Limerick/NRC
Pre-Submittal Meeting
Risk Informed Completion Times

TSTF-505 License Amendment Request

August 30, 2016

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Agenda

- Introduction
- License Amendment Request
- PRA Models and CRMP Summary
- Implementation
- Closing Remarks

Introduction

- Desired Meeting Outcomes
  - Discuss license amendment content
  - Identify variances from TSTF-505
  - Provide overview of Configuration Risk and PRA models
  - Provide overview of implementation activities
  - Validate timeline for September 2016 submittal

License Amendment Request

- Based on TSTF-505 and NEI 06-09
- 24 LCOs (Modes 1 and 2 only)
- New TS Section 6.0 Program
- Variances from TSTF-505
  - –LGS TS are old BWR STS; not ITS
  - –Subtle differences in Condition/RA wording
  - –TSTF-505 LCOs/Conditions not in LGS TS
  - –RICT added to plant-specific LCOs not in TSTF-505
  - –Typed TS pages not included

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LGS TS 3.1.5 – Standby Liquid Control (SLC) System

- Condition not in TSTF-505 or NUREG-1433 (BWR ITS)
  - –TS 3.1.5.b – Standby Liquid Control System otherwise inoperable (vs. two subsystems inoperable)
- Administrative deviation
- SLC is modeled in PRA
- RICT added to each respective Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.3.1 – Reactor Protection System (RPS) Instrumentation

- Condition not in TSTF-505 or NUREG-1433
  - –TS 3.3.1.a – Number of inoperable channels in either trip system for one or more Functional Units less than the minimum required operable channels per trip system
    - Includes a 1-hour AOT
- RPS is modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.3.3 – Emergency Core Cooling System (ECCS) Instrumentation

- Conditions not in TSTF-505 or NUREG-1433
  - –TS 3.3.3.c.1 – Either ADS trip system inoperable (with HPCI and RCIC systems operable)
    - Restoration action with 7-day AOT
  - –TS 3.3.3.c.2 – Either ADS trip system inoperable (with HPCI or RCIC systems inoperable)
    - Restoration action with 72-hour AOT
- ECCS is modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.3.4.2 – End-of-Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

- Condition not in TSTF-505 or NUREG-1433
  - –TS 3.3.4.2.c.1 – Number of OPERABLE channels two or more less than required consisting of one turbine control valve channel and one turbine stop valve channel
    - Restoration action with 12-hour AOT
- EOC-RPT is not currently modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.3.4.1 – Anticipated Trip Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation

- Condition not in TSTF-505 or NUREG-1433
  - –TS 3.3.4.1.c.1 – Number of OPERABLE channels two or more less than required consisting of one reactor vessel water level channel and one reactor vessel pressure channel
    - Restoration action with 12-hour AOT
- ATWS-RPT is modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.3.2 – Primary Containment Isolation Instrumentation

- Conditions not in TSTF-505 or NUREG-1433
  - –TS 3.3.2.b.1 – OPERABLE channels less than the Minimum OPERABLE Channels per Trip System (tripped condition would cause an isolation)
    - Restoration action with 6-hour AOT
  - –TS 3.3.2.c - OPERABLE channels less than the Minimum OPERABLE Channels per Trip System for both trip systems
    - Restoration action with 1-hour AOT
- PCI is modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.5.1 – ECCS – Operating

- Condition not in TSTF-505 or NUREG-1433
  - –TS 3.5.1.b.5 – Three LPCI subsystems inoperable with both Core Spray subsystems operable
    - Restoration action with 72-hour AOT
- ECCS is modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.6.1.3 – Primary Containment Air Lock

- Condition not in TSTF-505 or NUREG-1433
  - –TS 3.6.1.3.a.1 – One air lock door inoperable
    - Restoration action with 24-hour AOT
- Air lock is not currently modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.7.1.1 – Residual Heat Removal Service Water (RHRSW) System

- Conditions not in TSTF-505 or NUREG-1433
  - –TS 3.7.1.1.a.3.a) and a.3.b) – Allows the 72-hour allowed outage time (AOT) for the RHRSW system to be extended up to 7 days during repairs of the RHRSW subsystem piping
  - –Also affects TS 3.6.2.3 - Suppression Pool Cooling mode of RHR, TS 3.7.1.2 - Emergency Service Water and TS 3.8.1.1 - A.C. Sources -Operating [Emergency Diesel Generators]
- Affected systems are modeled in PRA
- RICT added to Required Actions and footnotes
- Only change is a calculated RICT

