

# ***Advanced Test Reactor Life Extension Program***

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# *ATR Life Extension Program*

## Outline

- Discuss the ATR Life Extension Program goals, details, methodology, and execution schedule for planned activities.

## ***ATR Life Extension Program***

- Summary: The ATR Life Extension Program was initiated to assure the ATR would achieve its intended safe operational lifetime while supporting materials irradiation testing.

The ATR Life Extension Program consists of a number of diverse activities that when complete will provide the ATR with:

- Reconstituted design basis,
- Improved material condition and associated,
- Improved maintenance program,
- Updated probabilistic risk assessment,
- An improved physical condition of those systems, structures, and components (SSC) consistent with current codes and standards.

# *ATR Life Extension Program*

## Overall Approach Utilizes

- Proven commercial nuclear processes
  - EPRI
  - INPO
- Experienced commercial nuclear industry experts
- Close coordination with DOE customer

# *ATR Life Extension Program*

## Design Basis Reconstitution: Assessment Phase

- Those documents containing the basis for the ATR design (original design documents and system design descriptions), the authorization basis for the ATR (Safety Analysis Report) and the physical configuration of the overall plant were compared
  - Approximately 8,000 documents were electronically scanned into a searchable database
  - Physical walk-downs of equipment (or direct input from operators) server to establish physical configuration
- Any discrepancies were noted as Gaps and recorded for future correction
- Gaps are being addressed through a detailed resolution process – Resolution Phase (Originally ~140 Gaps, currently ~60)

# *ATR Life Extension Program*

## Material Condition Assessment

- Evaluated material condition of all safety-related systems, structures, and components
- Performed through detailed review of system and component level material condition
  - Established a primary coolant system baseline
  - Inspected primary system heat exchangers
- Resulted in 80 recommendations for system replacements
- Developing a Reliability Centered Maintenance program

# *ATR Life Extension Program*

## Probabilistic Risk Assessment Update

- Assessed current PRA for upgrade vs. rework
- Determined rework was most effective, i.e., from cost and schedule perspective
- Utilizing state-of-the-art software; flexibility in use and future updates
- Will support implementation of commercial “Risk Monitor” application

# *ATR Life Extension Program*

## Seismic Assessment

- Performed state-of-the-art analysis of ATR seismic category structures, systems, and components
- Developed detailed recovery plans to apply first time requirements
- ATR facility is in very good condition, robust design, and construction

# *ATR Life Extension Program*

## Conclusions

- Assessment Phase complete
- Initiating Resolution Phase
  - Many opportunities to improve plant
  - Will result in a vastly improved material condition
  - Improved reliability and plant availability
- Overall schedule from 2006 through ~2015