UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 5, 2025

MEMORANDUM TO: Rebecca B. Sigmon
Generic Communications and Operating Experience Branch
Division Reactor Oversight
Office of Nuclear Reactor Regulation

Alex D. Garmoe
Reactor Assessment Branch
Division Reactor Oversight
Office of Nuclear Reactor Regulation

FROM: Russell N. Felts, Director
Division of Reactor Oversight
Office of Nuclear Reactor Regulation

Signed by N. Felts, Russell
on 05/05/25

SUBJECT: APPROVAL OF CHARTER FOR ADVANCED REACTOR OVERSIGHT PROCESS PERFORMANCE INDICATOR WORKING GROUP

This memorandum approves the team charter for the working group tasked with conducting an integrated, holistic review of the Reactor Oversight Process (ROP) performance indicators (PIs), which will inform a potential re-evaluation of the role of PIs in the assessment process and re-baselining of the inspection program. Commissioners' Assistants have been informed of staff's intent to conduct this review consistent with the objectives of Section 507 of the ADVANCE Act. This working group, with representation from all four regions, as well as headquarters divisions involved with ROP implementation, will evaluate the potential for expanding the use of PIs within the ROP to more efficiently implement the NRC's oversight function.

Enclosure:
1. Advanced Reactor Oversight
   Process Performance Indicator
   Working Group Charter

CONTACT: Rebecca Sigmon, NRR/DRO/IOEB
(301) 415-0895

SUBJECT: APPROVAL OF CHARTER FOR ADVANCED REACTOR OVERSIGHT PROCESS PERFORMANCE INDICATOR WORKING GROUP DATED: MAY 5, 2025

**DISTRIBUTION**:
RidsNrrDro Resource
RSigmon
AGarmoe
BBenney
DAird
PMcKenna
RFelts
MKhanna
MWaters
TInverso
JMcKirgan
BWelling
MFranke
JKozal
GMiller

**ADAMS Accession No.: ML25125A115** ***concurred via e-mail**

| **OFFICE** | NRR/DRO/IOEB | NRR/DRO/IRAB | NRR/DRO | NRR/DRO |
|---|---|---|---|---|
| **NAME** | RSigmon | AGarmoe | PMcKenna | RFelts |
| **DATE** | 5/5/2025 | 5/5/2025 | 5/5/2025 | 5/5/2025 |

**OFFICIAL RECORD**

**Advanced Reactor Oversight Process**
**Performance Indicator Working Group Charter**

Background

In 2000, the NRC implemented the Reactor Oversight Process (ROP) to replace the previous assessment process, which had come to be viewed as too subjective, with inconsistent results among the regions and an over-reliance on regulatory significance without regards to risk. The ROP was designed to:

- Maintain safety;
- Increase openness;
- Make NRC decisions more effective, efficient, and realistic; and
- Reduce unnecessary regulatory burden.

The resulting process, the ROP, reviews licensee performance across seven cornerstones using a combination of performance indicators and inspection results to provide an objective indication of licensee performance.

Performance indicators (PIs), together with risk-informed baseline inspections, are intended to provide a broad sample of data to assess licensee performance in the risk-significant areas of each cornerstone. In selecting PIs, the initial effort sought to select indicators that: (1) were capable of being objectively measured; (2) allowed for the establishment of a risk-informed threshold to guide NRC and licensee actions; (3) provided a reasonable sample of performance in the area being measured; (4) represented a valid and verifiable indication of performance in the area being measured; (5) would encourage appropriate licensee and NRC actions; and (6) would provide sufficient time for the NRC and licensees to correct performance deficiencies before the deficiencies posed an undue risk to public health and safety.

The thresholds were selected to be risk-informed, when possible, while also recognizing defense-in-depth and indications based on existing regulatory requirements and safety analyses. Thresholds were established so that sufficient margin would exist between nominal performance bands to allow for licensee initiatives to correct performance problems before reaching escalated regulatory involvement, and sufficient margin exists to allow for both NRC and licensee diagnostic and corrective actions in response to declining performance before the point of unsafe plant operation.

Probabilistic Risk Assessment (PRA) models were used to provide a risk-perspective on the thresholds for the Initiating Events and Mitigating Systems cornerstones, but in keeping with the underlying philosophy of the ROP, the thresholds established for most indicators are risk-informed to the extent practical, but not risk-based.

