

USNRC Engineering Inspection Review



Engineering Inspection Review

Objective

**Discuss recommendations of
Engineering Inspection Working Group
with stakeholders and seek feedback**



Engineering Inspection Review

Principal Considerations

- Consider stakeholder input
- Increase or maintain effectiveness
 - Independent oversight
 - Identification of latent conditions
 - Increase relevance to current challenges



Engineering Inspection Review

Principal Considerations (Cont'd.)

- Increase efficiency
 - Eliminate overlap
 - Capture advantages of holistic inspection of engineering design changes
- Knowledge gained from inspection experience
 - 18+ years
 - Value of independent inspection
 - Credible assessment of plant design



Engineering Inspection Review

Overall Results

- Conduct independent NRC engineering inspections annually
- New suite of engineering inspection procedures
- Holistic, agile, flexible, relevant
- Reduced overlaps and addressed gaps
- Maintain reasonable assurance of safety



Engineering Inspection Review

Current Engineering Inspections (Triennial Period)

Year 1

DBAI – Team Inspection

BI: 312 Hours

Resources: 4 Inspectors / 2 Contractors

Onsite Presence: 2 Weeks

Inservice Inspection

BI: 30 - 100 Hours

Resources: 1-2 Inspectors

Onsite Presence: 1-2 Week(s)

Year 2

Triennial Fire Protection

BI: 240 Hours

Resources: 3-4 Inspectors

Onsite Presence: 2-3 Weeks

Heat Sink Inspection

BI: 40 Hours

Resources: 1-2 Inspectors

Onsite Presence: 1 Week

Year 3

DBAI – Programs

BI: 192 Hours

Resources: 3 Inspectors

Onsite Presence: 2 Weeks

50.59 Inspection

BI: 92 Hours

Resources: 3 Inspectors

Onsite Presence: 1 Week

Inservice Inspection

BI: 30 - 100 Hours

Resources: 1-2 Inspectors

Onsite Presence: 1-2 Week(s)



Engineering Inspection Review

Proposed Engineering Inspections (Quadrennial Period)

Year 1

Comprehensive Engineering Team Inspection

BI: 350 Hours
Resources: 5 Inspectors / 2 Contractors
Onsite Presence: 2 Weeks

Year 2

Focused Engineering Inspection #1

BI: 210 Hours
Resources: 3 Inspectors
Onsite Presence: 2 Weeks

Inservice Inspection

BI: 30 - 100 Hours
Resources: 1-2 Inspectors
Onsite Presence: 1-2 Week(s)

Year 3

Focused Engineering Inspection #2

BI: 210 Hours
Resources: 3 Inspectors
Onsite Presence: 2 Weeks

Year 4

Focused Engineering Inspection #3

BI: 210 Hours
Resources: 3 Inspectors
Onsite Presence: 2 Weeks

Inservice Inspection

BI: 30 - 100 Hours
Resources: 1-2 Inspectors
Onsite Presence: 1-2 Week(s)



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Future Engineering Inspections

- Identify if latent design issues are introduced through design changes
- Verify SSCs continue to be capable of performing as designed through a emphasis on more relevant areas (aging, obsolescence, etc.)
- Verify changes do not introduce new or increased frequency of initiating events



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Comprehensive Engineering Team Inspection (CETI)

- Emphasize inspection on changes, operating experience, and aging
- Incorporates elements of modifications, 10CFR50.59, and DBAI inspections
- Team makeup of five inspectors with one or two contractors for two onsite weeks



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Focused Engineering Inspection (FEI)

- Independent inspection of specific engineering activities
- Areas may be identified with stakeholder input, selected by NRC
- Risk insights and operating experience considered



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FEI (Cont'd)

- Nominally three inspectors for two onsite weeks depending on inspection (focus area dependent)

In-Service Inspection

- Added periodic oversight of 10-year program implementation
- Continue inspections during outages



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Resource Implications

	Current 3 Year Cycle	Proposed 4 Year Cycle
Total Number of Inspections	7 Inspections	6 Inspections
Annual Onsite Weeks	3.66 weeks/yr (11 onsite weeks)	2.75 weeks/yr (11 onsite weeks)
Average Inspection Hours per Year	293 Hours	245 Hours

- Overall reduction in annualized baseline inspection and associated prep/doc



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Improved safety inspections

- Annual independent NRC engineering inspections
- New suite of engineering inspection procedures
 - Holistic, agile, flexible, relevant
 - Reduced overlaps and addressed gaps
- Maintain reasonable assurance of safety



Engineering Inspection Review

Recap of EIWG Recommendations

- Implement changes to engineering inspections
 - Increased effectiveness
 - Increased efficiency
 - Increased agility
 - Increased relevance



Engineering Inspection Review

Recap of EIWG Recommendations (Continued)

- Reduce types of inspections from 6 to 3
- Increase inspection cycle from 3 years to 4 years
- Implementation Timeline Considerations
 - Immediate?
 - 2019?
 - 2020?

Future Considerations

Licensee Self Assessments



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EIWG Recommendations

- Continue dialog on self-assessments
- Industry develop self-assessment standard
- Consider implementation of a project demonstration with independent NRC oversight
- Establish criteria for use (e.g., licensee in Column 1 for three consecutive years?)
- Establish limitations on use



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Self Assessment Standard

- Proposed by industry and reviewed/approved or endorsed by NRC
- Must address
 - Independence
 - Clarity and Reliability (self-critical)
 - Openness
 - Efficiency



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Project Demonstration

- Using the industry-developed standard
- NRC to provide oversight
- Select same area as FEI
- Compare self-assessment results with NRC independent inspection



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Challenges

- Industry development of a self-assessment standard
- NRC guidance for review of self-assessment
- Findings, transparency, and other issues



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Self Assessment Considerations

Year 1

Comprehensive Engineering Team Inspection

BI: 350 Hours
Resources: 5 Inspectors / 2 Contractors
Onsite Presence: 2 Weeks

Inservice Inspection

BI: 30 - 100 Hours
Resources: 1-2 Inspectors
Onsite Presence: 1-2 Week(s)

Year 2

Focused Engineering Inspection #1

BI: 210 Hours
Resources: 3 Inspectors
Onsite Presence: 2 Weeks

Year 3

Focused Engineering Inspection #2

BI: 210 Hours
Resources: 3 Inspectors
Onsite Presence: 2 Weeks

Inservice Inspection

BI: 30 - 100 Hours
Resources: 1-2 Inspectors
Onsite Presence: 1-2 Week(s)

Year 4

Licensee Self-Assessment

NRC Inspector Oversight

BI: TBD
Resources: TBD
Onsite Presence: TBD



Engineering Inspection Review

Next Steps/Milestones

- March 14 RIC Session on Engineering Inspection Working Group
- Finalize Engineering Inspection Working Group recommendations (EIWG)
- Develop SECY (DIRS)
- Industry self-assessment standard engagement (DIRS)
- Project demonstration

Recap

Additional Feedback

Questions?