EPRI Update

Procurement Engineering and Supply Chain

Marc H. Tannenbaum
Technical Executive

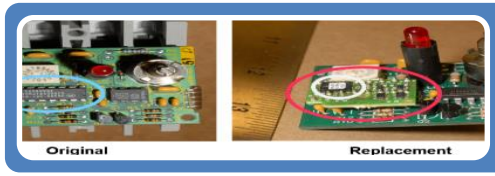
Readily Accessible Parts Information Directory Conference and Technical Exhibit
May 21, 2018

Recently Completed EPRI Products (www.membercenter.epri.com)

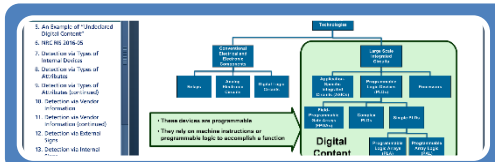
Use of Reverse Engineering Techniques – 3002011678 – Available at end of May

Procurement Engineering Safety Classification CBT (PESC CBT), PC and LMS Version 1.0 - 3002011679

Critical Spares Program Implementation and Lessons Learned - 3002010685



Prevention and Detection of Undeclared Digital Content – 3002008010



Undeclared Digital Content CBT, version 1.0– 3002009558

Counterfeit, Fraudulent, and Suspect Items CBT (CFI), version 2.0 - 3002007381

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EPRI Projects Working in 2018 (Supply Chain & Procurement Engineering)

Technical Evaluation Efficiency Improvement - Develop information that can be used to decrease the amount of time required to complete certain types of procurement engineering evaluations.

Advanced Commercial Grade Dedication Seminar - Instructor-led seminar that presents the detailed commercial grade dedication process in its entirety and provides students with the opportunity to complete a dedication technical evaluation over the course of the seminar.

10CFR50.69 RISC-3 Procurement Treatment – Develop alternative treatment guidance for procurement of low-risk items

Other industry initiative-related work in 2018

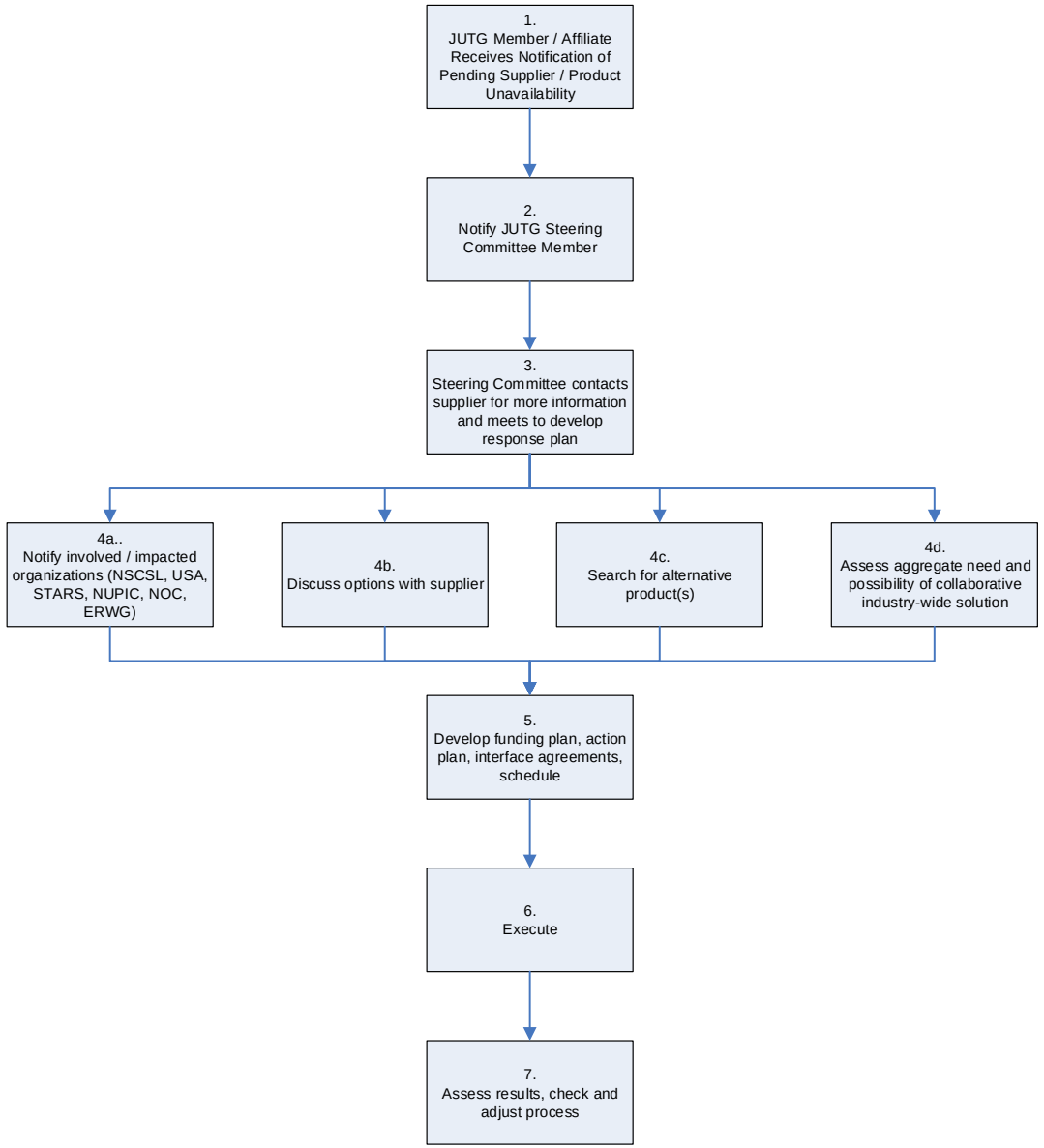
Acceptance of Commercial Digital Devices using Safety Integrity Levels – Determine how safety integrity levels (SILs) might be used to facilitate acceptance of commercial digital devices for use in safety-related applications

