

## INSPECTION AREA

### OVERVIEW

The Reactor Oversight Process (ROP) inspection thematic area was assigned to assess 45 recommendations, out of which four have been identified that could be dispositioned quickly, 11 as long-term completion, 22 as out of scope of this effort and not recommended by the staff, and 8 as being addressed by other U.S. Nuclear Regulatory Commission (NRC) initiatives already in progress.

### DISCUSSION

Recommendations were assessed for NRC staff resource efficiency gains, impact to licensees, and consistency with ROP goals and objectives.

All recommendations were categorized into one of the following areas:

1. Overall ROP baseline Inspection program improvements
2. Specific ROP baseline Inspection procedure (IP) improvements
3. Resident inspector staffing

Most of the recommendations reviewed by the team were focused on small changes to improve overall efficiency and predictability. The team concluded that the ROP inspection program was sound and that large changes were not necessary at this time. Therefore, the team focused on implementing targeted changes to the overall inspection program with the goal of continuing to risk-inform the inspection sample process and reduce unnecessary burden.

### STAKEHOLDER INTERACTIONS

During its review of the ROP enhancement recommendations in the inspection area, the staff sought feedback from internal and external stakeholders. These included members of the public, NRC procedure owners, technical branches, and the regions. Comprehensive regional feedback was provided by a regional advisory panel comprised of division-level managers from each of the four regions.

The staff discussed the status of its review of the recommendations and solicited feedback from members of the public at ROP public meetings on November 15, 2018; January 17, 2019; and March 7, 2019.

### COMPLETED ACTIONS

The staff has continuously improved the ROP through self-assessment and careful reflection as a fundamental aspect of the ROP. Several recommendations reviewed by the inspection working group were determined to have been previously addressed by other NRC initiatives to improve the ROP:

#### Transformation Initiative Recommendation 186

This recommendation stated that the design basis of nuclear plants is largely static and does not change over time. Over the history of the reactor oversight process, design basis inspections (e.g., Design Bases Assurance Inspection and formerly Component Design Basis

Inspection) rarely generate any greater-than-Green (GTG) inspection findings. The recommendation further states that the NRC should stop inspecting the design basis of nuclear plants. The engineering inspections are high impact to licensees and provide low value. It suggests that some of the extra resources that are freed up by the reallocation could be used for inspections where licensees are changing the design basis, and further risk information could be brought to bear on selecting worthwhile samples.

#### Transformation Initiative Recommendation 428

This recommendation is similar to recommendation 186. It suggests reducing large team inspections by targeting areas based on plant risk and performance. It states that the current process consists of numerous inspections covering broad areas and programs (e.g., design basis assurance, fire protection, heat sink, etc.). This approach utilizes a large number of inspector hours and even larger site resources. Findings from these inspections are largely due to documentation or analytical gaps that rarely impact or improve safety. It further suggests reducing inspections by focusing on risk significant areas and areas where plant performance warrants increased oversight. Plant-specific probabilistic risk assessments could be used to select systems for inspections. Long-term scheduling could use a tiered approach, covering higher risk systems first, and performance indicators for system availability/reliability could be utilized to determine additional focus areas.

#### Staff Response

Regarding recommendations 186 and 428, the staff completed a holistic review of engineering inspections and provided recommended changes to the Commission in SECY-18-0113, "Recommendations for Modifying the Reactor Oversight Process Engineering Inspections," dated November 13, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18144A567). The staff used risk insights, regulatory bases, and operating experience to choose the inspection areas for focused engineering inspections. The staff-recommended proposed changes would represent a 16 percent decrease in overall resources for this inspection area.

#### Early Actions:

The staff's initial review of the recommendations concluded that the following can be implemented in the near-term.

#### Nuclear Energy Institute (NEI) Recommendation 1F

This recommendation stated that the NRC should refrain from expanding baseline inspection effort in the future and that there should be a policy requiring no net increase in baseline inspection hours when considering new areas of inspection (including current consideration of inspecting beyond design basis features). When the NRC plans to add new subjects or scope to the baseline inspection program, it should identify subjects and scope that will be removed from the inspection program to prevent increasing the overall hours. The treatment proposed for diverse and flexible coping strategies (FLEX) inspections is an example of weaving a new area of inspection into the existing baseline program while striving to avoid increasing direct inspection hours.

### Staff Response

The NRC staff (staff) proposes to enhance existing NRC staff guidance. The industry provided this recommendation with an assertion that the ROP inspection program had increased by approximately 30 percent since implementation despite improved licensee performance. The staff reviewed the industry's assertion and concluded it is not supported, as described by the table in the main body of this paper. The staff review determined that while some areas of the ROP inspection program have increased since implementation, it has also decreased in other areas. The overall difference between original and current implementation is approximately 10 percent, most of which is due to increased inspection activities in the security cornerstone following 9/11.

