

# ***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

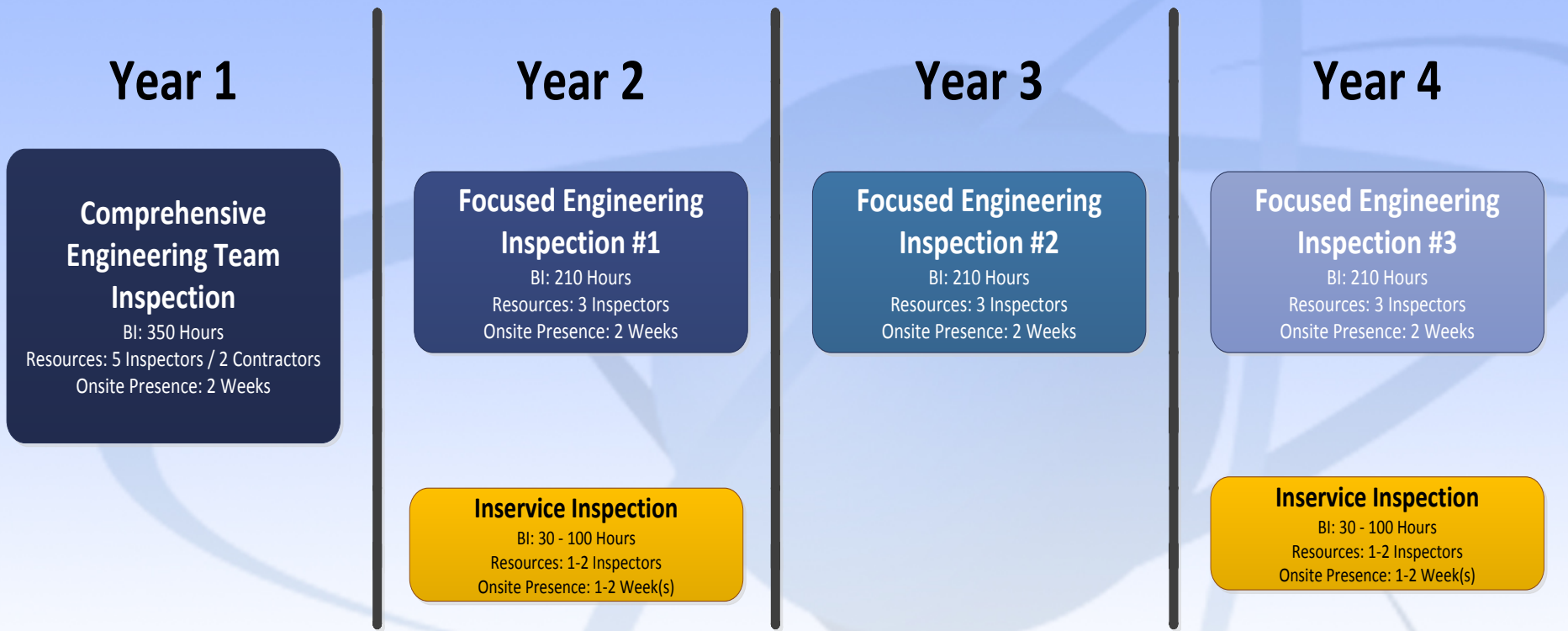
#### Inservice Inspection

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



# Engineering Inspection Review

## Proposed Engineering Inspections (Quadrennial Period)





# ***Engineering Inspection Review***

## **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





# ***Engineering Inspection Review***

## **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



# ***Engineering Inspection Review***

## **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



# ***Engineering Inspection Review***

## **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



# Engineering Inspection Review

## Resource Implications

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

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



# ***Engineering Inspection Review***

## **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***





# ***Engineering Inspection Review***

## **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



# ***Engineering Inspection Review***

## **Self Assessment Standard**

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



# ***Engineering Inspection Review***

## **Project Demonstration**

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



# ***Engineering Inspection Review***

## **Challenges**

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



# Engineering Inspection Review

## 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?***