Standard Equivalency Evaluation Procedure – Post-development roll-out and refinement of a procedure that can be used by licensees to promote standard equivalency evaluation practices – can benefit everyone, even with partial implementation

10CFR50.69 Risk-based Safety Classification – Determine appropriate special treatment for items that are classified as safety-related, low-risk (SR-R3)

IAEA Justification of Commercial Industrial Instrumentation and Control Equipment for Nuclear Power Plant Applications – Guidance to enable the use of commercial digital equipment in safety-related applications

EPRI JUTG Pending Obsolescence Response Protocol



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JUTG-03, Revision 0
July 5, 2017

PENDING OBSOLESCENCE RESPONSE PROTOCOL

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JOINT UTILITY TASK GROUP ON PROCUREMENT ENGINEERING (JUTG)

This document was approved for use by the JUTG Steering Committee on July 5, 2017

Marc H. Tannenbaum — July 5, 2017
Marc H. Tannenbaum — Date

Title Page

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EPRI JUTG Pending Obsolescence Response Protocol

- Dietrich Standard, Inc – Not renewing ASME N-Certificate
  - JUTG POP Notification sent to impacted members.

- Invensys/Foxboro – Acquired by Framatome, limited impact anticipated

- Swagelok – Not renewing ASME N-Certificate and discontinuing 10CFR50, Appendix B-compliant QA program for valves
  - JUTG POP Notification sent to impacted members.

Emerging U.S. Regulatory Concerns related to Procurement

- NRC contends that “current interrupt rating” is a critical characteristic for electrical devices
  - Significant cost and lead-time impact
- NRC concerns with maintaining / establishing environmental qualification
  - Challenging validity of existing technical bases and methodology
  - Challenging shelf-life, storage conditions, control of elastomers
- NRC concerns with implementation of reverse engineering activities (NRC IN 2016-09)
  - Should be addressed in EPRI 3002011678

Emerging U.S. Regulatory Concerns related to Procurement

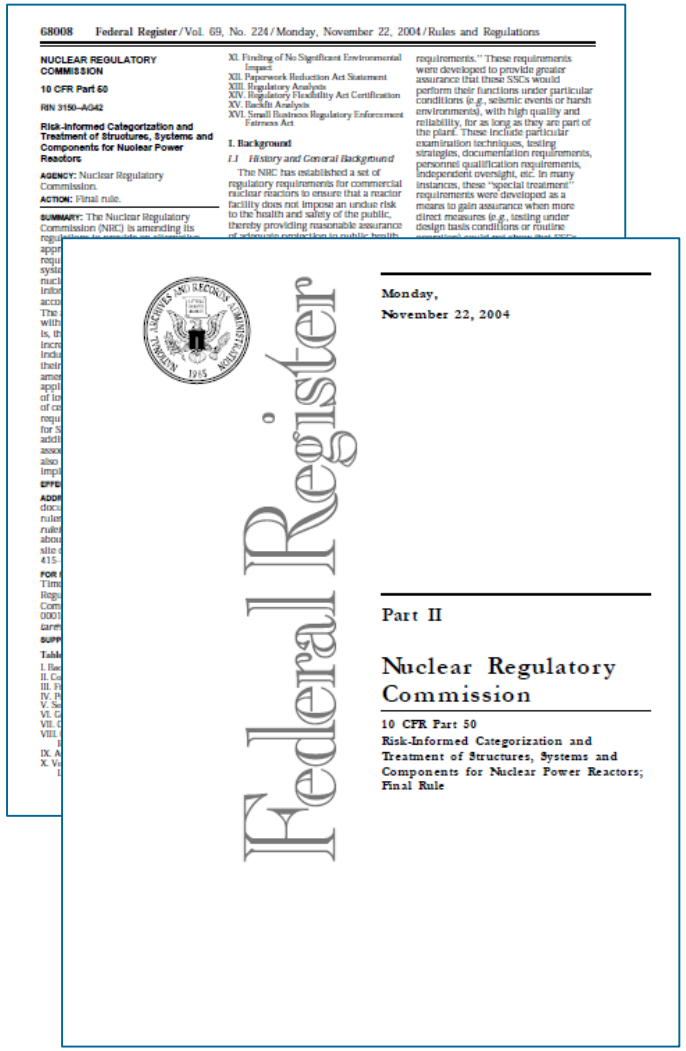
- NRC staff have asked how “alternative treatments” for procurement of 10CFR50.69 RISC-3 SSC’s will help provide *reasonable confidence* that the items will be capable of performing their safety functions
  - Potential for inspection questions related to procurement

10CFR50.69 Alternative Treatment Guidance

- Nuclear Energy Institute (NEI) Risk Informed Engineering team completed NEI 17-05 Rev. A, Risk Informed Engineering Programs: RISC-3 Alternative Treatment Framework Guide
  - Procurement considerations are included
    - *For RISC-3 SSC's the licensee may voluntarily comply with 10CFR50.69 as an alternative to certain other regulations including 10CFR50, Appendix B; 10CFR21; and 10CFR50.49*
    - "The licensee or applicant sh**all** ensure, with reasonable confidence, that RISC–3 SSCs remain capable of performing their safety-related functions under design basis conditions, including seismic conditions and environmental conditions and effects throughout their service life . . . inspection and testing, and corrective action shall be provided for RISC–3 SSCs."

50.69 - “rolled-out” in November 2004

“It is important to note that this rulemaking effort, while intended to ensure that the scope of special treatment requirements imposed on SSCs is risk-informed, *is not intended to allow for the elimination of SSC functional requirements or to allow equipment that is required by the deterministic design basis to be removed from the facility (i.e., changes to the design of the facility must continue to meet the current requirements governing design change; most notably § 50.59*). Instead, this rulemaking should *enable licensees and the staff to focus their resources on SSCs that make a significant contribution to plant safety* by restructuring the regulations to allow an alternative risk-informed approach to special treatment. Conversely*, for SSCs that do not significantly contribute to plant safety on an individual basis, this approach should allow an acceptable, **though reduced**, level of confidence (i.e., “reasonable confidence”) that these SSCs will satisfy functional requirements*. However, continued maintenance of the health and safety of the public will depend on effective implementation of § 50.69 by the licensee or applicant applying the rule at its nuclear power plant.


