Profile in Many Program or Functional Areas, e.g.,

- RP – Low and Decreasing Doses to Worker & Public; Effective ALARA Programs*

- MC&A – Low Strategic Significance for Category III Facilities' Material

- WM – Facilities Continue Reducing Production and Volume of Low-Level Radioactive Waste (LLW)

- Transportation – Nuclear Industry's High Safety Record on Thousands of Shipments, e.g., LLW, nuclear fuel, sources

NRR Staff Proposes to Retire ALARA IP and Reduce Frequency of RP IPs (71124) at Nuclear Power Plants Based on Performance and Risk

Deeper Dive on Industry Suggestions for Modifications to IMC 2600, Appendix B, Table 1 *(6/24/2019 submittal to NRC)*

Safety Operations

- *Combine* Plant Ops (IP 88020) & Maintenance/Surveillance (IP88025) & *Reduce* to 32 Hours Total to Reflect Integrated Licensee Programs

- *Delete* Annual Fire Protection (IP88055) & *Combine* with Triennial (IP88054) & *Reduce* to 64 Hours Total

- *Reduce* Frequency & Hours for Criticality Safety to 2/yr for Cat I, 1/yr for Cat III; 128 & 32 Hours, Respectively

- *Remove/Reduce* Overlaps: Sec 02.01(b)(3) references Criticality, Fire, & Radiation Safety Controls which overlap with IP88015 (Crit), IP88055 (Fire) and IP 88030 (Rad)

Safeguards

- **_MC&A_** - 1 Annual Inspection for Cat I, Cat III, and Enrichment Facilities with 96, 32 and 32 Hours, Respectively
  - Mature Programs and Historical Good Performance
- **_Physical Protection_** - IP 81700.02, .04, and .05 - 18 Hours, 32 Hours, and 64 Hours, Respectively – No Change to Frequency
  - Licensees Observe Experienced Inspectors' Ability to Complete Module in Fewer Hours than Current IP Dictates
- **_Fitness-for-Duty_** – IP 81700.08 Transferred to Resident Inspector Program
- **_Classified_** Material Control and INFOSEC – IP 81820 Reduce Hours to Range of 48-96 Hours for Enrichment Facilities
  - Licensees Observe Experienced Inspectors Ability to Complete Module in Fewer Hours than Current IP Dictates

Radiological Controls

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Several Functional Areas "Ripe" for Efficiencies and Consolidation

- Due to Very Low Risk Profiles; Ever Improving Performance, Low Doses/Discharges, Significantly Below Regulatory Limits
- NRC Should Benchmark with Department of Transportation

Combine RP, EP, WM and Transportation for Combined Biennial Inspection of 32 Hours:

- RP – Very Low Risk; Low to Nonexistent Emissions; Oversight via Routine Required Reports
- EP – Stable Programs; Very Low Releases (1-3% of regulatory limits); Oversight via Routine Required Reports
- WM – Licensees Observe IP Successfully Performed in 10 hours or Less Due to Decreases in Onsite Waste Generation/Storage and Shipment
- Transportation – Licensees Observe IP Successfully Performed in 10 Hours or Less; IP 86740.04 Estimates Onsite Hours "can range from less than 1 hour at materials licensee facilities….to more than 8 hours at reactors…."

Facility Support

- ***Combine*** M/S (IP 88025) with Operational Safety (IP 88020)
- ***Combine*** Annual EP (IP 88050) and Biennial EP (IP 88051) into 1 Biennial Inspection for a Total of 48 Hours
  - Mature & Stable Programs; Low Number of Cited Violations
- ***Delete*** Plant Mods Annual (IP 88070) if Triennial (IP 88072) is Performed; After Complete Round of (IP 88072), determine if IP 88070 Needed or Some Combination of Two is Appropriate
- ***Eliminate*** Overlaps/Redundancies:
  - Section 02.04 Review of Management Measures (IP 88020) & Sections 02.01(b)(4) and 02.03(b)(1) both require Management Measures Verification

Facility Support   (continued)

Eliminate Overlaps/Redundancies (continued):

