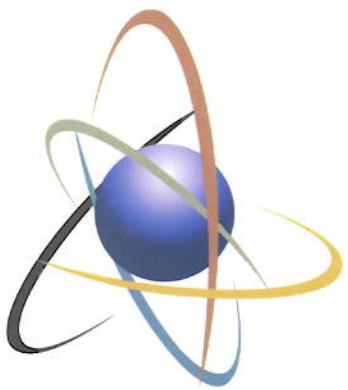June 21, 2011

ATTACHED ARE SLIDES/ HANDOUTS WHICH WERE

PRESENTED AT THE 5/26/11 "PUBLIC MEETING TO

PERFORM TABLETOP EXERCISES REGARDING GUIDANCE

ON RISK-INFORMED TECHNICAL SPECIFICATIONS

INITIATIVE 4b AND MAINTENANCE RULE 50.65(a)(4) FOR

NEW REACTORS"

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Risk Management Technical Specification

Risk-Informed Completion Times: Initiative 4b, Common Starting Point

Terminology Description/Example

TABLE-TOP EXERCISE

Terminology

- **Completion Time (CT)** – Specified with each Technical Specification (TS) condition are action(s) and completion time(s). The completion time is the amount of time allowed for completing an action. An allowed outage time (AOT) in TS is the same as the CT.

- **Front-stop CT** – The CT specified in the conventional plant TS.

- **Back-stop CT** – The ultimate CT limit permitted by the l4b, Risk-Informed CT (RICT), calculation. The back-stop CT is 30 days for RICT calculations greater than 30 days.

- **Baseline Risk** – The "no-maintenance" or "zero-maintenance" risk calculated via the plant PRA.

Terminology Continued

- **Incremental Core Damage Frequency (ICDF)** – the frequency above a "no-maintenance" baseline CDF (expressed in terms of events per calendar year).

- **Incremental Core Damage Probability (ICDP)** – the integral of ICDF over time; the classical cumulative probability of incremental core damage over a given period of time. ICDP is unit-less.

- **Incremental Large Early Release Frequency (ILERF)** – the frequency above a "no-maintenance" baseline LERF (expressed in terms of events per calendar year).

- **Incremental Large Early Release Probability (ILERP)**, The classical cumulative probability of incremental large early release of radioactivity over a given period of time. ILERP is unit-less.

- **Operable / Operability** – A system, subsystem, train, component or device shall be operable or have operability when it is capable of performing its specified safety function(s).

- **Risk-informed Completion Time (RICT)** – A CT calculated from an entry into a TS action until the 10^{-5} ICDP or 10^{-6} ILERP threshold is reached, or 30 days, whichever is shorter.

Terminology Continued

- **Risk-management Action Time (RMAT)** - the time interval at which the risk calculated from an entry into a TS action until the 10^{-6} ICDP or 10^{-7} ILERP threshold is reached, whichever is less. Risk management actions are to be taken no later than the calculated RMAT.

- **PRA Functionality** - Functionality that can be explicitly credited in a PRA for a RICT calculation of a TS inoperable SSC.

- **Significant Decrease** in Enhanced Safety Margin – [To be determined]

Description: Use configuration risk management

– "Real-Time" calculation of completion time (CT) based upon plant configuration and associated quantified risk assessment

– Extend CT from a existing (Front Stop) CT up to a RICT or a "backstop" maximum of 30 days whichever is less

• NEI 06-09, Risk-Informed Technical Specification Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines document contains requirements and guidance for implementation of Risk-Informed Completion Times (RICT).

