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NUCLEAR ENERGY INSTITUTE

October 15, 2019

Ms. Andrea Kock, Director
Division of Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Industry Proposal 2 - Smarter Program for Fuel Cycle Facilities; Follow up to September 25, 2019 Public Meeting in Preparation for Subsequent Fall 2019 Meetings

Project Number: 689

Dear Ms. Kock:

The Nuclear Energy Institute (NEI)[1], on behalf of its members, submits a new Smarter Inspection Program proposal for the staff's consideration. This proposal is a hybrid of earlier staff options and the industry Proposal 1 submitted in June 2019. *We offer industry Proposal 2 as an earnest attempt to converge the best elements of NRC and industry's collective proposals into a viable hybrid option that more explicitly reflects the current decreased risk profile of the fuel cycle facilities, enhances the safety focus, and results in increased efficiency for both the U.S. Nuclear Regulatory Commission (NRC) and industry.* There are four enclosures to this letter that provide the underpinnings and basis for the industry proposal, two examples of how licensees have used their Integrated Safety Analysis (ISA) to decrease the risk profile of the facilities, a mark-up of staff Option 2 to illustrate our hybrid approach in industry Proposal 2, and additional related programmatic issues that warrant resolution as part of this initiative. We trust that NRC management and staff will fully consider industry Proposal 2 and it will be the subject of a public meeting this fall.

As you are aware, NEI and industry representatives have been fully engaged in and supportive of the Smarter Program initiative since its inception in late 2018. In fact, it was industry that submitted the first written proposal for an enhanced program in June 2019. We appreciate the level of engagement and discussions during seven public meetings held between March–September of this year where we have individually and collectively identified program efficiencies and used risk information to propose potential modifications to both the inspection and licensing programs. That being said, the NRC staff has not taken full advantage of this opportunity to enhance the safety focus and efficiency of the oversight of fuel cycle facilities, in order to become a more modern, risk-informed regulator. We believe that the staff should more thoroughly recognize the safety benefit and efficiencies of industry's proffered modifications and provide specific feedback to industry on Proposal 2 such that both NRC and industry are supportive of any NRC senior management decision on the final enhanced program.

[1] The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

We continue to support industry Proposal 1 (submitted to NRC in June 2019) as a viable alternative to the current program in addition to industry Proposal 2 contained in this letter. Therefore, we consider there to be four current options on the table for full consideration by NRC (Staff Options 1 and 2, and industry Proposals 1 and 2). We also recognize that, as NRC managers stated during the September 25, 2019 meeting, implementation of any enhanced inspection program would *not* likely occur before either July 1, 2020 or January 1, 2021, so there is ample time for NRC management to make a more fully informed decision on inspection program enhancements.

2019 Public Meeting Timeline

- March 2019: "Smarter Programs" concept is introduced at the NRC's Regulatory Information Conference (RIC) panel

- April and May 2019: NRC public meetings held to discuss NRC draft working group charters for the Inspection and Licensing program. Enhancements, efficiencies, key milestones, and the timeline were discussed.

- June 2019: Industry submits the first proposal, i.e., a mark-up of NRC Inspection Manual Chapter 2600, Appendix B, Table 1 (Industry Proposal 1). The basis for our mark-up is the facilities' current individual risk profiles, industry review of 5 years of NRC inspection data, operational experience, existing comprehensive Corrective Action Programs, facility expert judgment, benchmarking, and other insights. A broad overview of industry Proposal 1 was discussed in a brief June 27, 2019 public teleconference.

- August 2019: NRC public meeting held where industry presented a more detailed basis for its Proposal 1. The staff also presented four new options (A, B, C, and D) for enhancing the inspection program. "Smarter licensing" was also discussed through a discussion of NRC's comment resolution table.

- September 12 and 25, 2019: NRC public meetings held to discuss two new staff options (1 and 2), to replace previous Option A, B, C, and D. Modest efficiency enhancements to the licensing program were discussed during the second September meeting.