- Section 03.04 (d) - Adequate Periodic Testing (IP 88025) Section 02.02(b) Requires Exam of Surveillance Testing
- Section 03.04(f) - Determine Identification of Issues and Entry into CAP Timely and Adequate – Most Licensees Have No License Requirement, Regulatory Basis Not Clear
- Section 03.06 - Review of License Amendments and SERs, Verify 11 Listed Design Criteria Addressed; If Amendment Has Been Granted, These Verifications Have Been Done

Credit to Smarter Core for Good Performance

Concept for Credit to Smarter Core Program

- Use Existing LPR Process to Assess & Evaluate Each Licensee in its Normal Cycle:

    - Determine Whether "Credit" Can Be Applied to Reduce Frequency and/or Duration of Smarter Core Program

- During Each LPR Review, Staff Collects Performance Data to Include But Not Limited to:

    - Numbers of Violations, Reportable Events, and Both Self-Identified and Self-Revealing Safety or Security Events

- Review to Include Inspection Results and Consider NRC Observations as Recorded

Concept for Credit to Smarter Core Program (cont)

- If Available, Results of Self-Assessments and/or Independent Assessments Would be Considered

- Regardless of Whether a CAP is NRC-Approved or Not, Inspectors May Consider CAP Strengths as Input to LPR

- External Stakeholder Input Should be Considered

Examples of Criteria* for Determining Credit

- No Escalated Violations (i.e., $\geq$ SL III)
- Minor, Non-Cited or SL IV Violations Would Not Negatively Impact Consideration of Credit if Licensee has Comprehensive CAP
- Reportable Events that Do Not Result in Significant Violations Would Not Negatively Impact Consideration of Credit
- Low Doses, Low Number of Contamination, WM or Transportation Events

- ISAs that Rely on Defense-in-Depth (e.g., $\geq$ 2 IROFS) in a Given Sequence
- Robust Management Measures Result in Available and Effective IROFS
- Effective Self or Independent Assessments Would be Additional Bases for Consideration of Credit
- Continued or Repetitive Periods of Performance under LPR Resulting in an "Area not Needing Improvement"

*Single, Stand-Alone Criteria

Suggested Credits to Smarter Core Program

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- Frequency of IP Would Be Reduced by 50% if:
    - 2 or More Sequential LPRs With "No Improvement Needed"
    - Zero Significant Violations or Reportable Events in an Area
- Credits in a Given Area Can Be Waived (i.e., Not Granted) if There is a Formally NRC-Identified Generic Safety or Security Concern Across the Industry
- Credits Are Not Cumulative, i.e., Credits Must Be "Earned" Each LPR Period
- Special and Reactive Inspections Are Independent of Any Granted Credits and Can Be Basis of Revocation of Any Credit
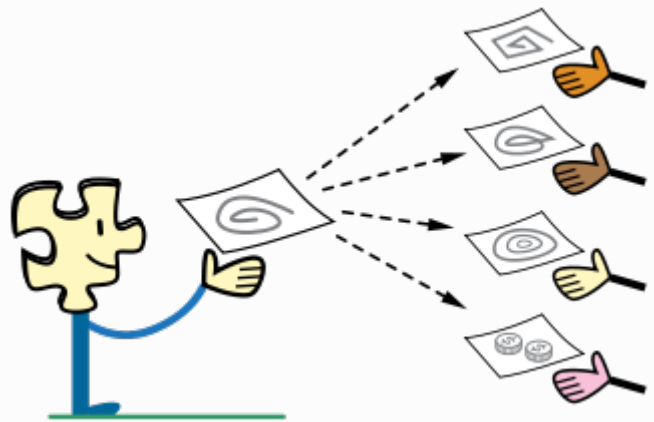
LICENSING PROGRAM

Licensing Program Principles

- Comprehensive NRC Licensing Program is Key Attribute of NRC's Principles of Good Regulation
- Risk and Performance-Based Insights Justify Efficiencies to Current Practices
- Current Licensing Process Works But Could be Improved by Additional, Timely and Effective Communication Including Expanded Use of Site Visits for Major Amendment, Renewal Reviews and Applications
- Current Effective Licensee Programs Provide Transparent Basis for More Efficient and Effective Licensing Reviews