68008 Federal Register / Vol. 69, No. 224 / Monday, November 22, 2004 / Rules and Regulations

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

RIN 3150–AG42

Risk-Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its

XI. Finding of No Significant Environmental Impact
XII. Paperwork Reduction Act Statement
XIII. Regulatory Analysis
XIV. Regulatory Flexibility Act Certification
XV. Backfit Analysis
XVI. Small Business Regulatory Enforcement Fairness Act

I. Background

I.1 History and General Background

The NRC has established a set of regulatory requirements for commercial nuclear reactors to ensure that a reactor facility does not impose an undue risk to the health and safety of the public, thereby providing reasonable assurance

requirements.” These requirements were developed to provide greater assurance that these SSCs would perform their functions under particular conditions (*e.g.*, seismic events or harsh environments), with high quality and reliability, for as long as they are part of the plant. These include particular examination techniques, testing strategies, documentation requirements, personnel qualification requirements, independent oversight, etc. In many instances, these “special treatment” requirements were developed as a means to gain assurance when more direct measures (*e.g.*, testing under design basis conditions or routine

Federal Register

Monday, November 22, 2004

Part II

Nuclear Regulatory Commission

10 CFR Part 50

Risk-Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors; Final Rule

Per 10CFR50.69, Licensees can voluntarily comply with 10CFR50.69 for RISC-3 &RISC-4 items as an alternative to compliance with:

QA Requirements 10CFR50, Appendix B	Reporting of Deficiency & Noncompliance 10CFR21	ASME Section XI Replacements (limited) 10CFR50.55a(g)	Seismic Qualification 10CFR100, Appendix A (partial)
Environmental Qualification 10CFR50.49	Applicable Portions of IEEE standards 10CFR50.55a(h)	Local Leak Rate Testing 10CFR50, Appendix J	In-Service Inspection 10CFR50.55a(g)
Maintenance Rule 10CFR50.65	Event Reporting 10CFR50.55(e)	In-Service Testing 10CFR50.55a(f)	Notification Requirements 100CFR50.72, 50.73

Other special requirements remain in effect

- Design basis functional requirements
- Design basis accidents
- Fracture toughness requirements
- Technical Specification
- Fire protection
- General Design Criteria

10CFR50.69 also says:

(2) RISC–3 SSCs. The licensee or applicant *shall ensure, with reasonable confidence, that RISC–3 SSCs remain capable of performing their safety-related functions under design basis conditions, including seismic conditions and environmental conditions and effects throughout their service life*. The treatment of RISC–3 SSCs must be consistent with the categorization process. *Inspection and testing, and corrective action shall be provided for RISC–3 SSCs.*

(i) Inspection and testing. Periodic inspection and testing activities must be conducted to determine that RISC–3 SSCs will remain capable of performing their safety-related functions under design basis conditions; and

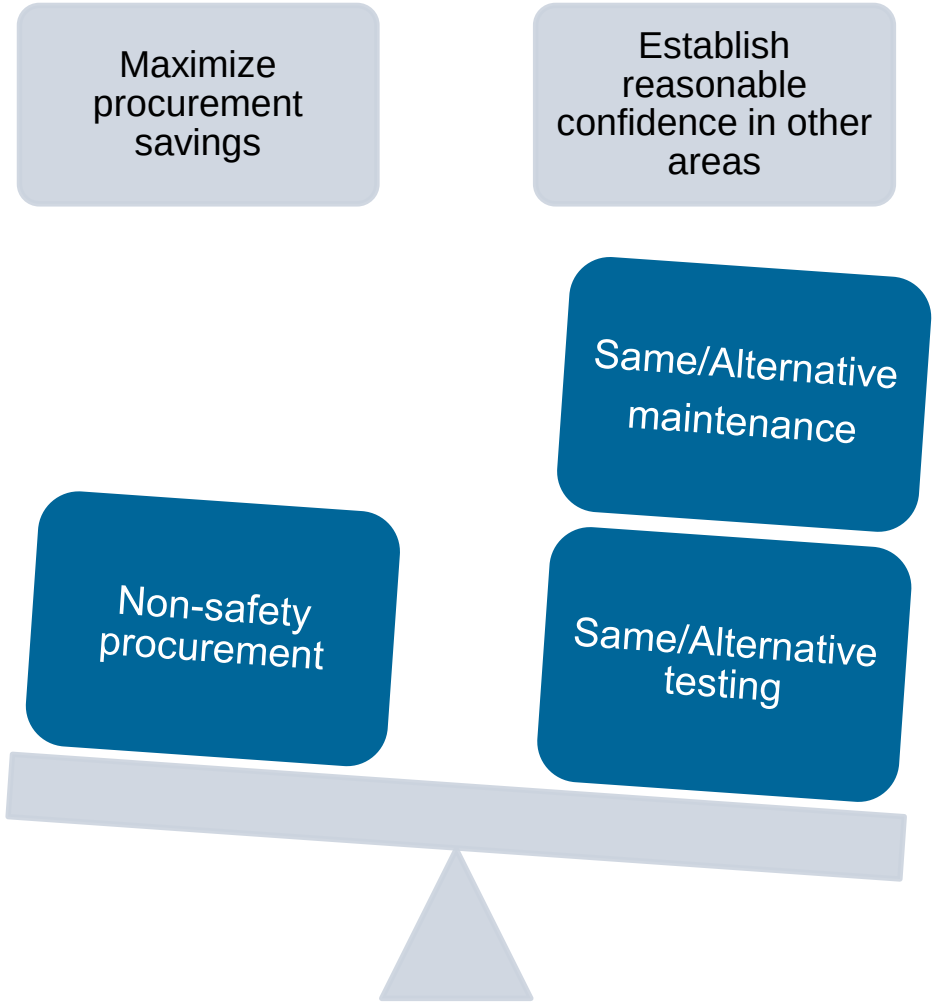
(ii) Corrective action. Conditions that would prevent a RISC–3 SSC from performing its safety-related functions under design basis conditions must be corrected in a timely manner. For significant conditions adverse to quality, measures must be taken to provide reasonable confidence that the cause of the condition is determined and corrective action taken to preclude repetition.