We acknowledge the obvious time and energy expended by NRC to evolve its thinking from earlier staff options and present them on September 12 for a thorough discussion and exchange of information and insights during both September meetings. After the September 25, 2019 meeting, NEI members carefully deliberated on and compared staff Options 1 and 2 to industry Proposal 1, considering what was discussed during the September 25 meeting. As a result, we developed industry Proposal 2 as a hybrid of earlier staff and industry options with further enhancements based on those discussions. *It bears repeating. We offer industry Proposal 2 as an earnest attempt to converge NRC and industry's collective proposals into a viable hybrid option that more explicitly reflects the current reduced risk profile of the fuel cycle facilities and other relevant factors.*

The 4 Enclosures to this letter are summarized as follows:

Enclosure 1 describes the fundamental underpinnings and basis for industry Proposal 2. Here are the highlights.

- Industry Proposal 2 is a hybrid of earlier staff options and industry Proposal 1.

- Industry Proposal 2 reflects the current decreased risk profile of the fuel cycle facilities as supported by the mature, facility-specific ISAs resulting in improved operational performance and regulatory compliance.

- Industry Proposal 2 includes the staff's concept of "FLEX" hours to allow for facility-specific Inspection Program adjustments (through the use of a range of hours for inspections) based on the Licensee

Performance Review (LPR) process. The proposal maintains the current LPR process with modifications to support periodic risk profiling of the individual facilities based on updated ISAs and performance.

- Industry Proposal 2 includes an enhanced Resident Inspector Program at Category I facilities to more fully utilize this critical on-site resource.

Enclosure 2 provides real-time examples where licensees have applied insights from their facility-specific ISAs to further risk inform their operations and safety programs. These measures result in a facility risk profile that is orders of magnitude lower than required by NRC regulation and should be reflected in the efficiencies made to the inspection program.

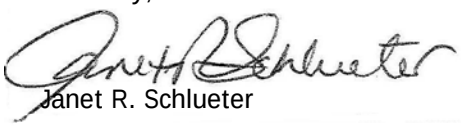
Enclosure 3 contains industry Proposal 2, which is best illustrated by a mark-up of Staff Option 2.

Enclosure 4 contains a description of related programmatic issues that should be resolved prior to further development or implementation of a Smarter Inspection Program. They are:

- NRC review of Operational Experience as the basis for staff options
- Overlaps and redundancies in current inspection procedures
- Inconsistencies between current staff Options 1 and 2
- Need for efficiencies in inspector prep and post time
- Current project timeline
- Ongoing parallel related initiatives within the Office of Nuclear Material Safety and Safeguards

We trust that both Headquarters and Region II management and staff will find this hybrid industry Proposal 2 extremely useful. We look forward to a public meeting where industry can speak to it and NRC can ask questions and provide specific feedback on it to further this initiative. Please contact me or Hilary Lane of my staff (hml@nei.org) with any comments or questions on the content of this letter.

Sincerely,



Janet R. Schlueter

Enclosure:

1. Technical Basis for Industry Proposals
2. ISA Insight Examples that Decrease Risk Profile
3. Industry Proposal 2 (mark-up of staff Option 2)
4. Description of Other Relevant Issues to be Resolved

c: Mr. John Lubinski, NRC/NMSS
Ms. Laura Dudes, NRC/RII
Mr. Christopher Regan, NRC/NMSS/DFM
Ms. LaDonna Suggs, NRC/RII/DFFI

Technical Basis for Industry[1] Proposals

The fundamental underpinnings and basis for Industry's Proposals are described more fully below. Industry Proposal 2 is best illustrated by the industry mark-up of staff Option 2 contained in letter Enclosure 3.

- **Industry Proposal 2 is a hybrid of previous staff options and industry Proposal 1.** As stated during the September 25 public meeting, NEI members continue to be concerned with the lack of predictability and clear safety basis for some of the program elements of Option 1 which are unprecedented and not fully developed or described by staff at this time, e.g., a very large pool of "FLEX" hours, the "generic 5-year schedule," and the "Comprehensive" inspection conducted once every 5 years. That being said, certain elements of earlier staff options are incorporated in industry's proposals (see below).

- **Specific Areas of Current Industry and NRC Alignment**

  - We acknowledge that the concept of FLEX hours allows NRC to recognize the current decreased risk profile of individual facilities on a case-by-case basis. As such, industry Proposal 2 introduces a FLEX range of 20% in its hour proposals for each Inspection Procedure (IP).