Suggested Licensing Program Improvements

- Increased Use of Routine Status Calls Between NRC and Licensee, (e.g., Current NRR biweekly calls on Topical Reports under NRC review)
- Increased Use of Site Visits for More Complex Licensing Actions, Prior to and/or After Submittal, (e.g., DFP)
- Establish Meaningful Licensing Milestones for Most Submittals to Include All NRC Offices and Centers of Excellence Involved, (e.g., not needed for actions requiring $\leq$ 45 days)

- Combine Acceptance and Approval Letters for "Simple" Actions, (e.g., Approval of Surety Bonds)
- Consider Calls and Issuance of Draft RAIs & Responses to Ensure Clear Communication and Reduce Likelihood of Multiple Rounds
- Positive Experiences with NMSS/DSFM
- Public Release of NRC Licensing Handbook (redacted?)

Suggested Licensing Program Improvements (cont)

NRC Review of Renewal Applications Limited to Program Changes Since Last Renewal:

- Current Approved License Provides Basis for Acceptance Review and Limited NRC Review
- Licensee to Clearly Identify Program Changes Since Last Renewal in Application
- No Review of a Specific Program Area if:
    - No Licensee Changes to a Stable Program Area, e.g., RP, EP, WM and Transportation
    - No New or Revised NRC Relevant Requirements

CY2020: Holistic Review With Industry Input on Recent Renewals to Identify Lessons-Learned and Future Efficiency Gains

Conclusions

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- Licensees Agree that Comprehensive Oversight is Required and Desirable and More Efficient Licensing is Needed and Desirable

- Licensees Remain Committed to Continuous Improvement Including Comprehensive and Effective CAPs, Benchmarking, Sharing of OE, Lessons-Learned, etc.

- Significant Opportunities for NRC Program Efficiencies Exist While Continuing to Assure Adequate Protection

Thank You!

Industry Suggested Smarter Core

Submitted to NRC 6/24/2019

Function/ Program Areas	Procedure or Procedure Suite	Category I Fuel Facility		Category III Fuel Fabrication Facility		Uranium Conversion Facility		Gas Centrifuge Facility		Laser Enrichment Facility	
		Inspection Frequency	Estimated Resources per IP (hrs)	Inspection Frequency	Estimated Resources per IP (hrs)	Inspection Frequency	Estimated Resources per IP (hrs)	Inspection Frequency	Estimated Resources per IP (hrs)	Inspection Frequency	Estimated Resources per IP (hrs)
SAFETY OPERATIONS											
Plant Operations +Maintenance Surveillance	88020 (OPR) + 88025(MS)	-	-	Annual (~~2 per year~~)	~~60~~ Tot. 32	Annual (~~2 per year~~)	~~60~~ Tot. 32	Annual (~~2 per year~~)	~~60~~ Tot. 32	-	-
	88135+ (Resident Inspection Program)	Annual	797	-	-	-	-	-	-	-	-
Criticality Safety	88015	Annual (~~3~~ 2 per year)	~~192~~ 128	Annual (~~2 per year~~)	~~64~~ 32	-	-	Annual (~~2 per year~~)	~~64~~ 32	-	-
Fire Protection	~~88055 (FPA)~~	-	-	~~Annual unless 88054 is performed~~	~~32~~ 0	~~Annual unless 88054 is performed~~	~~32~~ 0	~~Annual unless 88054 is performed~~	~~32~~ 0	-	-
	88054 (FPT) +88055	Triennial*	~~90~~ 64	Triennial*	~~90~~ 64	Triennial*	~~90~~ 64	Triennial*	~~90~~ 64	-	-

+Resident inspection activities are conducted over the course of the year at the frequency and in the manner described in the relevant inspection procedure. The hours listed are for planning purposes and may vary by ±10%. If variance is more than 10%, the difference must be explained and the hours reviewed.*Note: The triennial inspection (88054) references portions of 88055, but all inspection time will be charged to 88054.