Since the inception of the ROP in 2000, PIs have remained unchanged with the following exceptions:

- In 2006, the Mitigating Systems Performance Index replaced the safety system unavailability indicators as a more risk-informed PI.

- The Loss of Normal Heat Removal PI in the Initiating Events cornerstone was replaced with the Unplanned Scrams with Complications PI in 2007. The new PI, benchmarked against significant events from the early 2000s, proved better able to focus attention on the most risk-significant events indicative of current performance.

- In 2024, Emergency Response Facility and Equipment Readiness PI was developed as a replacement for the Alert and Notification System Reliability PI, which was retired, as described in SECY-23-0010.

The Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy (ADVANCE) Act,[1] signed into law in July 2024, directed NRC to, among other things, identify specific improvements to reactor oversight and inspection programs to maximize efficiency and eliminate duplicative or otherwise unnecessary activities through the use of risk-informed, performance-based procedures. The law further directs expanded incorporation of information technology, including artificial intelligence and machine learning. Staff's intent to conduct an integrated, holistic review of the ROP consistent with the objectives of Section 507 of the ADVANCE Act has been communicated to Commissioner's Assistants and is among the notifications contained in the draft SECY for ROP recommendations related to ADVANCE Act Section 507.[2]

II. Purpose

The purpose of this working group is to perform a comprehensive review of ROP performance indicators, which will inform a potential re-evaluation of the role of PIs in the assessment process and re-baselining of the inspection program to meet ADVANCE Act directives to review the balance of oversight and inspection resources commensurate with safety significance and licensee performance. This includes:

- Identification of indicators of performance across ROP cornerstones
    - Provide an objective measure
    - Representative of licensee performance
    - Risk or safety impact on regulated activities
    - Straightforward measure or calculation based on data already collected for plant performance monitoring
    - Identify indicators that may apply beyond the current light water power reactor fleet including
        - New light water reactors
        - Advanced non-light water reactors
        - Non-power production and utilization facilities
- Determination of the role of indicators for informing inspection samples
    - Consider how thresholds may be established to inform distribution of baseline inspection samples
    - Consider whether individual plant design and risk profile should impact thresholds
    - Ensure indications are available for licensees and NRC to take action prior to more significant impacts on safety
- Determination of the role of indicators in the assessment process
    - Consider whether all or any PIs will continue to be assessed as Action Matrix inputs
        - These would be separate (higher) thresholds than those established for informing baseline inspection distribution
        - May involve combinations of indicators changing thresholds to result in Action Matrix movement.
- Identification of gaps in oversight that require continued baseline inspection

III. Tasking

---

1 S.870, https://www.epw.senate.gov/public/_cache/files/5/0/5053d4be-a56e-446d-8341-53ad78c3e82f/82728233C96DC75092F9436066FAB212.bills-118s870eah.pdf

2 SECY-25-00XX (*Draft)*, Recommendations for Revising the Reactor Oversight Process, ML25042A278

1. Review ROP basis documents and supporting material describing the role of performance indicators, relationship between performance indicators and inspection, basis for current indicators and inspection procedures, as well as information from outside sources identifying performance indicators relevant to NRC oversight of reactors
    a. Inspection Manual Chapter 0308, Reactor Oversight Process Basis Document
    b. IMC 0308 Att. 1, Technical Basis for Performance Indicators
    c. IMC 0608, Performance Indicator Program
    d. SECY 99-007 and SECY 99-007A, Recommendations for Reactor Oversight Process Improvements
    e. NUREG 1753, Risk-Based Performance Indicators: Results of Phase 1 Development
    f. NEI 99-02 Rev. 8, Regulatory Assessment Performance Indicator Guideline
    g. INPO 19-002 Rev. 4, Industry Reporting and Information System (IRIS), *Reporting Requirements*
    h. Development of a Nuclear Industry Safety Culture Inventory (published by the United Kingdom's Office for Nuclear Regulation)
2. Identify potential new indicators, with an understanding that indicators should have a clear, risk-informed nexus to performance
    a. Current indicators
    b. Staff solicitation
    c. Industry input
    d. Cross-reference inspection procedures to identify potential inspection activities that could be indicators
    e. Conduct public workshops to consider various inputs and narrow selection
    f. Consider applicability to new/advanced reactors and NPUFs
3. Perform benchmarking against past performance (IOEB)
4. Identify application for each PI
    a. Applicable technology (including consideration of advanced reactors)
    b. Action matrix applicability and thresholds as appropriate
    c. Baseline sample impact
5. Identify remaining baseline inspection requirements
    a. Expansion of PI verification
    b. Problem Identification and Resolution
    c. Event Response
    d. Probabilistic Risk Assessment configuration control and application
    e. Remaining baseline inspection procedures
        i. What is not covered by PIs
        ii. Identify baseline available to augment oversight of areas covered by PIs/respond to non-Action Matrix PI trends
6. Draft a SECY documenting the team's efforts, conclusions, and recommendations for Commission approval
    a. New PIs
    b. Thresholds for AM
    c. Projected resource implications for IPs
    d. Adjustment to MD 8.13 requirements to allow for more efficient application of lessons learned
7. Identify other impacted program documents that would need to be revised (IRIB and IRAB)
8. Identify inspector training that would be needed (IRAB with TTC)