Although the staff and industry have agreed that most recent changes to the ROP were resource neutral, the staff determined that additional guidance is warranted in this area to ensure inspection program changes are performance-based, targeted and do not result in an unnecessary regulatory burden.

The staff recommends incorporating this guidance into inspection Manual Chapter 2515, "Light Water Reactor Inspection Program," through addition of the following:

*To the extent practicable, future additions to the inspection program should be incorporated into the sample requirements of existing baseline inspection procedures or replace existing baseline procedures. The intent of this statement is for new baseline inspection program elements to take credit for existing program elements or replace existing baseline procedures, if possible, so that overall nominal baseline program hours are not unnecessarily modified to any significant extent.*

*Any additions to the inspection program require [the Office of Nuclear Reactor Regulation Division of Inspection and Regional Support] DIRS management approval.*

### NEI Recommendation 2B.2

This recommendation states that the NRC should follow up and close White findings utilizing the resident inspector. The supplemental inspection was originally expected to take 16 hours. The recommendation further states that the attributes of the IP 95001 inspection to assess corrective actions to prevent recurrence, and assessment of extent of cause/condition, could be accomplished through a Problem Identification and Resolution (PI&R)-type sampling process.

### Transformation Initiative Recommendation 617

This recommendation stated that the staff should create more incentive to fix existing issues, and place less emphasis on inspection of White issues, perhaps by reducing the IP 95001 supplemental inspection to 12 hours.

### Staff Response

For Recommendations 2B.2 and 617, the staff proposes to revise IP 95001 to clarify the expectation that licensees determine the cause, not necessarily perform a root cause evaluation for White Action Matrix inputs, as this expectation does not have a regulatory basis and is not

an enforceable requirement. The staff would change the current guidance by replacing the licensee's root cause evaluation with a causal analysis commensurate with the safety significance of the issue. Successful closure of an issue will still be dependent on the adequacy of the licensee's evaluation of the issue and associated corrective actions; if a licensee does a poor causal evaluation, it may prolong the process to close the issue. In addition, the staff plans to revise the resource estimate from 40–120 hours to a range of 16–120 hours. The revised lower range is to realign with the original estimates to close uncomplicated White inputs, while the upper range applies to more complicated issues, or when multiple safety-significant Action Matrix inputs overlap.

The staff evaluation of recommendations 2B.2 and 617 concluded that this proposal is partially consistent with current NRC practice and recommendations from recent program self-assessments. NRC policy does not explicitly direct whether this inspection is to be performed by a resident inspector or a region-based inspector. Currently, inspector resource assignment for supplemental inspections is a management decision based on resource availability, required expertise, and complexity of the issue. The staff does not recommend restricting performance to only resident follow up.

Separately, the staff performed a self-assessment of IP 95001 in April 2018 and again in September 2018 in response to industry concerns regarding consistency of implementation across the four regions. The reviews concluded the procedure was properly implemented, but recommended the following enhancements:

- To enhance dissemination of best practices, equalize regional work-loads, and possibly improve consistency among regions, consider using inspectors from other regions to perform 95001 inspections. The deployment of Replacement Reactor Program System should facilitate scheduling of this activity since the program provides improved visibility of available inspector resources.
- The minimum resource estimated hours were changed in 2011 from 16 hours to 40 hours, and the maximum from 40 -120 hours. The staff is recommending revising the resource estimate range to 16 - 120 hours, which will provide inspectors the flexibility to quickly close out uncomplicated white findings or perform in depth review of multiple white findings that have occurred during an assessment period. Inspection procedure resource estimate will range as follows:
  - a) Single or uncomplicated white finding: 16-40 hours
  - b) Multiple or complex white findings: 40-120 hours

## **RECOMMENDATIONS REQUIRING COMMISSION APPROVAL**

### **NEI Recommendation 1D**

This recommendation stated that the NRC should consider reducing the baseline inspection hour levels based on sustained plant performance. Higher performing plants should merit at least 25 percent fewer baseline inspection hours. This can be achieved by reducing the number of samples and subsequent direct-inspection hours in the existing inspections. It suggests that higher performing plants could be defined as having no GTG inputs to the Action Matrix in the preceding 12 months.

### Transformation Initiative Recommendation 203 (shared by all cornerstones)

This recommendation stated that the staff should consider reducing or combining IPs. One area to consider is the radiation protection inspection program. Additional areas include emergency preparedness (EP), security, and fire protection. For example, rather than having eight separate IPs in radiation protection, it suggests combining key focus areas of inspection into possibly only four IPs. One IP focusing only on radiation protection during refueling outages. Other key focus areas such as monitoring effluents, transportation, radioactive waste, etc., could also be combined and intervals extended. The recommendation further stated that inspectors review the same things over and over again on a periodic basis, potentially looking at the same thing.