Function/ Program Areas	Procedure or Procedure Suite	Category I Fuel Facility		Category III Fuel Fabrication Facility		Uranium Conversion Facility		Gas Centrifuge Facility		Laser Enrichment Facility	
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SAFEGUARDS											
MC&A	Procedures as in IMC 2683	~~2~~ 1	~~152 106~~ 96	Annual	~~54 72~~ 32	-	-	Annual	~~62 84~~ 32	-	-
Physical Protection	HEU Security Measures (PS1)										
	81700.01	Biennial	18	-	-	-	-	-	-	-	-
	81700.02	Annual	~~27~~18	-	-	-	-	-	-	-	-
	81700.04	Biennial	~~40~~ 32	-	-	-	-	-	-	-	-
	81700.05	Triennial	~~70~~ 64	-	-	-	-	-	-	-	-
	81700.06	Triennial	20	-	-	-	-	-	-	-	-
	81700.07	Biennial	25	-	-	-	-	-	-	-	-
	81700.08 Transfer to Resident Inspection Program	~~Triennial~~	~~24~~	-	-	-		-		-	
	81700.10	Triennial	6	-	-	-	-	-	-	-	-
	81700.11	Annual	8	-	-	-	-	-	-	-	-
	LEU Security Measures (PS2)										
	81431	-	-	Triennial	14	Triennial	22	Triennial	14	-	-
	81810	-	-	Triennial	2	Triennial	2	Triennial	2	-	-
	Transportation Security (PS3)										
	81335	Triennial	4	-	-	-	-	-	-	-	-
	81340	Triennial	4	Triennial	8	-	-	Triennial	8	-	-
	Other										
	96001	Triennial	360	-	-	-	-	-	-	-	-
Classified Material and INFOSEC	81820 (INFOSEC)	Annual	2	-	-	-	-	Annual	~~48 160~~ 48-96	Annual	104-120
	81815 (Access Authorization)	-	-	-	-	-	-	Annual	8-16	Annual	16

Function/Program Areas	Procedure or Procedure Suite	Category I Fuel Facility		Category III Fuel Fabrication Facility		Uranium Conversion Facility		Gas Centrifuge Facility		Laser Enrichment Facility	
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RADIOLOGICAL CONTROLS – 4 units; 1 biennial inspection; 32 hrs. total - focused on Program Deltas											
Radiation Protection	88030 (RP)	Biennial with annual subsections	64	Biennial with annual subsections	64	Biennial with annual subsections	64	Biennial with annual subsections	64	-	-
Environmental Protection	88045 (Effluent Control and Env.)	Biennial Annual	32 → 32	Biennial Annual	32 → 32	Biennial Annual	32 → 32	Biennial Annual	32 → 32	-	-
Waste Management	88035 (WM)	Biennial	32	Biennial	32	Biennial	32	Biennial	32	-	-
Transportation	86740 (T)	Biennial	32	Biennial	32	Biennial	32	Biennial	32	-	-
FACILITY SUPPORT		Tot. 32		Tot. 32		Tot. 32		Tot. 32			
*1 Maintenance/ Surveillance	88025 (MS)	-	-	Annual	30	Annual	30	Annual	30	-	-
*2 Emergency Preparedness	88050 (EP)	Annual	32	Annual	32	Annual	32	Annual	32	-	-
	+88051 (Exercise Observation)	Biennial	48	Biennial	48	Biennial	48	Biennial	48	-	-
Plant Modifications (Annual)	88070	Annual unless 88072 is performed	32*	Annual unless 88072 is performed	32*	Annual unless 88072 is performed	32*	Annual unless 88072 is performed	32*	-	-
*3 Plant Modifications (Triennial)	88072	Triennial	96*	Triennial	96*	Triennial	96*	Triennial	96*		

*Note: The actual planned inspection hours will depend on information developed from routine inspections, changes to the ISA Summary, discussions with Project Inspectors, Project Managers, and staff, etc.

*1 Combined with Plant Ops (pg. 1).

*2 NRC to work with each licensee on whether to conduct during same week.

*3 After the first round of 88072 inspections, NRC will determine whether or not to continue the '"deep dive" triennial reviews. Recommend removal after first round is completed.