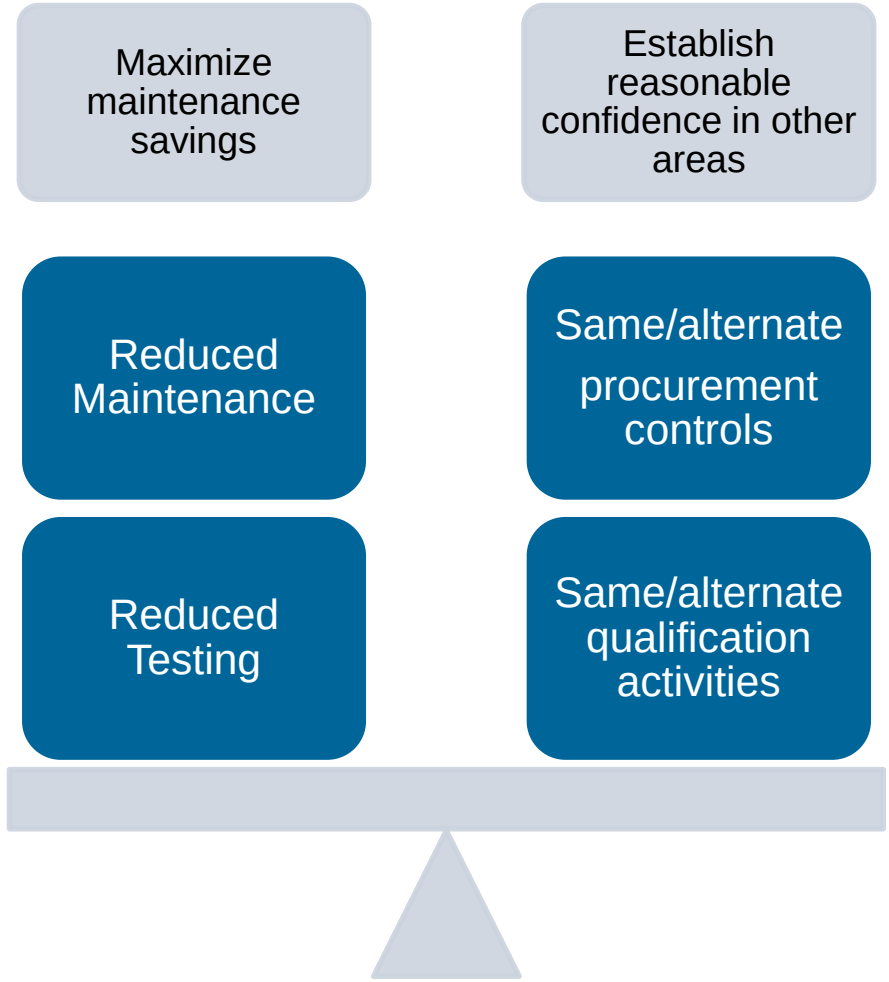
(e) Feedback and process adjustment—(1) RISC–1, RISC–2, RISC–3 and RISC–4 SSCs. The licensee *shall review changes to the plant, operational practices, applicable plant and industry operational experience*, and, as appropriate, update the PRA and SSC categorization and treatment processes. The licensee shall perform this review in a timely manner but *no longer than once every two refueling outages.*

EPRI RISC-3 Procurement Guidance

- Provides a new procurement option for SR-R3 items
- Accurate, clear communication is essential
- New terminology for Alternate Procurement Treatment?
  - Safety Related
  - Safety-Related Commercial Grade
  - Safety-Related RISC-3?
  - Non-Safety-Related
  - Non-Safety-Related Augmented Quality
- Information system changes?
- Qualification terminology
  - Qualification
  - RISC-3 Qualification?

Alternative approach based on obtaining reasonable confidence and cost-effective procurement





Alternative Treatment for 1 IN Air-operated diaphragm Globe Valve

- 150 lb ANSI Class
- Containment Isolation valve
  - Rad monitor sample line
  - Normally open
  - Fail closed
- ASME Section III, Class 3
- Schedule 40 socket weld ends
- EQ Solenoid Valve to vent diaphragm
- EQ limit switches for position indication

Special Treatment	$avings Target	Approach to Alternate Treatment	Interdependencies / Comments
10CFR50, App. B	Yes	Purchase same valve & actuator sans nuclear QA	Procurement Spec.
10CFR21	Yes	Purchase same valve & actuator sans nuclear QA	Procurement Spec.
ASME Section XI	Yes	ANSI B31.1 in lieu of ASME Sec. II, Class3 (same size, pressure) Purchase ASTM materials identical to ASME for pressure retaining items (body, bonnet, studs, nuts)	PE or DE Document via SIEP. Procurement Spec.
Seismic Qualification 10CFR100, App. A	Yes	Verify weight and center of gravity	Purchasing identical materials, model, size
Environmental Qualification, 10CFR50.49	No	Use existing EQ solenoid valves and limit switches	
IEEE 10CFR50.55a(h)	No		
Local Leak Rate Testiing 10CFR50, App. J	Yes	Eliminate Type C LLRT. Require manufacturer to perform seat leakage test with licensee source verification	Procurement Specification
In-Service Inspection 10CFR50.55a(g)	Yes	Perform post-installation functional / stroke testing	Maintenance Work Order instructions
Maintenance Rule 10CFR50.65	Maybe		
Event Reporting 10CFR50.55(e)	No		
In-service Testing 10CFR50.55a(f)	Maybe	Supplier seat leakage test	
Notification Requirements 10CFR50.72, 50.73	No		