### Transformation Initiative Recommendation 231 (Partial)

This recommendation provided several ideas to consider to streamlined regulatory oversight:

- A. Recognize sustained high regulatory performance through reduced regulatory oversight (e.g., fee reduction or inspection less than baseline).
- B. Revamp IPs to emphasize risk, and less emphasis on licensing/design basis.
- C. Simplify the “no violation” or low risk violation report (e.g., transition to materials Form 591 inspection report formats). (The staff determined this was out of scope for this effort; past efforts have been unsuccessful.)
- D. Reduce columns in the ROP Action Matrix. (The staff rejected this recommendation.)

### Transformation Initiative Recommendation 583

This recommendation suggested reducing the frequency for some inspections and increasing the flexibility to adjust inspection frequencies.

### Transformation Initiative Recommendation 613 (shared by all cornerstones)

This recommendation stated that the staff should apply the recent approach for replacing the engineering inspections to inspections of operations, maintenance, security, etc.

### Transformation Initiative Recommendation 622

This recommendation stated that the staff should acknowledge improvements in safety and risk, and reduce required resources to complete inspections.

### Staff Response

To address recommendations 1D, 203, 231, 583, 613, and 622, the staff performed a review of the reactor safety cornerstone baseline IP with the goal to right-size the ROP baseline inspection program through continuous use of risk insights and to further align with the efficiency and reliability principles of good regulation. Using the best available knowledge from research and operational experience, the staff identified the following changes to the reactor inspection program. Full implementation of these recommendations would equate to an approximately 21 percent reduction in overall inspection hours in the reactor safety cornerstones, as shown in Table 1. This value does not include changes to the EP, radiation protection, or security inspectable areas, nor changes to plant status.

## ROP Baseline Inspection Enhancement Proposal:

The following Baseline IPs were recommended for changes under this proposal:

- 71111.01, “Adverse Weather Protection” – Reduce 1 Sample and 12 Hours
- 71111.04, “Equipment Alignment” – Reduce 3 Samples and 24 Hours
- 71111.05, “Fire Protection” – Increase 1 Sample and 5 Hours
- 71111.06, “Flood Protection Measures” – Reduce 1 Sample and 8 Hours
- 71111.13, “Maintenance Risk Assessment and Emergent Work Control” – Revise sample range based on number of operating units at a site. Nominal reduction of 2 Samples and 5 Hours
- 71111.18, “Plant Modifications” – Reduce 2 Samples and 21 Hours
- 71111.19, “Post maintenance Testing” – Reduce 24 Samples and 84 Hours<sup>1</sup>
- 71111.22, “Surveillance Testing” – Increase 12 Samples and 42 Hours<sup>2</sup>

The following Baseline IPs were not recommended for any changes under this proposal:

- 71111.08, “Inservice Inspection Activities”
- 71111.11, “License Operator Requalification Program”
- 71111.12, “Maintenance Effectiveness”
- 71111.15, “Operability Determinations”
- 71111.20, “Refueling and Other Outage Activities”
- 71151, “Performance Indicator Verification”
- 71153, “Follow-up of Events and Notices of Enforcement Discretion”

The following Baseline IPs were evaluated by the Engineering Inspection Working Group; changes were submitted for Commission approval in SECY-18-0113.

- 71111.05T/XP, “Fire Protection (Triennial)”
- 71111.07, “Heat Sink Performance”
- 71111.17, “Evaluations of Changes, Tests and Experiments”
- 71111.21M, “Design Bases Assurance Inspection (Teams)”
- 71111.21N, “Design Bases Assurance Inspection (Programs)”

Detailed discussion of the proposal is provided below. Hours and Samples in this document are representative of a dual-unit pressurized water reactor (unless otherwise noted) for the sake of ease of calculation.

### IP 71111.01, Adverse Weather Protection

Recommendation: Reduce to one to two seasonal extreme weather samples and as needed impending severe weather samples. Remove summer readiness sample with Commission approval and move external flood sample to 71111.06, Flood Protection Measures.

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<sup>1</sup> The large reduction noted for IP 71111.19, Post Maintenance Testing is due to the proposal to combine with IP 71111.22, Surveillance Testing.

<sup>2</sup> The large increase noted for IP 71111.22, Surveillance Testing is due to the proposal to combine with IP 71111.19, Post Maintenance Testing.

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	4	4	6	24	27	30
Revised	2	3	6	10	15	30
Reduction	2	1	0	14	12	0

Samples:

- Seasonal Extreme Weather – 1 to 2 samples (Section 03.02)
- Impending Severe Weather – 1 sample (Section 03.03)

Remove:

- Summer Readiness – 1 sample (Section 03.01)
  - Directed by the Commission in SRM M050426, “Staff Requirements - Briefing on Grid Stability and Offsite Power Issues, 9:30 A.M., Tuesday, April 26, 2005,” dated May 19, 2005 (ADAMS Accession No. ML051390156) and described in Regulatory Information Summary 2004-05, “Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power,” dated April 15, 2004 (ADAMS Accession No. ML040990550).
- External Flood – 1 sample (Section 03.04)
  - Move sample to 71111.06 Flood Protection Measures.