  - Industry proposed in its June 2019 Proposal 1, and we agree with staff Options 1 and 2, that the Maintenance & Surveillance IP (88025) should be combined into the Plant Operations IP (88020).

  - We support staff Option 1 hours at Category III facilities for Plant Operations (88020) and Criticality (88015), 60 hours each.

  - We support staff Option 2 that the Waste Management IP (88035) be merged with the Environmental Protection IP (88045) and Transportation IP (86740) to reduce redundancy and reflect the inherent low-risk of this relatively static program area.

  - We support staff Option 2 that the Triennial Fire Protection IP (88072) be eliminated in view of the recommended biennial review.

- **Decreased Risk Profile.** As NRC is aware, the facility-specific Integrated Safety Analysis (ISA) provides the methodology to assess and establish the needed safety basis to assure that the handling of nuclear material is within the programmatic requirements, that the safety program is appropriate for the risk and that the measures for carrying out the safety program are monitored through NRC's fuel cycle oversight process. It should be recognized that the risk profile of every fuel cycle facility has significantly decreased over the last 2+ decades due to full implementation, maturity and evolution of the ISA; additional margin beyond regulatory requirements that is owned by the licensee; increased use of engineered barriers in the form of automation and other technological advances; effective and comprehensive Corrective Action Programs (CAPs); sharing of best practices; benchmarking between facilities, etc. The facility-specific ISAs afford the NRC the ability to assess the risk profile of each facility and make insightful adjustments to their inspection programs. It is suggested that the periodic Licensee Performance Review (LPR) process be modified to include a periodic assessment of risk for each facility in the NRC's determination of

[1] "Industry" in this context means fuel cycle facility members of the Nuclear Energy Institute

risk-based adjustments. This in no way changes the continuing oversight role or tools of NRC, including event response or generic actions or responses by the NRC.

- **"FLEX" hours for Decreased Risk Profile**. Consistent with staff Option 1, the concept of "FLEX" hours is incorporated into industry Proposal 2. Specifically, each IP includes an acceptable range of hours representing 20% of the total hours for that IP to reflect the fact that in any given year, NRC can give credit for a decreased risk profile. This can provide an incentive for licensees that adopt additional safety margin beyond that already codified in the regulations (or in most cases, keeping supplemental margin that already exists today). This adjustment by NRC would be based on the periodic LPR results, reportable events, etc. It is important to note that in industry Proposal 2, the maximum number of hours for each IP to maintain the core program is the lowest of 3 available NRC Options: 1) the current program; 2) Option 1; or 3) Option 2. Then, a 20% range is applied which allows NRC, on a case-by-case basis, to provide an adjustment of inspection hours by facility. Enclosure 2 provides examples of how the ISA can be the basis for an assessment of a given facility's risk profile. Licensees, for a variety of reasons, have made decisions to build in additional margin, sometimes by orders of magnitude beyond the regulatory requirements. It is the industry's belief that this risk profile can be a major input to a risk-informed adjustment of the inspection procedures in a Smarter Inspection Program.

- **Category I and Resident Inspector Scope**. Industry understands the reluctance to assign the Senior Resident Inspector additional IPs and appreciates the "fresh eyes" approach for reasonable assurance of adequate protection. However, the Resident performs daily direct observations in the areas of plant operations, criticality safety, MC&A, plant modifications, and radiation protection, to the extent that the Resident is able to assess compliance with regulatory requirements. The Resident currently assesses licensee actions taken to resolve issues and items of more than minor safety significance and they are captured in the quarterly Resident Inspector's report. It seems reasonable that between the 797 hours currently required per Inspection Manual Chapter 2600 Appendix B and the 1510 total direct billable hours by the Resident that further reduction in Safety Operations inspection hours is justified. For example: reduce the criticality safety annual inspection hours from 180 (currently proposed) to 90 due to the presence of a Resident.

  It is further suggested that the Category I Plant Operations (88020) and Fire Protection (8805X) Biennials be transferred back to the Resident Inspector's scope of duties, as is currently implemented today.