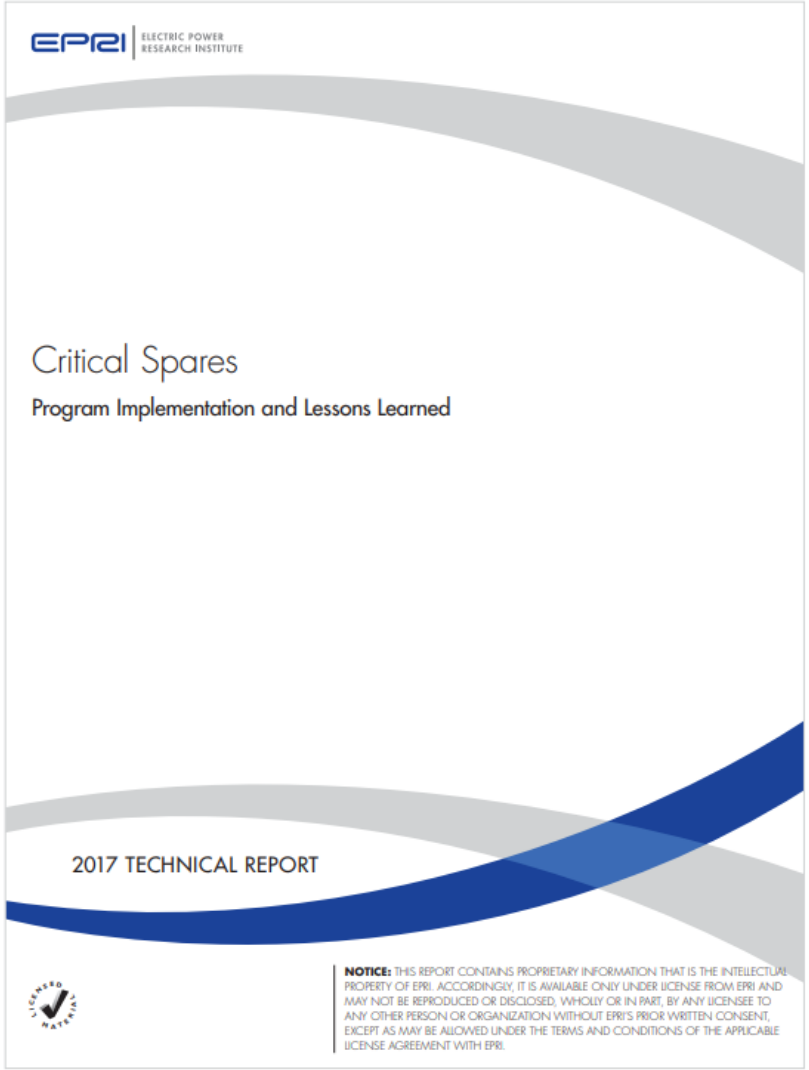
Alternative approach based on maximum savings

Maximize procurement, LLRT, ISI, IST savings	Establish reasonable confidence in other areas
Eliminate Type C LLRT	PO requires witnessed seat leakage testing
Purchase ANSI in lieu of ASME	Use existing EQ limit switches & solenoid valves
Purchase Actuator non-QA	Verify mass and center of gravity
Eliminate in-service inspection, IST	Perform post-installation testing

Critical Spares Implementation and Lessons Learned

- EPRI 3002010685 published November 2017
  - Update to EPRI 1019162
  - Value-based approach
    - Balance risk and cost to manage critical spares

- Ensure that the spare and replacement items needed to support operation of critical equipment are evaluated and if appropriate are available to minimize equipment unavailability and optimize generation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Critical Spares

Program Implementation and Lessons Learned

2017 TECHNICAL REPORT

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Critical Spares Implementation and Lessons Learned

- Updated definition of “Critical Spares”
  - Spares that support critical component functions or support utility-specific equipment reliability goals
  - Other factors for inclusion/exclusion as a critical spare may vary by utility based on integrated risk, to include:
    - Supplier performance
    - Probabilistic risk assessment insights
    - Spare costs
    - Lead-time
    - Usage, and so forth.

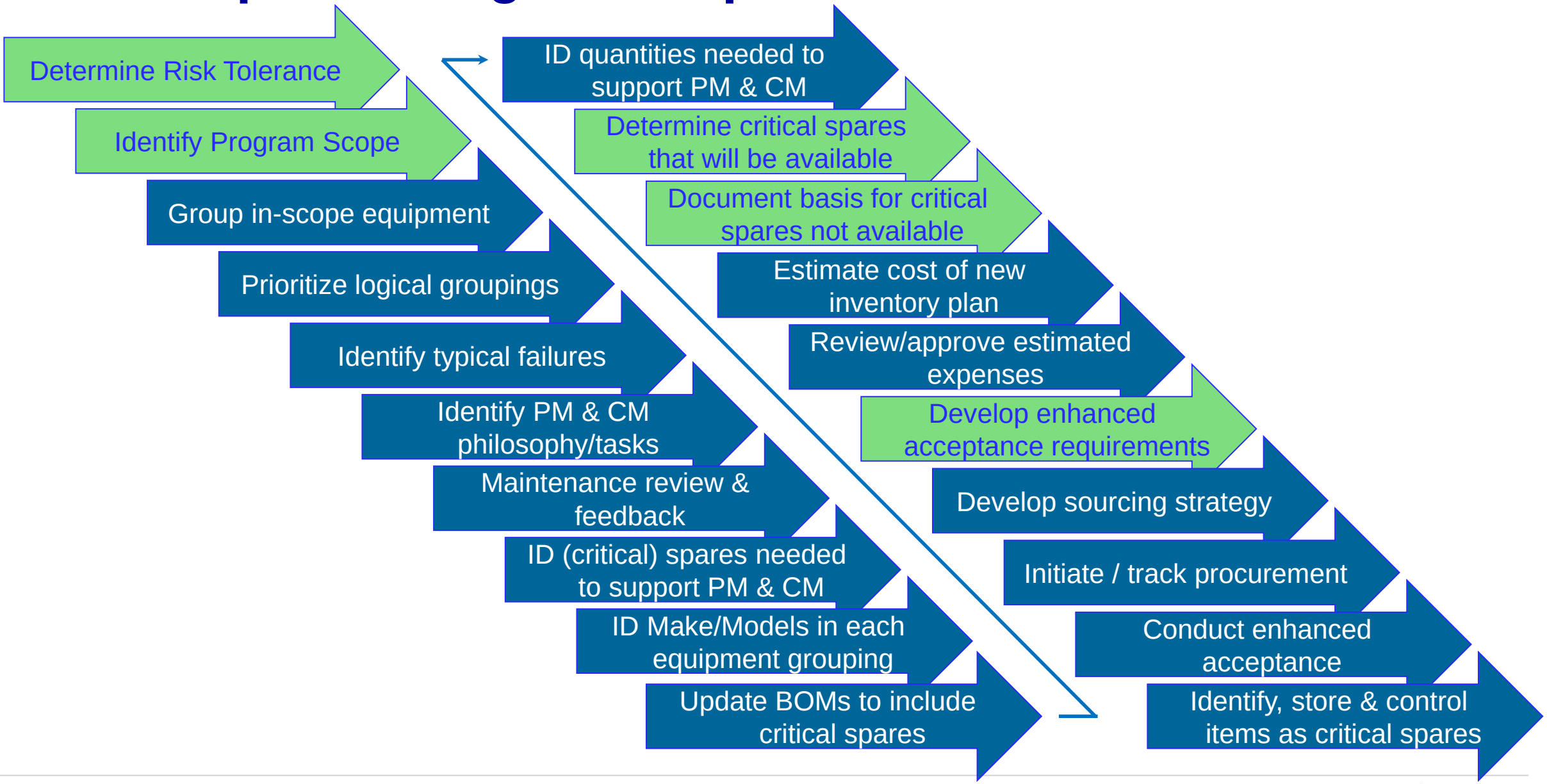
Critical Spares Implementation and Lessons Learned