*Post Commission approval*

9. Pilot program
10. Update inspection procedures (IRIB)
11. Update impacted inspection manual chapters (IRIB and IRAB)
12. Interface with industry for
    a. Necessary guidance (along the lines of NEI 99-02) (IRAB)

b. Buildout of infrastructure for efficient transfer of new PI data from licensees to NRC (IOEB)

13. Update ROP public website (IRAB/IOEB)

IV. Team Leader Functions

- Schedule and lead team meetings
- Schedule and lead public workshops
- Ensure action items are identified and tracked
- Circulate draft products for members to review
- Present at public meetings to provide status of project
- Provide periodic status briefings to NRC managers as required
- Identify need for separate teams/groups for discrete projects under the umbrella of the overall project

**V. Team Membership**

*NRR*

- Phil McKenna, Deputy Director, NRR/DRO (SES Sponsor)
- Rebecca Sigmon, Senior Reactor Systems Engineer, NRR/DRO/IOEB (Co-Lead)
- Alex Garmoe, Senior Reactor Analyst, NRR/DRO/IRAB (Co-Lead)
- Aron Lewin, Reactor Systems Engineer, NRR/DRO/IRIB
- Daniel Geary, Reactor Operations Engineer, NRR/DRO/IRAB
- Jason Carneal, Reactor Systems Engineer, NRR/DRO/IOEB
- Odunayo Ayegbusi, Senior Reactor Operations Engineer, NRR/DRO/IRAB
- David Garmon, Health Physicist, NRR/DRA/ARCB

*Regional Representatives*

- Len Cline, Senior Resident Inspector, Region 1
- Peter Boguszewski, Senior Resident Inspector, Region 2
- Jasmine Gilliam, Branch Chief, Region 3
- Christopher Henderson, Senior Resident Inspector, Region 4

*NSIR*

- Tanvir Siddiky, Reactor Systems Engineer, NSIR/DPCP/CSB
- Jeremiah Rey, Security Specialist, NSIR/DSO/SOSB
- Nadir Chaudhry, Emergency Preparedness Specialist, NSIR/DPR/POB

**VI. Duration**

This charter will remain in effect until the required SECY(s) have been submitted. The performance indicator review is expected to be complete by the end of calendar year 2025, with SECY(s) submitted by April 1, 2026.

**VII. Level of Effort**

Members are expected to review reference information, participate in periodic virtual meetings, and complete action items assigned at team meetings. Travel might be necessary for public meetings and workshops.

Estimated Timeline: (Subject to change)

| **Milestone** | **Date** |
|---|---|
| Working group kickoff meeting | May 5, 2025 |

| | |
|---|---|
| Initial NRC staff solicitation for potential indicators | May 2025 |
| Initial industry workshop | June 5, 2025 |
| Additional public workshops | July – September 2025 |
| Data validation of potential PIs* | June – September 2025 |
| Preliminary identification of areas requiring inspection* | August - October 2025 |
| Brief NRC management (including the Regional Administrators) on the initial results of the effort | September 2025 |
| Additional workshop (if needed) | October 2025 |
| Initial Draft SECY | November 15, 2025 |
| SECY to Commission | April 1, 2026 |

*May involve separate, specialized working group spinoffs