  Consistent with staff Option 1, industry proposes that the Category I Material, Control & Accounting (IMC 2683) annual hours be reduced to 90. This is based on the risk profiles of these facilities and the historically stable and mature states of the fuel facility programs in this area. It also has been the observation that the IP can be appropriately accomplished in reduced timeframes.

- **Licensee Performance Review Process.** It is recommended that the LPR process be considered to allow for the periodic review of the facility-specific risk profile as represented by the facility's ISA, comprehensive safety programs and CAP performance. The facility ISA has detailed analysis supporting the measure (albeit qualitative) of the risk margin in a great number of areas congruent with the oversight process. The safety programs, including the magnitude of the safety margin and mature CAPs, are appropriate measures of the licensees' ongoing commitment to minimize risk of their operations. This then can be the basis to make an adjustment of the hours as represented in the Industry Proposal 2 markup contained in Enclosure 3.

- **Further Information on the Basis for Industry Risk Insights and Specific Aspects of Proposals 1 and 2.** Industry continues to firmly support the following risk insights, operational experience, and other information which served as the basis for industry's Proposal 1 as outlined on NEI Slides 5-12 presented by industry during the August 8, 2019 public meeting, and the Overlaps and Redundancies between Inspection Procedures captured on NEI Slides 12-13 (see Enclosure 4). Such insights continue to be the underpinning for industry Proposal 2. While these insights were presented by industry during the August 2019 public meeting, they bear repeating since they are also reflected in industry Proposal 2. They are best summarized as follows:

    - **Combine Plant Operations and Maintenance/Surveillance –** While staff accepted this industry suggestion (from industry Proposal 1), we continue to recommend that the hours be reduced to 60, consistent with staff Option 1. This is based on licensee observations at the facilities that experienced inspectors are able to complete a thorough inspection in this timeframe, and the decades long outstanding operational record of the industry's performance as an indicator of the risk profile in this program area.

    - **"FLEX" Hours for Fire Protection -** "FLEX" hours are warranted based on the low number of violations, industry performance, and several layers of independent oversight and jurisdiction. These include local Fire Marshalls, insurance providers and other government agencies in some cases. While it is understood that NRC can not abdicate its responsibilities to these other oversight jurisdictions, it can and should be able to utilize this fact by informing its own inspections with insights from other, independent experts.

    - **"FLEX" Hours for Radiological Controls IPs (Radiation Protection, Environmental Protection, and Transportation) –** To reiterate, we support staff Option 2 that the Waste Management IP (88035) be merged with the Environmental Protection IP (88045) and Transportation IP (86740). Consistent with industry Proposal 1, industry recommends in its Proposal 2 changing the frequency of Radiation Protection and Environmental Protection from Annual to Biennial. Furthermore, "FLEX" hours are warranted for the remaining 3 IPs as these areas are stable, low risk and are rarely cited for violations. In addition, the low risk profiles of the facilities are demonstrated by the low to no doses to workers, the public and environment, and the relatively static nature of both programs. The ALARA programs have ensured the attainment and maintenance of continuing decreases of doses (many only small fractions of allowable regulatory limits) and contamination events.

    - **Emergency Preparedness** – The EP program review (88050) and the evaluated exercise (88051) should be combined (assuming consent/interaction of the facility) and performed biennially. This could allow for efficiencies for both the agency and licensees.

    - **Plant Modifications Triennial Review** -- Consistent with industry Proposal 1, industry recommends that after the first round of the Plant Modifications Triennial inspections (88072) have been completed, that NRC determine whether or not to continue the "deep dive." Industry recommends removal of the additional Plant Modifications Triennial inspection after the first round is completed since such information is readily available to or attained by NRC, particularly at the Category I facilities.

Two Industry Examples Where ISA Insights are Applied to Further Decrease the Facility-Specific Risk Profile

The following two examples are used to demonstrate how a site-specific Integrated Safety Analysis (ISA) has been used to assess and decrease the relative risk profile of a facility. Such inputs should be used to modify the Licensee Performance Review (LPR)—that in the present process is used to adjust the inspection programs by facility—to adjust the hours or frequency of a given module or area of performance for a licensee.