Basis for Recommendation:

The staff determined that the existing summer readiness sample is no longer warranted. Other federal entities with regulatory jurisdiction over the national electric grid have increased oversight and coordination with utilities since implementation of the sample in 2007. Additional NRC inspection in this area is no longer needed. Additionally, actions taken in response to open phase circuits and FLEX have mitigated risk in this area.

The staff also determined that the existing external flood sample is better aligned with the objectives and scope of IP 71111.06, “Flood Protection Measures.” The sample will be moved to the appropriate IP as an optional sample for selection based on a site-specific analysis.

IP 71111.04, Equipment Alignment

Recommendation: Reduce partial walkdown samples by two and complete walkdown samples by one.

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	12 / 2	14 / 2	16 / 2	48 / 20	56 / 24	64 / 28
Revised	10 / 1	12 / 1	14 / 1	40 / 8	48 / 8	56 / 8
Reduction	2 / 1	2 / 1	2 / 1	20	24	28

Samples:

- Partial Walkdown – 10 to 14 samples (Section 03.01)
- Complete Walkdown – 1 sample (Section 03.02)

Basis for Recommendation:

The staff determined, based on inspector experience, performance indicator history, and performance-based results that a reduction of inspection effort (i.e., inspection samples and hours) in this area is warranted and would still be effective in meeting the cornerstone objectives. The proposed reduction in hours per sample is based on inspector experience, and not on a reduction in scope. The staff concluded that a small reduction in inspection effort in this area was an appropriate balance of considerations.  
IP 71111.05, Fire Protection

Recommendation: Increase fire brigade drill performance sample by one.

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	16 / 1	20 / 1	24 / 1	26 / 4	30 / 5	34 / 6
Revised	16 / 2	20 / 2	24 / 2	26 / 8	30 / 10	34 / 12
Increase	1	1	1	4	5	6

Samples:

- Fire Area Walkdown and Inspection – 16 to 24 samples (Section 03.01)
- Fire Brigade Drill Performance – 2 samples (Section 03.02)
  - Unannounced drill preferable, but announced is acceptable
  - Fire brigade live fire training exercise acceptable as drill performance sample

Basis for recommendation:

The staff concluded that internal fire remains a significant contributor to overall plant risk across the industry. Therefore, it is not prudent to reduce inspection in this area.

Additionally, based on inspection experience that a typical site has five to six fire brigade crews, the staff concluded that the lone annual sample does not provide a sufficient review of fire brigade performance. Additional observation of fire brigade performance during drills (announced or unannounced) will provide another opportunity to assess consistency of performance between different crews and ensure this significant risk mitigation activity is being properly evaluated by licensee personnel. The staff believes this change will better risk-inform this inspection. Unannounced fire drills will remain the preferred inspection sample. However, viewing fire brigade live fire training exercises will be added as an option.

IP 71111.06, Flood Protection Measures

Recommendation: Reduce to one internal flood sample, one external flood sample, and one submerged cable sample.

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	2	3	3	17	20	23
Revised	1	2	3	6	12	18
Reduction	1	1	0	11	8	5



Samples:

- Internal Flood – 1 mandatory sample
- External Flood – 1 optional sample (if appropriate site analysis supports non-completion)
  - Selection based upon site specific analysis
- Submerged Cable – 1 optional sample

Basis for Recommendation:

The staff determined that continued focus on internal flood control measures is important based on past operating experience (e.g., Arkansas Nuclear One (EA-14-088), Kewaunee (EA-05-176)), but also noted that a reduced sample size is warranted based on inspector feedback, the maturity of the program, and actions taken by licensees in response to the Fukushima accident, including walk downs of internal flood sources and mitigation strategies. The revised nominal inspection time is based on six hours per sample, normalized from the current resource estimates, with no change in scope for the required samples.

The staff also determined that the existing external flood sample (section 03.04) from IP 71111.01, Adverse Weather Protection, is better aligned with the objectives and scope of this IP. The sample will be moved to the appropriate IP as an optional sample for selection based on site-specific analysis.

IP 71111.13, Maintenance Risk Assessment and Emergent Work Control

Recommendation: Revise the sample size to account for the significant difference in the amount of risk-significant work activities between one, two, and three-unit sites.