- Crux of a critical spares program is definition of scope
  - Wider scope dilutes focus on equipment and associated spare and replacement items
- Senior management should be involved in establishing and adjusting scope
  - Scope should reflect tolerance for risk, mitigation strategy, regulatory requirements, and condition of equipment
- Critical spares may be thought of as insurance against the impact of unexpected equipment failures
  - Establishing the scope of a critical spares program can be likened to choosing the type of insurance policy and level of coverage to purchase

Critical Spares Implementation and Lessons Learned

- Careful consideration is warranted when identifying critical spares
  - Additional inventory valuation can directly impact financial results and external obligations, such as ad valorem taxes.
- Enhanced acceptance activities can be implemented where appropriate to ensure that in-stock critical spares function reliably when they are installed, such as:
  - Detailed procurement specifications
  - Supplier oversight
  - Pre-receipt inspection and testing
  - Pre-installation inspection and testing

Critical Spares Program Steps



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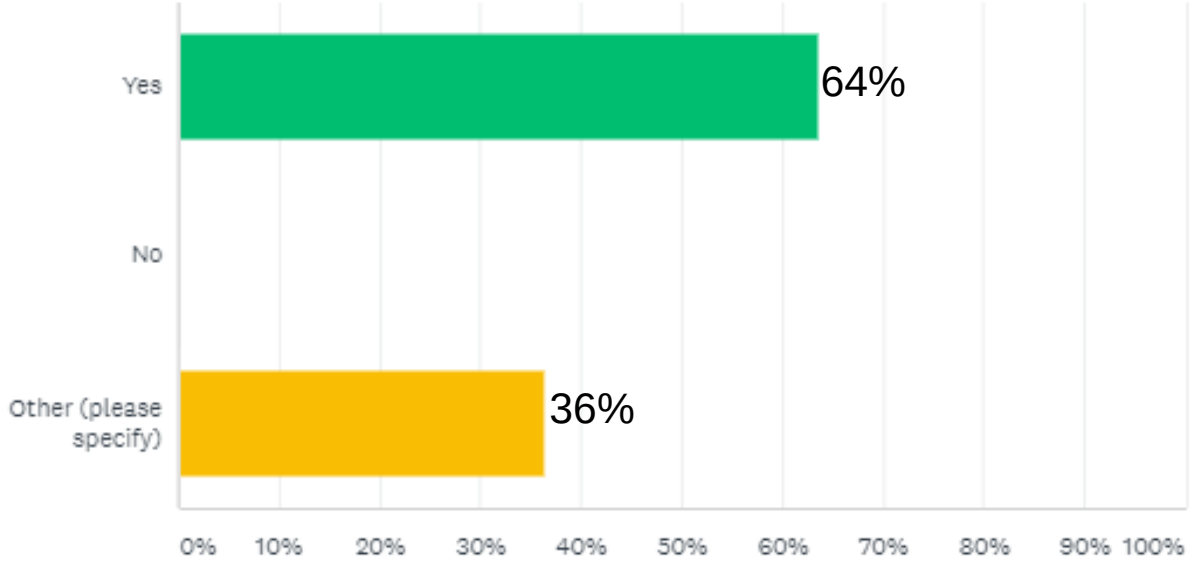
May 2018 Critical Spares Survey

Has the DNP critical component/equipment re-categorization (reduction based on updated definitions of single point vulnerability and critical) been completed? Note, this question addressed re-categorization, not identification of critical spares?

Answered: 11 Skipped: 1



Comments:

- It has been started but not completed
- Don't know, but don't think so
- Site has completed re-categorization. Critical Spares have not been removed from the program based on this.
- Still ongoing

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Quantities of critical spares

If your organization has completed component/equipment re-categorization (reduction based on updated definitions of single point vulnerability and critical) as a result of DNP, what is the new total number of critical components per plant/site?