It is important to consider that these examples *are not atypical*. At the same time, the industry is not representing that all sequences have the same level of risk margin as these examples represent. The purpose of presenting these examples is to demonstrate that the site-specific "living" ISAs can be used to assess the relative level of risk as compared to the allowable regulatory limits. This ISA assessment can be differentiated to areas of focus as well. While the ISAs have many criticality-based scenarios, there are also Plant Operations including chemical risks, radiological risks, etc. This can then be a major input to the periodic review of a licensee's performance during the LPR process which is now used to adjust the present Inspection Program.

For further context, it should be noted that:

- The likelihood numerical values used in each example represent an approximate order of magnitude of likelihood and should not be regarded as strict numerical limits.
- **The initiating event frequency for each example described below is not included in the calculation of overall likelihood frequency; yet, the resulting overall likelihood is still well below regulatory limits.**
- Per NUREG-1520, likelihood evaluations and definitions of the likelihood terms "unlikely" and "highly unlikely" can be based on a range of acceptable methods (purely qualitative, qualitative risk index, semiquantitative risk guidelines, quantitative, and other methods that employ a mixture of qualitative and quantitative information). The use of quantitative likelihood terms in these examples is not meant to imply that all licensees are using a quantitative method.
- The *overall likelihood* for an accident sequence is typically the product of the frequency of the initiating event times the probability of any enabling conditions, times the probability of failure for each credited Items Relied on for Safety (IROFS). Considerations include frequency of the initiating event, IROFS, enabling conditions, conditional events, time period (duration) of the IROFS failed condition prior to detection/response, IROFS testing or surveillance interval, and independence of IROFS which mitigate the progression of the accident sequence.
- The overall likelihood is then evaluated against the applicable limit for the corresponding consequence category. The mitigated likelihood of the accident sequence occurring with the preventive or mitigating IROFS in-place must meet the requirements in 10 CFR 70.61, which requires that the risk of each high and intermediate consequence event must be limited. The limit for high consequence events is typically 1.0×10^{-4}.

    - AC – Administrative Control
    - AEC – Active Engineered Control
    - PEC – Passive Engineered Control

Example 1

Moderator Is Released onto Process Equipment (Press)

This accident sequence could result in a criticality, which is a high consequence event.

Initiating Event Frequency

The Press Rooms contain moderating liquids routed through the room in pipes and the rooms contain an overhead water-based fire suppression system. The initiating event is either a leak of the building roof, a moderated liquid release above equipment, or human error where a moderating material is brought into the press feed process area and spilled on or near the equipment. The frequency of significant moderator releases in the process area that could interact with uranium is the sum of the operator error, overhead leaks, and roof leaks: 5×10^{-1} events per year. If a release of moderator occurs, a conditional probability of 0.1 is used to account for the release occurring in a location above the uranium-containing equipment. The initiating event frequency is the product of the significant moderator release event frequency and the conditional probability that the release is above the process equipment.

The initiating event frequency is 5×10^{-2} events/year.

Items Relied on for Safety

Four IROFS are chosen to minimize the risk of this accident sequence:

- ☐ Process Equipment Barrier – Pellet Press
- ☐ Pellet Press – Safe Geometry
- ☐ Press Pellet Counter
- ☐ Press Hood Level Sensors (Optical Sensor)

Process Equipment Barrier – Pellet Press

The Process Equipment Barrier – Pellet Press is a PEC.

The safety function of this IROFS is to prevent significant moderator ingress into the pellet press. The pellet press process equipment provides a barrier to external moderation leaking into the uranium material. A failure of this moderation barrier would be a breach that allows a large volume of moderator to collect inside the equipment. The failure of the process equipment barrier is assumed to be a result of operator error. The failure probability associated with this IROFS is 1.0×10^{-2}.

Pellet Press – Safe Geometry

The Pellet Press – Safe Geometry is an AC.

The safety function of this IROFS is to ensure uranium at the pellet presses is maintained in a favorable geometry. The normal press geometry includes the feed tube, rotary die table, press hood, pellet take-off system, boat conveyor, and press base. The press hood is limited to approved containers specified by Nuclear Safety. Provisions are made to account for potential accumulation beneath the press die cavity, beneath the accumulator, and in the press base.