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LGS TS 3.7.1.1 - Residual Heat Removal Service Water (RHRSW) System

- Conditions not in TSTF-505 or NUREG-1433
  - –TS 3.7.1.1.a.6 – Three RHRSW pump/diesel generator pairs inoperable
    - Restoration action with 7-day AOT
  - –TS 3.7.1.1.a.7 - Four RHRSW pump/diesel generator pairs inoperable
    - Restoration action with 8-hour AOT
- RHRSW is modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.7.1.2 – Emergency Service Water (ESW) System

- Conditions not in TSTF-505 or NUREG-1433
  - –TS 3.7.1.2.a.4 - Three ESW pump/diesel generator pairs inoperable
    - Restoration action with 72-hour AOT
  - –TS 3.7.1.2.a.5 - Four ESW pump/diesel generator pairs inoperable
    - Restoration action with 8-hour AOT
- ESW is modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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LGS TS 3.8.1.1 – AC Sources – Operating

- Condition not in TSTF-505 or NUREG-1433
  - –TS 3.8.1.1.e.1 – Two train systems, with one or more diesel generators inoperable
    - Restoration action with 72-hour AOT
- EDGs are modeled in PRA
- RICT added to Required Action
  - –Consistent with similar TSTF-505 changes

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PRA Models and Configuration Risk Management Program (CRMP)

- PRA models updated/upgraded and peer-reviewed
- F&O closure independently validated
- Updated screening for RG 1.200, Rev. 2 hazards
- Total CDF/LERF meet RG 1.174, Rev. 2 criteria

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Internal Events PRA

- BWROG Internal Events Peer Review October 2005; PRA Standard Part 2
- Focused scope BWROG review for internal flooding May 2008; PRA Standard Part 3
- Gap Assessment performed relative to RG 1.200, Rev. 2
- Most Supporting Requirements (SRs) assessed as PRA Standard Capability Category II
  - Majority of unresolved peer review findings related to documentation
  - Most Findings addressed in latest internal events PRA model update
  - SR's met at Capability Category II after resolution of findings
  - No significant impact on CDF or LERF

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Internal Fire PRA

- Peer review by BWROG in November 2011; PRA Standard Part 4 (Internal Fire) and RG 1.200, Rev. 2 following NEI 07-09 peer process
- Most Supporting Requirements judged to meet Capability Category II
  - Majority of findings addressed in latest Fire PRA model update

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Peer Review Findings Closure Review

- Formal process by Independent review team
  - –Assessed disposition of Findings for Internal Events and Internal Fire PRAs
  - –Observed by NRC
  - –Confirmed resolution of most Findings, resulting in SRs Met/Capability Category II
  - –Identified several areas for additional assessment relative to specific applications
    - Will be addressed in the LAR assessment of Technical Adequacy

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Other Hazards

- Seismic
  - –No Current Limerick Seismic PRA
    - Limerick is a relatively low seismic hazard site
    - NRC Staff Assessment of Limerick (ML15296A492):
      - Re-evaluated hazard bounded by SSE in frequency range of 1 to 10 Hz
      - Therefore, seismic risk evaluation not merited
  - –Seismic penalty will be applied to all RICTs based on
    - Current seismic hazard (EPRI 2013)
    - Limiting plant level HCLPF based on IPEEE
- Other
  - –Updated IPEEE screening evaluation performed
  - –No other external hazards required to be included in the RICT calculations

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RICT CRMP Model

- Real-time risk model as currently used for existing Maintenance Rule a4 CRM
- Uses PARAGON software
- Incorporates RICT/RMAT calculation features
- Handles multiple overlapping configurations
- Developed with operator input

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Implementation

- Operations owns implementation
- Cross-functional team supporting implementation
- RICT implemented in Modes 1 and 2 only
- CRMP and PRA Models updated to support RICT
- Procedure changes and training
- Site-wide Communications

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Procedures and Training

- Procedures
  - Revised to address risk management action times, PRA functionality, and incremental risk tracking
  - New RICT Program Procedure
- Level 1 Training
  - Hands-on (detailed) training for Operators and Work Management
  - Classroom training to address how RICT impacts Station Operations
  - Integrated with current online processes
- Level 2 Training
  - Support training for managers on process, expectations, limitations
- Level 3 Training
  - Awareness training for all others

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Closing Remarks

- Next Steps
  - –Submit the LAR in September 2016
  - –Refine implementing procedures
  - –Conduct training in 2016/2017
  - –Ready to implement in 2017
  - –Submit 50.69 using generic template
- Questions

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