

efficiency bulletin

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Optimizing FLEX Equipment Preventive Maintenance Strategies

Since there is not a large body of history for FLEX equipment in the nuclear industry, the industry adopted a conservative process combining failure modes and effects analysis with vendor information and operating experience from external emergency response organizations to create the initial preventive maintenance (PM) strategies. The industry now must pool its collective testing experience so that the maintenance strategy can be adjusted based on actual experience from storing, testing and using the FLEX equipment.

Addressees: Chief nuclear officers, NEI APCs and INPO APCs

Issue: PMP-999, Optimizing FLEX Equipment PM Strategies

Summary of Efficiency Opportunity

- Desired end-state—Optimizing PM tasks for FLEX equipment will ensure that appropriate resources are applied to the FLEX equipment based on a value-added reliability focus. The outcome will provide the operating history necessary to effectively adjust the maintenance strategy for the FLEX equipment to assure appropriate reliability by applying the right maintenance on the right equipment at the right time.
- Value proposition (vision of excellence)—By collecting information on the operating history of the FLEX equipment in an industry database, it will be possible to continually adjust the maintenance strategies for the components. This will result in the appropriate use of resources necessary to maintain the requisite reliability to assure that regulatory-mandated performance is met. At present, there is limited operating history as the equipment has been used only a short time in this type of application.



NUCLEAR ENERGY INSTITUTE

The Nuclear Energy Institute is the nuclear energy industry's policy organization.

This bulletin and additional information about nuclear energy are available at nei.org.

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- Why it is important?—The current maintenance strategies for the FLEX equipment were developed from the collective experience of subject matter experts for the components. There was no previous operating history for this equipment in this application. As the experience is developed over the next several years, prudence dictates that the maintenance strategies be adjusted to factor in the lessons learned during this period of operation. This will assure that the necessary reliability is obtained at the most reasonable level of resource allocation.

Relevant Standards

- Nuclear Maintenance Applications Center: Preventive Maintenance Basis for FLEX Equipment—Project Overview Report. EPRI, Palo Alto, CA. 2013. [3002000623](#).
- U.S. NRC Staff Directive JLD-ISG-2012-01, Order to Modify Licenses with regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, March 12, 2012.
- [NEI-12-06,-Rev-2](#) Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 2, December 2015.

Guidance

Please reference guidance found in WM-1 of the “Industry Cumulative Impact Short-Term Actions” report issued in November 2013. WM-1 in this document discusses the need to adjust preventive and predictive maintenance scope and frequency based on as-found condition. Since the quantity of FLEX equipment is limited at each station, the industry will adjust the maintenance strategy according to the as-found conditions throughout the industry for similar FLEX equipment.

Recommend Industry Actions

- Implement actions for WM-1 in the Cumulative Impact Short-Term Actions, dated November 2013

Change Management Considerations

Industry Activities

- Industry webinar to provide background for initiative, industry peer discussion, and provide an open forum to clarify expectations and ask questions. Webinar information can be found at <https://web.inpo.org/Pages/Nuclear-Promise-Issues.aspx>
- EPRI is creating a database for relevant industry reporting of operating history for FLEX equipment. Industry personnel will populate this database as relevant information becomes available.
- This information will be used by industry personnel with the assistance of EPRI, to adjust the task, task content and task intervals for the FLEX equipment maintenance and testing strategies to assure the requirements of the staff directive and industry commitments are met.
- Attend EPRI sponsored workshops on PM optimization or schedule an on-site workshop.

Key to Color Codes:

Red: NSIAC initiative – full participation required for viability

Blue: Action expected at all sites, but is not needed for broad industry viability

Green: Utility discretion to implement, consistent with its business environment

Company Actions

- Use the EPRI Collaboration site for FLEX equipment:
<https://membercenter.epri.com/collaboration/4000000475/Pages/default.aspx>
- Actively participate in the Industry FLEX PM Working Group and its periodic telephone calls.
- Review the industry history associated with FLEX equipment reliability and adjust the maintenance strategy as necessary.

Guidelines

- Revisions to component PM tasks must be documented in the station's PM technical bases or other engineering records.

Report Your Site's Results

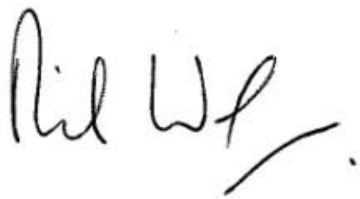
Please report your company's implementation of this improvement opportunity, including the date of completion. Send this information, along with your company point of contact, to EfficiencyBulletin@NEI.org.

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