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The Role of Failure Data in Plant Aging Management and Life Extension

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Presented at:
PVP2008
2008 ASME Pressure Vessel and Piping Division Conference
Chicago, Illinois

July 31, 2008

The Early Years

How Data Changed Plant Management Strategies

- Initially rules and regulations for nuclear plant inspections based on fossil plants
- SSCs were over-designed, over built, & over maintained
- Originally little consistency in ISI programs
- AEC study set the basis for ISI program requirements
  - Inspection of important systems and components
  - 10 years to complete all inspections
  - Random-failure philosophy

Random-Failure Philosophy

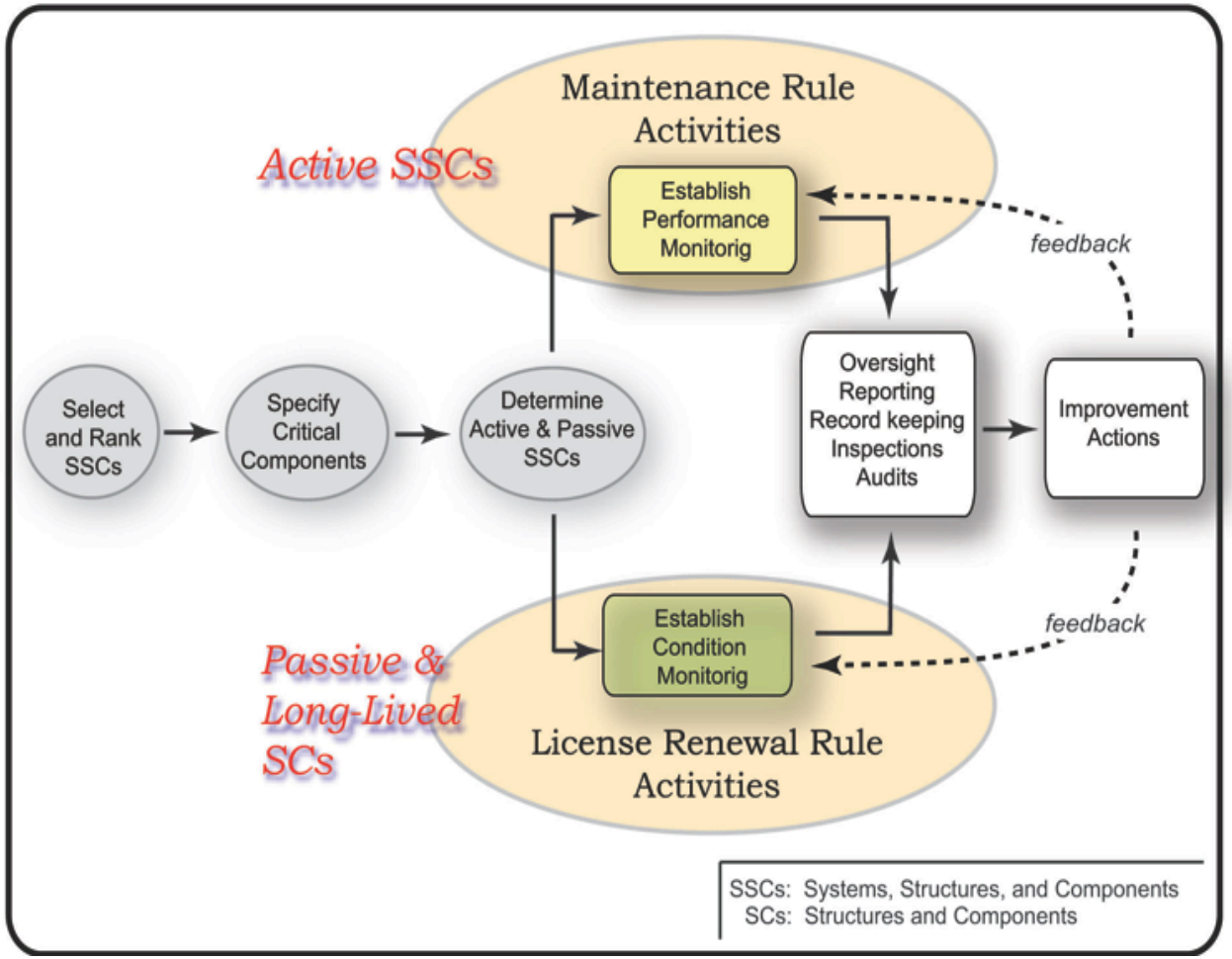
- Inspection programs selected random locations and randomized the timing of inspections
- Initially no rules or guidance when indications were found – leading to on-site repairs on a case-by-case basis
- Operational experience showed failures were not random

Risk-Informed Data Requirements

Aging Management Data Requirements

- Success o

The Role of Data in Aging Management



Sources of Operational Data

- NRC risk informed initiatives, including new directions for RI safety classification
  - 10 CFR 50.69, *Risk-Informed Categorization and Treatment of SSCs (Option2)*
    - Uses risk-informed safety classification to determine the applicability of special treatment requirements
    - Treatment includes quality assurance, testing, inspection, condition monitoring, assessment, evaluation, and resolution of deviations

SKI Piping Failure Database

OPDE and PIPExp Databases

The EPIX Database

Conclusions

Concluding Remarks

Risk-informed Inservice Inspection process

- Provides a structured and systematic framework for allocating inspection resources in a cost-effective manner and helps focus inspections where failure mechanisms are likely to be present and enhanced inspections are warranted
- Has been highly successful for both the industry and regulator