Single Unit

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	14	19	24	80	90	100
Revised	10	15	20	50	75	100
Reduction	4	4	4	30	15	0

Dual Unit

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	14	19	24	80	90	100
Revised	12	17	20	60	85	100
Reduction	2	2	4	20	5	0

Triple Unit

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	14	19	24	80	90	100
Revised	14	19	24	80	90	100
Reduction	0	0	0	0	0	0

Samples:

- Risk Assessment and Management – 10 to 20 samples for one-unit site (Section 03.01)
- Risk Assessment and Management – 12 to 20 samples for two-unit site (Section 03.01)
- Risk Assessment and Management – 14 to 24 samples for three-unit site (Section 03.01)

Basis for Recommendation:

The staff recommends a reduction in sample size. Inspectors have indicated that improved licensee risk management techniques over the past 10 years have resulted in a declining number of elevated risk windows (those requiring risk management actions) for appropriate risk informed sample selection. The staff concluded that the current sample requirements in this area are not an effective use of NRC inspector resources. The sample requirements for IP 71111.13 have been adjusted to recognize the improved annual risk profile for most nuclear plants. Regional inspectors maintain flexibility with the maximum sample range, which should be sufficient to address most emergent work control situations that are encountered in a given calendar year.

IP 71111.18, Plant Modifications

Recommendation: Reduce temporary or permanent modification samples.

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	3	5	7	36	42	48
Revised	2	3	4	14	21	28
Reduction	1	2	3	22	21	20

Samples:

- Temporary Modification – 2 to 4 samples, combined with Permanent Modification (Section 03.01)
- Permanent Modification – 2 to 4 samples, combined with Temporary Modification (Section 03.02)
- Severe Accident Management Guidelines Update – 0 to 1 sample, when applicable (Section 03.03)
  - Replaces Temporary or Permanent Modification sample

Basis for Recommendation:

The staff recommends a reduced sample size based on inspector feedback and experience that a low number of risk-significant samples related to temporary or permanent modifications are available in a calendar year. The expected hours per sample resulted from a normalization of data without a change in the inspection scope. While it continues to be important to review changes to the plant, in many cases, inspectors report that because there are only a few risk-significant modifications that occur in a given year, the current sample requirements in this area are not an effective use of NRC inspector resources. Additionally, temporary modifications that are implemented as a compensatory measure for a degraded or nonconforming condition can be reviewed under IP 71111.15, "Operability Evaluations."

The staff's recommendation also considered that the proposed Comprehensive Engineering Team Inspection and Focused Engineering Inspections will be focused on plant changes.

IP 71111.19, Post-Maintenance Testing

Recommendation: Cancel and consolidate requirements with IP 71111.22.

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	20	24	28	71	84	97
Revised	0	0	0	0	0	0
Reduction	20	24	28	71	84	97

IP 71111.22, Surveillance Testing

Recommendation: Combine scope with IP 71111.19 and rename *Testing and Maintenance of Equipment Important to Risk*. Increase hours and samples by half of IP 71111.19

	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	14	18	22	100	100	100
Revised	24	30	38	135	142	148
Increase	10	12	14	35	42	48

Samples:

- Post-Maintenance and Surveillance Testing Combined – 24 to 38 samples
- Specific minimum requirement
  - In-service Testing – 4 samples
  - FLEX Equipment Testing – 1 sample
  - Containment Isolation Valve Testing – 1 sample minimum, if applicable
  - Ice Condenser Testing – 1 sample minimum, if applicable
  - Reactor Coolant System Leakage Detection Testing– 1 sample minimum, if applicable
  - Post-Maintenance Testing: 4 samples minimum
  - Surveillance Testing: 4 samples minimum

Basis for Recommendation:

The staff’s proposal to combine IP 71111.19 and IP 71111.22 allows resident inspectors greater flexibility to inspect the various types of testing expected to occur at a nuclear site, allowing better focus on those tests that are risk-significant.

While the staff determined that oversight of licensee testing programs should continue to be a focus of the inspection program, there are changes that have or will be occurring that necessitate a change to the existing IPs. As an example, surveillance testing of plant equipment is likely to change due to industry implementation of alternate programs, such as Technical Specification Task Force 5.b, which is a risk-informed initiative to relocate most periodic surveillance frequencies from the Technical Specifications, and place the frequencies under licensee control in accordance with a new program. The staff’s proposal reflects expected changes in the frequency of testing of some components.

Table 1 summarizes the current and proposed resource estimates for the baseline inspections related to reactor safety.

<b>Table 1: ROP Baseline Inspection Hours</b>				
	Current Hours	Proposed Hours by Sample Size	Change in Hours by Sample Size	Percent Change
71111 Reactor Safety	993	Nominal 886	Nominal -107	-11%
		Minimum 759	Minimum -234	-24%
71111 Engineering*	293	Nominal 245	Nominal -48	-16%
71151, 71152, 71153**	505	Nominal 280	Nominal -225	-45%
		Minimum 233	Minimum -272	-54%
Reactor Safety Total	1791	Nominal 1411	Nominal -380	-21%
		Minimum 1237	Minimum -554	-31%

\* Reflects staff recommendation of Option 2 in SECY-18-0113

\*\* Revision to IP 71152 is discussed below but is reflected in this table for completeness. Total does not reflect resources that were moved to Inspection Manual Chapter (IMC) 2515, Appendix D.