The independent failure probability associated with this IROFS is 1.0×10^{-3}. A common mode event could affect the process equipment barrier IROFS allowing significant moderator in leakage and affecting the safe geometry IROFS simultaneously. The event that causes failure of the process equipment barrier that allows moderator in leakage is usually not of the size or type that may also cause failure of the safe geometry. The common mode dependent failure probability associated with this IROFS is 1.0×10^{-2}.

Press Pellet Counter

The Press Pellet Counter is an AEC.

The safety function of this IROFS is to prevent the accumulation of pellets beyond a safe mass in the take-off hood. The pellet press is equipped with a control that disables the press if the pellet count exceeds a set number of pellets before being reset. This prevents additional transfer to the take-off hood. Larger quantities of pellets would need to collect before an unsafe condition could be achieved. The failure probability associated with the Press Pellet Counter is 1.0×10^{-2}.

Press Hood Level Sensors

The Press Hood Level Sensors is an AEC.

The safety function of this IROFS is to prevent the accumulation of uranium beyond a safe geometry by closing the feed valve automatically when the level sensor detects buildup. The closure of the feed valve prevents additional transfer of material to feed the press. This active engineered feature limits the amount of material that could accumulate in the base of the hood. The failure probability associated with this IROFS is 1.0×10^{-2}.

Quantification of Accident Sequence

The overall likelihood of this mitigated accident sequence is:

Overall Likelihood = $(1.0 \times 10^{-2}) \times (1.0 \times 10^{-2}) \times (1.0 \times 10^{-2}) \times (1.0 \times 10^{-2}) = 1.0 \times 10^{-8}$ events/year

This provides significant margin to the regulatory limit of 10^{-4} per year, in fact some of the IROFS could fail to be available and still meet Performance Criteria by greater than an order of magnitude.

Example 2

Moderator Spills onto Vacuum Cleaner

This accident sequence could result in a criticality, which is a high consequence event.

Sequence Overview

This accident sequence is a potential criticality resulting from a large moderator spill onto floor storage and significant leakage into vacuum cleaners filled with uranium. To create the potential for criticality, moderator must be released onto the vacuum, the barrier must fail allowing water entry, greater than a safe mass must be present, and the geometry must be in a failed state when this occurs. The scenario assumes the vacuum cleaner is not on when the moderator release occurs.

Initiating Event Frequency

The initiator is an overhead moderator release that exposes a vacuum cleaner. Such events could occur from roof leaks, overhead piping leaks, or overhead spills. Overhead releases of significance in the operating areas where vacuum cleaners are routinely used do not frequently occur.

The initiating event frequency is 5.0×10^{-2} events/year.

Items Relied on for Safety

Three IROFS are chosen to minimize the risk of criticality for this accident sequence:

- ☐ Process Equipment Barrier – Transportable Container
- ☐ Vacuum Mass Control
- ☐ Vacuum Cleaner – Safe Geometry

Process Equipment Barrier – Transportable Container

The Process Equipment Barrier – Transportable Container is a PEC.

The safety function of this IROFS is to contain the uranium material and to prevent significant moderator ingress into the container. When the material is in the vacuum, it is sealed against moderator ingress. The vacuum cleaner is not as leak-tight as a standard 3-gallon can because there is an exhaust port and inlet port. As a result, the vacuum barrier may allow some moderator ingress. The ability of the vacuum to resist water ingress is similar to that of hoods, which is assigned a probability of failure of 1.0×10^{-2}.

Vacuum Mass Control

The Vacuum Mass Control is an AC.

The safety function of this IROFS is to ensure the mass of material inside a single vacuum is equal to or less than the safe mass limit. The failure probability associated with this IROFS is 1.0×10^{-2}.

Vacuum Cleaner – Safe Geometry

The Vacuum Cleaner – Safe Geometry is an AC.

The safety function of this IROFS is to maintain uranium inside a vacuum cleaner in a favorable geometry. The failure probability associated with this IROFS is 1.0×10^{-3}.

Quantification of Accident Sequence

The overall likelihood of this mitigated accident sequence is:

Overall Likelihood = $(1.0 \times 10^{-2}) \times (1.0 \times 10^{-2}) \times (1.0 \times 10^{-3}) = 1.0 \times 10^{-7}$ events/year

This provides significant margin to the regulatory limit of 10^{-4} per year, in fact some of the IROFS could fail to be available and still meet Performance Criteria by greater than an order of magnitude.