Answered: 10 Skipped: 2

7000 average per 2-unit station					
847					
	Plant 1		Plant 2		Plant 3
Tier 1	34	172	53	378	35	555
Tier 2	138		325		520
Unknown					
Approximately 1500 per unit					
1679					
Plant 1	Plant 2	Plant 3	Plant 4	Plant 5	Plant 6
5350	1946	2141	6459	4139	3809
Not Sure					
Do not know					
Unknown					

2015 survey reported number of critical spares ranged from 31 to 17,921

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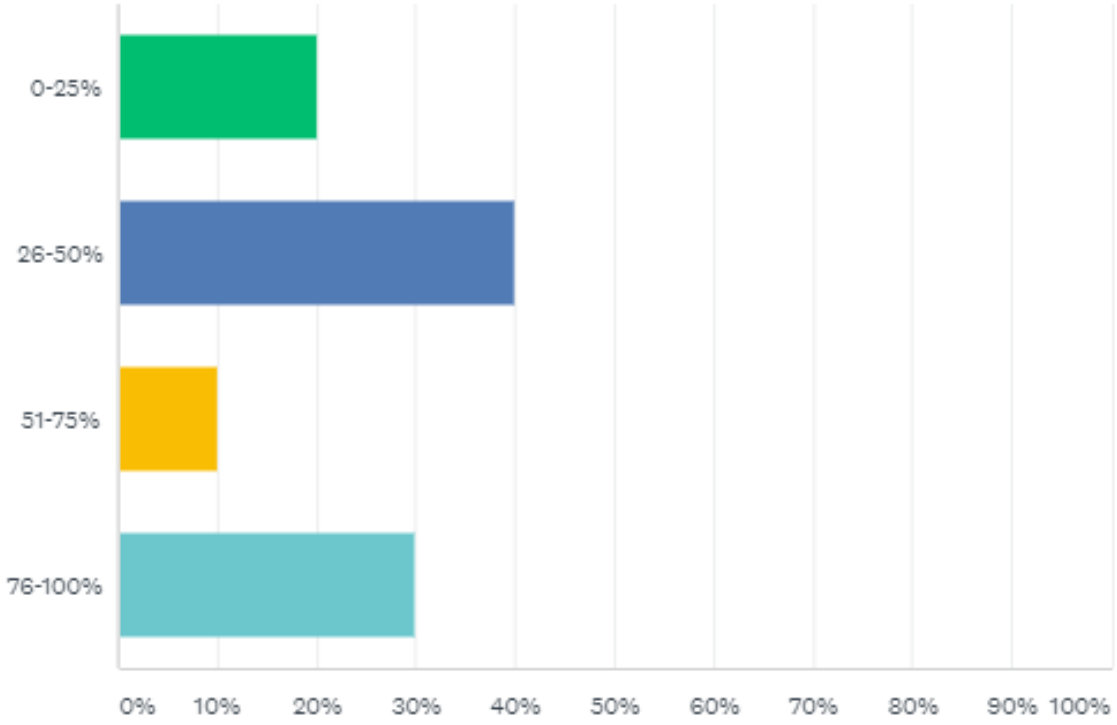
Post re-categorization critical spares evaluation progress

If your organization has completed critical component/equipment re-categorization (reduction based on updated definitions of single point vulnerability and critical) as a result of DNP, what is the approximate percentage of critical components that have been evaluated by the critical spares program?

Answered: 10 Skipped: 2



Comments:

- We have written a condition report to address the changes in component criticality that has not been evaluated yet.
- Work in progress

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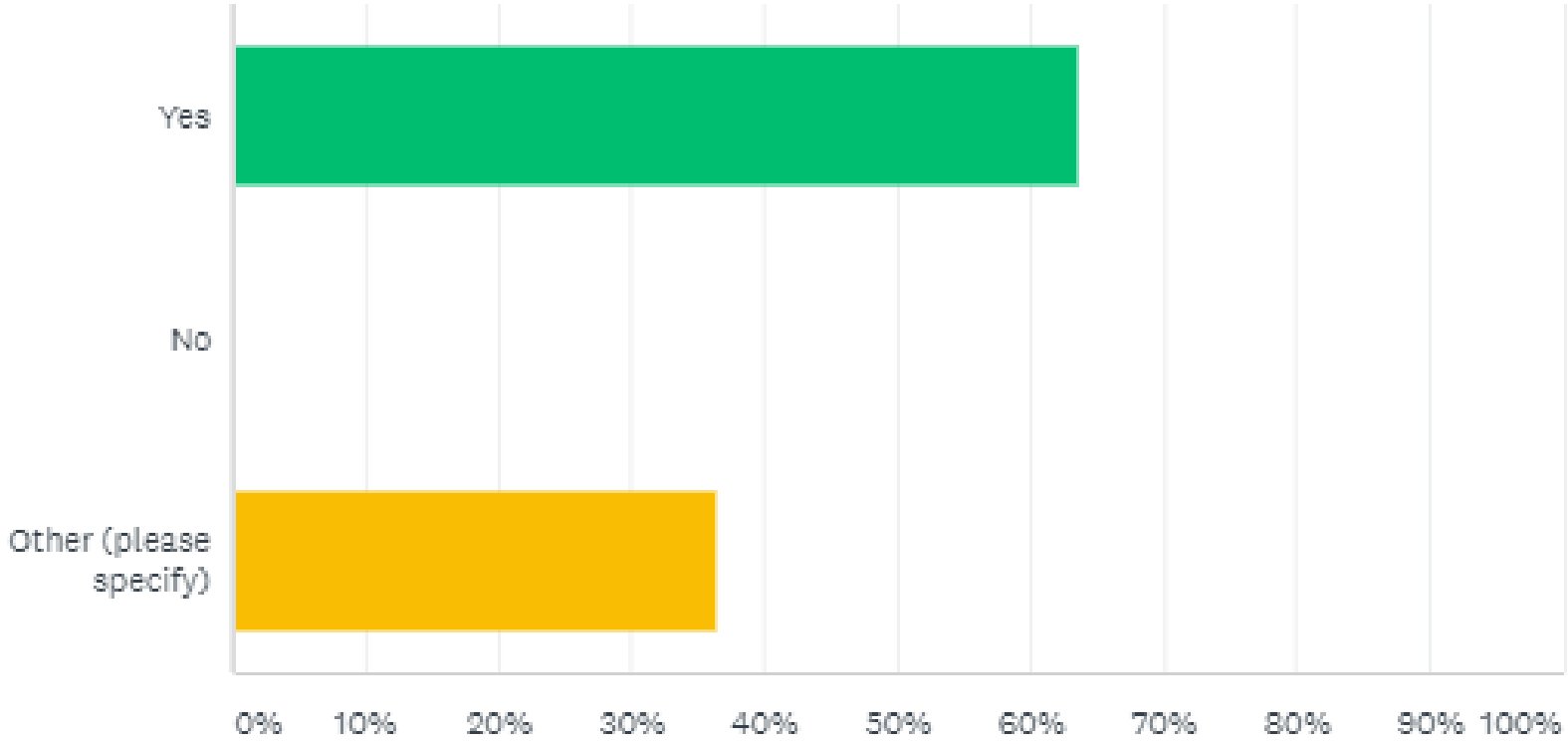
Is inventory valuation a consideration?