## RECOMMENDATIONS REQUIRING ADDITIONAL EVALUATION

Multiple comments and recommendations received from both internal and external sources have focused on IP 71152, “Problem Identification and Resolution” (PI&R), and IP 95001. The comments have ranged from minor changes with the goal of improving efficiency to major adjustments of the basis and objectives of the IPs. The staff plans to perform a comprehensive review of the PI&R program beginning in calendar year 2019. Proposed changes to IP 95001 are described in Enclosure 1.

### NEI Recommendation 1E

This recommendation stated that the staff should remove the biennial PI&R inspection from the baseline inspection program, and revise the inspection to be an inspector follow-up or reactive procedure. Resident inspectors focus daily on the corrective action program (CAP) by reviewing all new condition reports. It argues that since all inspectors focus on CAP entries, each inspection assesses the ability of the licensee to find and fix its problems. It further argues that focusing a separate inspection team solely on PI&R is redundant to the assessment of the PI&R function that occurs in almost every inspection. In addition, the cross-cutting issues element of the ROP captures trends in PI&R performance in every inspection.

## NEI Recommendation 2B.4

This recommendation is identical to recommendation 1E.

## Transformation Initiative Recommendation 78

This recommendation stated that the staff should make the frequency of PI&R team inspections performance-based by using Big Data to better target inspection resources. This can be accomplished by changing the frequency of PI&R team inspections from a biennial frequency to an "as needed/performance-based" frequency. Specifically, a PI&R team inspection would be triggered when a 1) a cross-cutting theme (first occurrence) is identified; or 2) a GTG finding in which a PI&R cross-cutting aspect is identified. Inspection has historically not achieved the desired results as predicted by the ROP. The recommendation argues that results have not justified the level of effort. Reduction in this area can be supported by the other inspections done in reviewing a licensee's CAP. Each IP in the ROP has a requirement to review CAP. IP 71152 also requires annual samples be performed (i.e., mini team inspection basically conducted by one person/sample), and a semi-annual trend review which involves an in-depth review. It further argues that this proposal would allow for better scheduling/planning so that the teams can get the right people for the job, as well as to encourage the regions to work together to create diverse inspection teams, since inspection would be "infrequent."

## Staff Response

For recommendations 1E, 2B.4, and 78, the staff and stakeholders concluded that the fundamentals of the ROP were sound. As such, removal of IP 71152 from the baseline inspection program would constitute a significant change to the basis of the ROP that is not warranted at this time.

Specifically, the staff determined that resident inspector and other baseline IP CAP review was focused on licensee identification of adverse conditions for the purposes of sample selection and inspector follow-up of inspectable areas. The objective of the biennial IP 71152 inspection is focused on the evaluation and resolution of adverse conditions and corrective actions for the purposes of assessing the overall health and effectiveness of the licensee's program. The staff concluded that an assessment of the health and effectiveness of the licensee's CAP may not always be accomplished effectively and efficiently through resident and other baseline inspection CAP review.

Additionally, the staff concluded that multiple other elements of IP 71152 are not replicated anywhere else in the baseline inspection program, and elimination of those elements was not supportable.

Finally, removing IP 71152 from the baseline program would contradict several of the goals set forth in IMC 0308, "Reactor Oversight Process Basis Document," such as:

- 1) Establishing confidence in the licensee's ability to detect and correct problems.
- 2) Assessing programs such as licensee self-assessment, safety committees, operating experience, and corrective action (which are not covered elsewhere).
- 3) Assessing Safety Conscious Work Environment.
- 4) Providing the NRC with leading indicators of potential performance issues at a site.

However, the staff concluded that improvements and efficiencies can be gained in IP 71152. The staff is planning to create a working group to perform a comprehensive review of IPs 71152, 95001, 95002, “Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area,” dated February 9, 2011 (ADAMS Accession No. ML102020532), and 95003, “Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input,” dated December 18, 2015 (ADAMS Accession No. ML15188A400), to better align the IPs with the objectives and eliminate areas of unnecessary duplication. The staff has identified the following recommended changes to IP 71152 that can be implemented prior to the completion of a comprehensive review.

IP 71152, Problem Identification and Resolution (Routine)

Recommendation: Transfer PI&R daily review and associated commitments, objectives, requirements, and resources from this procedure to IMC 2515, Appendix D, “Plant Status.”

	Hours Single Unit	Hours Dual Unit	Hours Triple Unit
Current	129	178	225
Revised	0	0	0
Transferred	129	178	225

Basis for Recommendation:

The staff’s proposal is intended to align performance and time commitment with intended scope of the activity and to more clearly differentiate between routine CAP review and follow-up inspection. Additionally, it is intended to restore the original ROP separation between plant status and baseline inspection activities and remove the unintended bias towards using IP 71152 to conduct follow-up inspection effort over other baseline IPs. The transfer of hours to plant status included a revised assessment of the resource estimate appropriate for plant status activities, so there was not an equivalent increase in hours assigned to plant status

IP 71152, Problem Identification and Resolution (Biennial)

Recommendation: Change frequency to triennial, reduction of 35-48 hours annually, and conduct a comprehensive review of the PI&R inspections. The staff is recommending a comprehensive review to identify where the current procedure does not meet the intended reason for PI&R inspections and to address any gaps. The staff expects the result of this review will increase efficiency and effectiveness of the PI&R inspection.