Industry Proposal #2
(Industry edits in green)
October 2019

App B Markup

OPTION 2

		Category I Fuel Facility		Category III Fuel Facility		Uranium Conversion Facility		Gas Centrifuge Facility	
Function / Program Areas	Procedure or Procedure Suite	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	88020 (OPR)	Biennial	~~0~~ ~~30~~ 0[1]	Annual	~~60~~ ~~90~~ 48-60	Annual	~~60~~ ~~90~~ 48-60	Annual	~~60~~ ~~90~~ 48-60
	88135 (Resident Inspection Program)	Annual	797	-	-	-	-	-	-
Criticality Safety	88015	Annual	~~196~~ ~~180~~ 72 -90	Annual	~~64~~ ~~90~~ 48-60	-	-	Annual	~~64~~ ~~90~~ 48-60
Fire Protection	8805X (FPB)	~~Annual~~ Biennial	~~0~~ ~~30~~ 0[1]	~~Annual~~ Biennial	~~32~~ ~~60~~ 48-60	~~Annual~~ Biennial	~~32~~ ~~60~~ 48-60	~~Annual~~ Biennial	~~32~~ ~~60~~ 48-60
~~Fire Protection (Triennial)~~	~~88072~~	~~Triennial~~	~~90~~	~~Triennial~~	~~90~~	~~Triennial~~	~~90~~	~~Triennial~~	~~90~~

1. Keep these IP's with the Resident Inspection Program, as is currently implemented today.

App B Markup Option 2

		Category I Fuel Facility		Category III Fuel Facility		Uranium Conversion Facility		Gas Centrifuge Facility	
Function / Program Areas	Procedure or Procedure Suite	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)
SAFEGUARDS									
MC&A	Procedures as in IMC 2683	Annual	~~196~~ ~~120~~ 72-90	~~Annual~~ Biennial	~~64~~ ~~60~~ 48-60	-	-	~~Annual~~ Biennial	~~64~~ ~~60~~ 48-60
MC&A (observation)	Procedures as in IMC 2683	Triennial	~~30~~ 24-30	Triennial	~~30~~ 24-30	-	-	Triennial	~~30~~ 24-30

App B Markup Option 2

		Category I Fuel Facility		Category III Fuel Facility		Uranium Conversion Facility		Gas Centrifuge Facility	
Function / Program Areas	Procedure or Procedure Suite	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)
RADIOLOGICAL CONTROLS									
Radiation Protection	88030 (RP)	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30
Environmental Protection	88045 (Effluent Control and Env.)	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30
~~Waste Management~~	~~88035 (WM)~~	~~Biennial~~	~~32~~	~~Biennial~~	~~32~~	~~Biennial~~	~~32~~	~~Biennial~~	~~32~~
Transportation	86740 (T)	~~Biennial~~ Triennial	~~32~~ ~~30~~ 24-30	~~Biennial~~ Triennial	~~32~~ ~~30~~ 24-30	~~Biennial~~ Triennial	~~32~~ ~~30~~ 24-30	~~Biennial~~ Triennial	~~32~~ ~~30~~ 24-30

App B Markup Option 2

		Category I Fuel Facility		Category III Fuel Facility		Uranium Conversion Facility		Gas Centrifuge Facility	
Function / Program Areas	Procedure or Procedure Suite	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)
FACILITY SUPPORT									
~~Maintenance / Surveillance~~	~~88025 (MS)~~	~~-~~	~~-~~	~~Annual~~	~~30~~	~~Annual~~	~~30~~	~~Annual~~	~~30~~
Emergency Preparedness	88050 (EP)	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ 30 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30	~~Annual~~ Biennial	~~32~~ ~~30~~ 24-30
	88051 (Exercise Observation)	Biennial	~~48~~ 38-48	Biennial	~~48~~ 38-48	Biennial	~~48~~ 38-48	Biennial	~~48~~ 38-48
Plant Modification (Annual)	88070	Annual	~~32~~ ~~30~~ 24-30	Annual	~~32~~ ~~30~~ 24-30	Annual	~~32~~ ~~30~~ 24-30	Annual	~~32~~ ~~30~~ 24-30
Plant[2] Modification (Triennial)	88072	Triennial	~~96~~ ~~90~~ 72-90	Triennial	~~96~~ ~~90~~ 72-90	Triennial	~~96~~ ~~90~~ 72-90	Triennial	~~96~~ ~~90~~ 72-90

2. After the first round of 88072 inspections, NRC will determine whether or not to continue the "deep dive" triennial inspection. Industry recommends removal after the first round is completed.