Does your critical spares program include provisions to consider and account for impact on inventory valuation due to critical spare stocking decisions?

Answered: 11 Skipped: 1



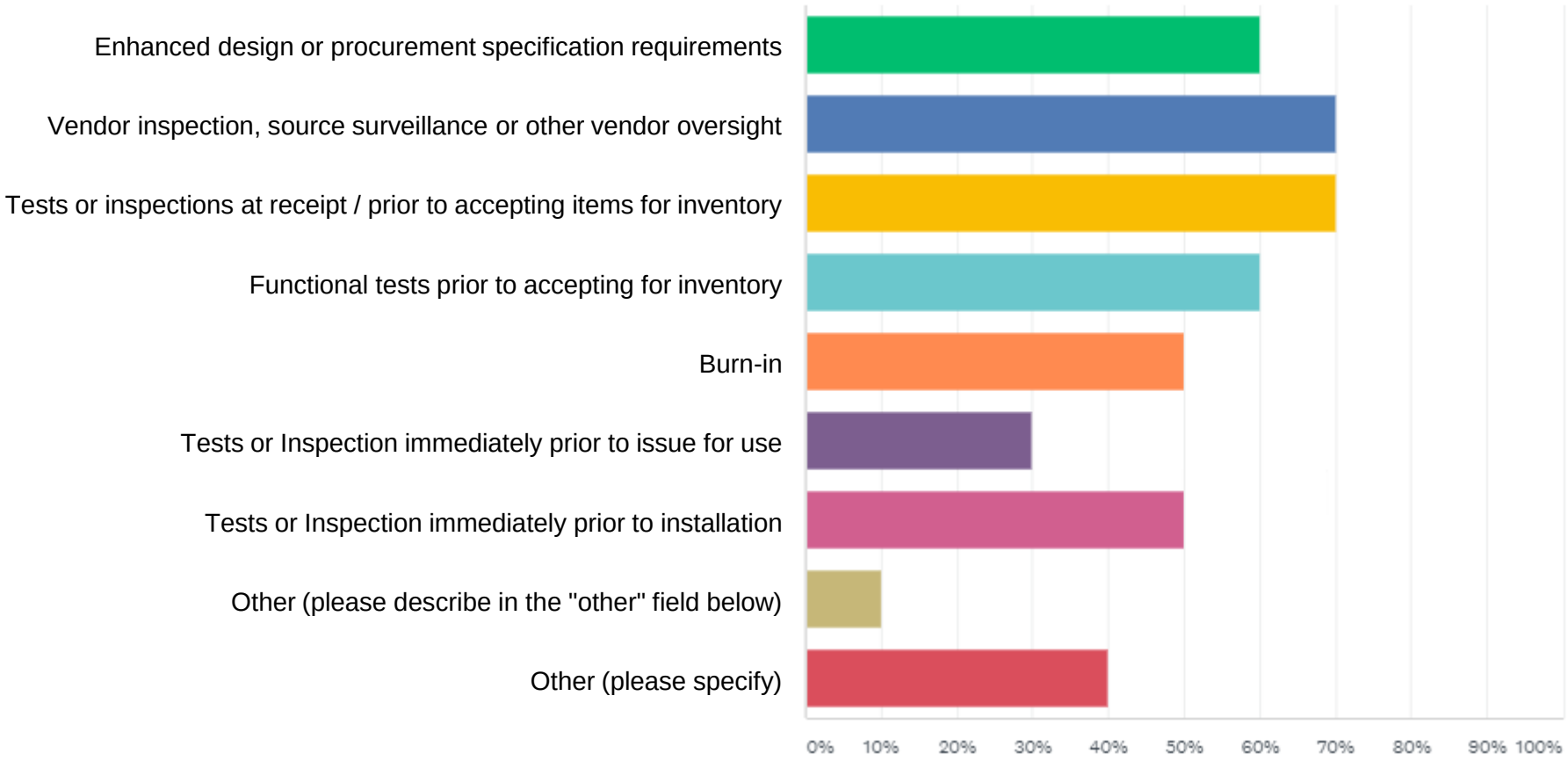
Comments:

- Was performed during initial identification - not revisited
- Yes, we convene a material review board for >$25K items to determine if they will be procured.
- Inventory increase and stocking level increase Performance Indicators do not get impacted by E critical spare decisions. For example, there is a goal for stocking level adds per year. E and Y critical items do not impact this indicator
- Yes, CT review for >$5K, PRG review if greater than $50K

Control of critical spares

What special controls are used to ensure function/reliability of critical spare parts? Please select all responses that apply:

Answered: 10 Skipped: 2



Other:

- Preventive maintenance on items, including critical spares, as required by our procedures. (e.g. motors, breakers, etc.)
- First two items as deemed necessary, on a case by case/item by item basis
- Will probably use a 3rd party to obtain the spares and have them do the PQI testing. this way the costs go into the AUP and not an O&M expense.
- ISPM

Procurement-Related Instructor-Based Training in 2017 Open Sessions at EPRI in Charlotte, NC

Course	Dates
Nuclear Utility Procurement	July 9-11, 2018
Procurement of Pressure Boundary Items	July 12-13, 2018
NUPIC Audit Team Leader Training	August 14-16, 2018
Nuclear Utility Procurement	December 4-6, 2018

Courses are also available on-site
Please contact Britnie at bmccallum@epri.com for more information

Summer 2018 JUTG

- August 7-9
- EPRI's Offices - Charlotte, North Carolina
  - Room block / reception at Hilton University Place

Winter 2019 JUTG

- Feb 12-14
- Targeting San Antonio, TX

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