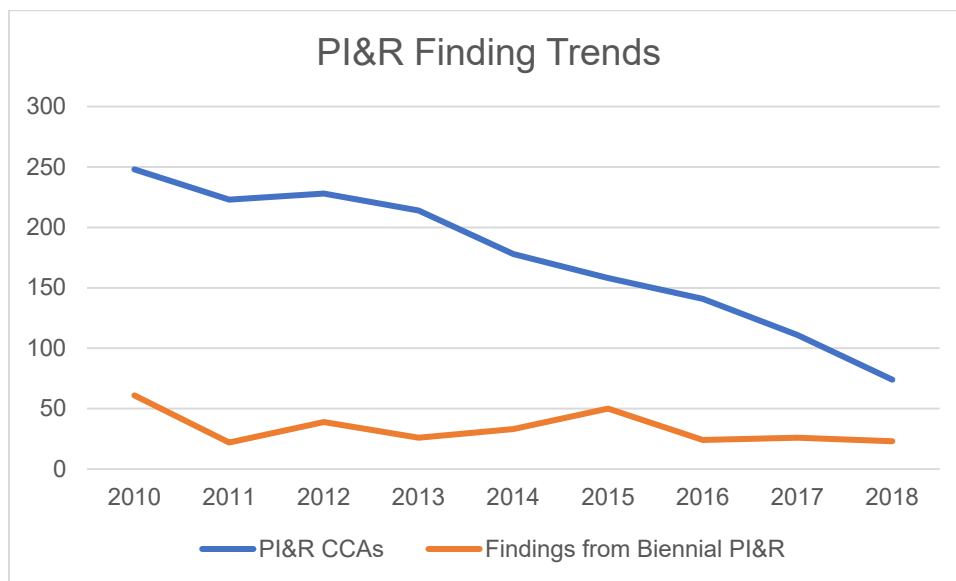
	Minimum Samples	Nominal Samples	Maximum Samples	Minimum Hours	Nominal Hours	Maximum Hours
Current	1	1	1	106	125	144
Revised	1	1	1	71	83	96
Reduction	0	0	0	35	42	48

\* Biennial inspection hours are annualized in above table

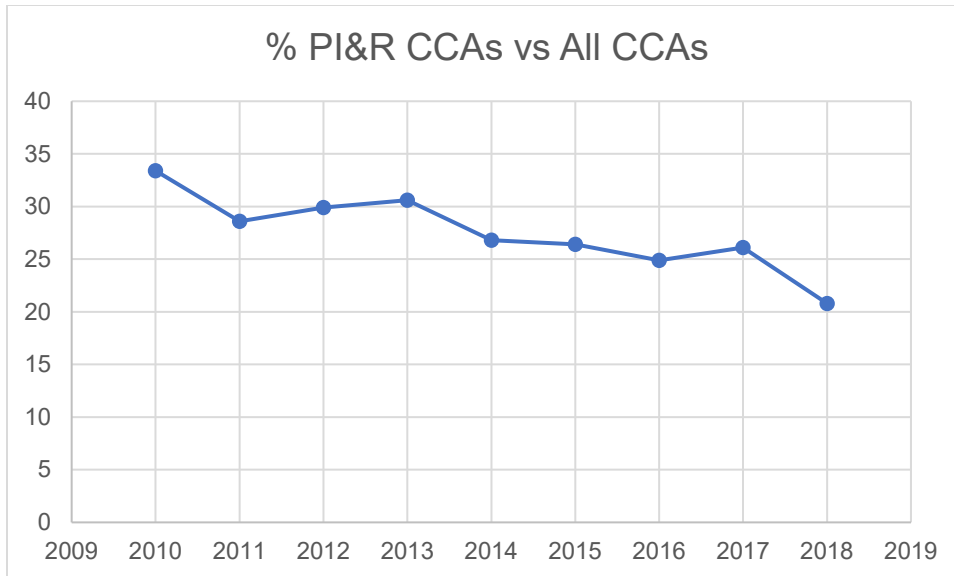
### Basis for Recommendation:

The staff is proposing to change the frequency from biennial to triennial, recognizing that the current procedure is not as effective as it could be, based on inspector feedback. The basis for the recommendation is that inspectors have many touchpoints in which to assess licensee CAP performance, including daily reviews of all issues entered into the CAP, semi-annual trend reviews, annual follow-up of selected issues, and other IPs directing reviews of issues entered into the CAP. In addition, regional staff perform a two-year review of all inspection findings for each licensee during end-of-cycle assessment meetings to determine if there are any adverse programmatic trends, including the licensee CAP. The staff performs a semi-annual review of all inspection findings with cross-cutting aspects related to PI&R as part of the assessment of licensee performance in the cross-cutting areas. Some staff have noted that the biennial frequency is too short, which causes similar issues to be repetitively reviewed every two years. The Regions also have the option to perform additional PI&R inspections for licensees in Column 3 or 4 of the Action Matrix when deemed appropriate.