Other Issues to be Resolved in the Smarter Program Initiative

Industry offers the following insights on other relevant issues that should be resolved prior to final decisions on and implementation of a Smarter Inspection and Licensing Program for fuel cycle facilities. Feedback on these items should be part of our ongoing deliberations and development of the final Smarter Program path forward.

Specifically:

1) **Operational Experience:** The staff routinely alludes to its internal "self-assessments" and analyses of "trending data" and operating experience that has not been made transparent to stakeholders. We request visibility of such data and analysis.

2) **Current Overlaps and Redundancies:** We request that staff fully consider and inform industry of its disposition of the inspection procedure overlaps and redundancies identified by industry and included on Slides 12-13 of our August 8 meeting presentation.

In particular, the Plant Modifications IP (88070) contains several overlaps with other IPs and additional redundancies:

1) Section 02.04 says to verify the licensee has established management measures and review the management measure program. However, IP 88020 (Plant Operations), Sections 02.01(b)(4) and 02.03(b)(1) both require management measure verifications.
2) Section 03.04(d) says to ensure the licensee has established adequate periodic surveillance testing. However, IP 88025 (Maintenance/Surveillance), Section 02.02(b) has a whole section to examine periodic surveillance testing.
3) Section 03.04(f) says to determine whether the licensee is identifying issues and entering them into the corrective action program (CAP) and to determine whether the CAP actions were timely and appropriate. Most Fuel Cycle Facilities licensees have no licensee requirement for a CAP, therefore we question the regulatory basis for this requirement.
4) Section 03.06 says to review a license amendment and safety evaluation report and verify that 11 listed design criteria were addressed by the licensee including natural phenomena, fire protection, environmental effects, emergency capability, and criticality control. If the amendment has been granted/approved these verifications are redundant.

3) **Inspection Prep and Post Time:** As early as April 2019, industry expressed concerns to NRC about the need for increased efficiency and possibly process improvements for inspection preparation time and effort and post inspection activities and documentation. We have seen significant variances between inspectors when completing the same inspection procedure at the same facility. To date, any efforts by NRC to address these concerns about needed efficiencies has not been made transparent.

4) **Inconsistencies:** As was pointed out by industry representatives during the September 12 meeting, there are inconsistencies and perhaps simply oversights between staff Options 1 and 2 that should be rectified on any final versions should they be maintained, e.g., in Option 1, integrate Waste Management into Environmental and Transportation (as is currently reflected in Option 2), and include the Material, Control & Accounting observation for completeness.

5) **Project Timeline:** Staff routinely alluded to a draft staff report which would be submitted to Division or Office management in the fall 2019 timeframe for decision making. Given the submission of

industry's Proposal 2 for consideration and discussion during a fall 2019 meeting, we trust that NRC staff and management will be amenable to extending the current schedule.

6) **Ongoing Parallel Initiatives within NMSS:** Equally important to consider is the current parallel NRC efforts of the "ISFSI Enhancement Team," chartered to assess additional inspection efficiencies in ISFSI operations. Given that the scope of the Enhancement Team and Smarter Programs team appear to be congruent, NRC should conduct additional internal collaboration, and incorporate lessons-learned and best practices from each NRC initiative. Industry would also benefit from and appreciate a brief presentation by a member of the "ISFSI Enhancement Team" or Division manager at the next "Smarter Programs" public meeting. We understand that their recommendations report was to be completed in September, and this would allow for a timely and transparent sharing of analogous insights. This step in the process is particularly important given the recent reorganization and management changes within the Office of Nuclear Material Safety and Safeguards that went into effect earlier this week whereby the previous Division of Fuel Cycle Safety, Safeguards and Environmental Review was merged with the Division of Spent Fuel Management to create the new Division of Fuel Management.