The staff reviewed the numbers of PI&R cross-cutting aspects assigned and the numbers of findings identified during biennial PI&R inspections since 2010 to determine if there were any trends in industry CAPs. The data is summarized in the following graph. The staff concluded that findings identified during biennial PI&R inspections during the period were steady, while there has been a steady decrease in numbers of findings with PI&R cross-cutting aspects. The decrease in PI&R cross-cutting aspects is consistent with the decrease in overall inspection findings for the same period. The staff identified no adverse trends in industry performance for CAPs.



The staff also reviewed the number of inspection findings with PI&R cross-cutting aspects compared to the number of inspection findings with all cross-cutting aspects. The following graph depicts the trend in the percentage of findings with PI&R cross-cutting aspects. There is a decreasing trend in the number of PI&R cross-cutting aspects compared to the number of findings for all cross-cutting aspects.



IMC 2515, Appendix D, Plant Status

Recommendation: Add PI&R daily review and transfer associated commitments, objectives, requirements, and resources from IP 71152 to this procedure.

	Hours Single Unit	Hours Dual Unit	Hours Triple Unit
Current	641	699	908
Revised	720	720	1080
Transferred	129	178	225

Under this proposal, a portion of the CAP daily review will be removed from IP 71152 and added to plant status activities which currently include control room walkdown, status meetings, plant tour, and reactor safety/plant security interface. The staff reviewed the hours typically needed for plant status activities. Most of the 178 hours that were transferred from IP 71152 are being removed from the baseline program, so that daily plant status review hours under IMC 2515 will only increase from 699 to 720 hours for a dual unit site. This number is based on the assumption that two inspectors at a site will need about three hours per day combined to cover daily plant status activities. Assuming approximately 48 weeks on site per inspector, this works out to 720 hours per year.

Basis for Recommendation:

The team's proposal is intended to return the daily screening of CAP documents from IP 71152 back to the plant status inspection manual chapter along with associated commitments, objectives, requirements and resources and to update ROP basis documents accordingly. This action removes a bias toward selection of IP 71152 to follow-up plant status items – many of which would be more effectively inspected by other baseline IPs.



### NEI Recommendation 2B.3

This recommendation stated that the staff should consider changing the IP 95001 supplemental inspection from a stand-alone procedure for White Action Matrix inputs to an initial follow-up inspection for Yellow or Red findings, with triggers for expanded inspections using IP 95002 or IP 95003, if necessary. This is consistent with a graded approach where performance dictates escalation, not automatic escalation by process.

### Staff Response

The staff plans to create a working group to perform a comprehensive review of IPs 71152, 95001, 95002, and 95003. The staff concluded that the objectives of these procedures are fundamentally similar in that they each focus on an assessment of the licensee's ability to identify, evaluate, and correct deficiencies in performance. The objective of the comprehensive review is to reevaluate the elements of each procedure to better align them with their stated objectives and eliminate areas of unnecessary duplication and burden. The comprehensive review will also include a review of the overall IPs regarding industry and agency initiatives that impact the use and efficiency of the licensee's CAP. The staff expects to begin the review in calendar Year (CY) 2019 and complete it in CY2020. The conclusions and recommendations of the review will be provided to the Commission, as necessary.

### **STAKEHOLDER VIEWS**

Some internal stakeholders expressed a view that the term "root cause" should not be replaced with the term "causal analysis" in IP 95001. The stakeholders stated that root cause analysis has been integral to the ROP inspection of significant conditions adverse to quality (SCAQ) and significant adverse conditions (SAC) since its inception. The ROP's broad reliance on root cause analysis is evidenced in the 26 references to "root cause" in SECY-99-007, "Recommendations for Reactor Oversight Process Improvements," dated January 8, 1999 (ADAMS Accession No. ML992740074), as well as in IMC 0308, "Reactor Oversight Process Basis Document," dated October 4, 2017 (ADAMS Accession No. ML16306A386), and in the supplemental IPs and the problem identification and resolution IP. For the agency to explicitly accept reduced reliance on root cause analyses for SACs and SCAQs (i.e., to eliminate the above references from NRC governance) is for the NRC to accept reduced assurance that the causes of SCAQs (and SACs) will be determined and corrective action will be taken to preclude repetition.

The staff was not aligned on transitioning the biennial PI&R inspection to a triennial frequency. While all parties agreed on the need for a comprehensive review of IP 71152, there were some who believed that in the interim the procedure should remain biennial with a decrease in scope, while others believed that the procedure should not be changed prior to the comprehensive review.