- NEI 06-09 includes:

  – Approved decision-making process

  – Implementation requirements and guidance

  – Requirements for PRA technical adequacy, and configuration risk monitoring

  – Quantitative configuration and cumulative risk metrics

  – Documentation requirements

  – Training requirements

- NEI 06-09 requirements invoked in TS through a Section 5 Administrative Controls Program

I4b Applicability and Thresholds

- Applies in at power Modes (1 & 2)

- Requires Plant Specific NRC Approval to apply in shutdowns Modes

- A RICT is calculated and entered to extend a CT beyond the front-stop CT

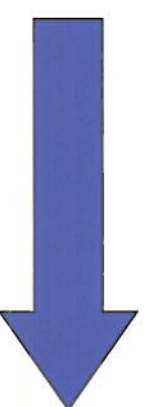- A RICT is recalculated upon plant configuration changes

RICT Rules

- A RICT is effective from time of original TS entry until all TS that utilize a RICT are exited

- If a RICT is reached, then the subsequent required Condition is entered and the TS Required Action is taken (i.e., shutdown)

- PRA functionality can be used, within guidelines, to calculate a RICT

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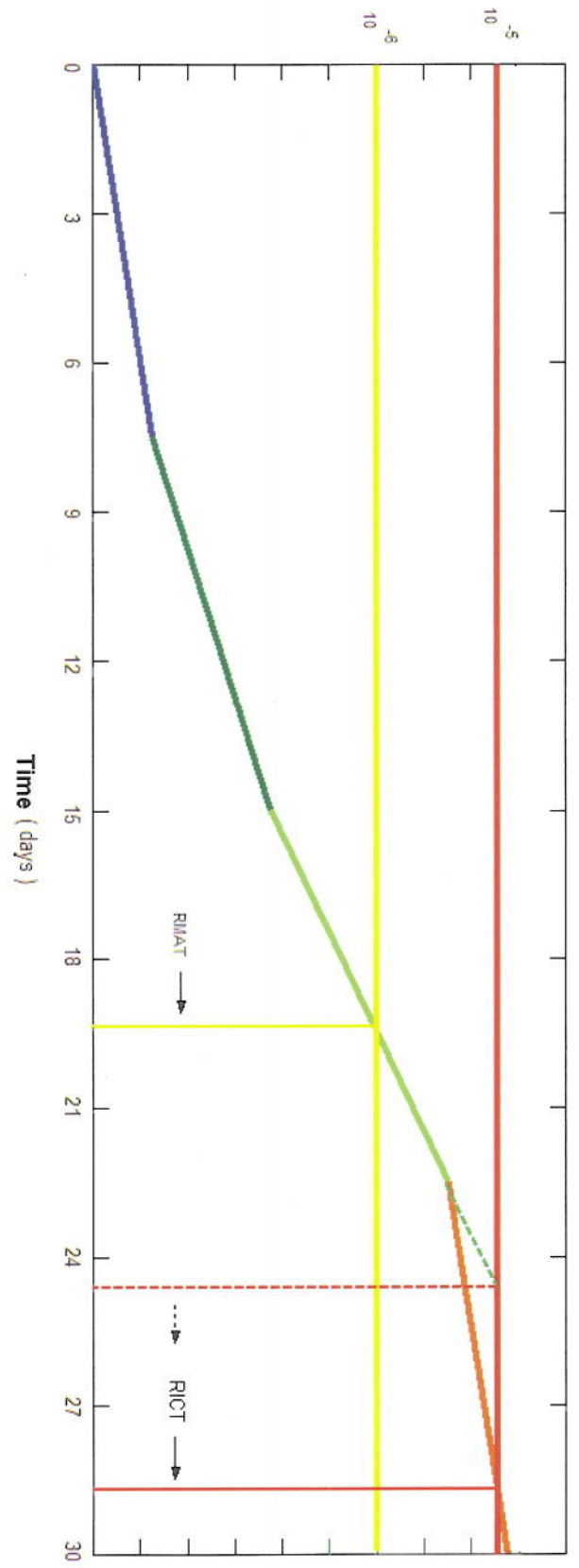
RITS I4B - RICT

- Risk assessed and managed:

  - Implement risk management actions at 1E-6 ICDP or 1E-7 ILERP

  - CT based on 1E-5 ICDP or 1E-6 ILERP with 30-day backstop; cannot exceed 1E-3 CDF/1E-4 LERF

  - Consistent with NUMARC 93-01 guidance

- Periodic assessment to comply with RG 1.174 ΔCDF and ΔLERF guidance.

- RICT & RMAT based on "zero maintenance" state

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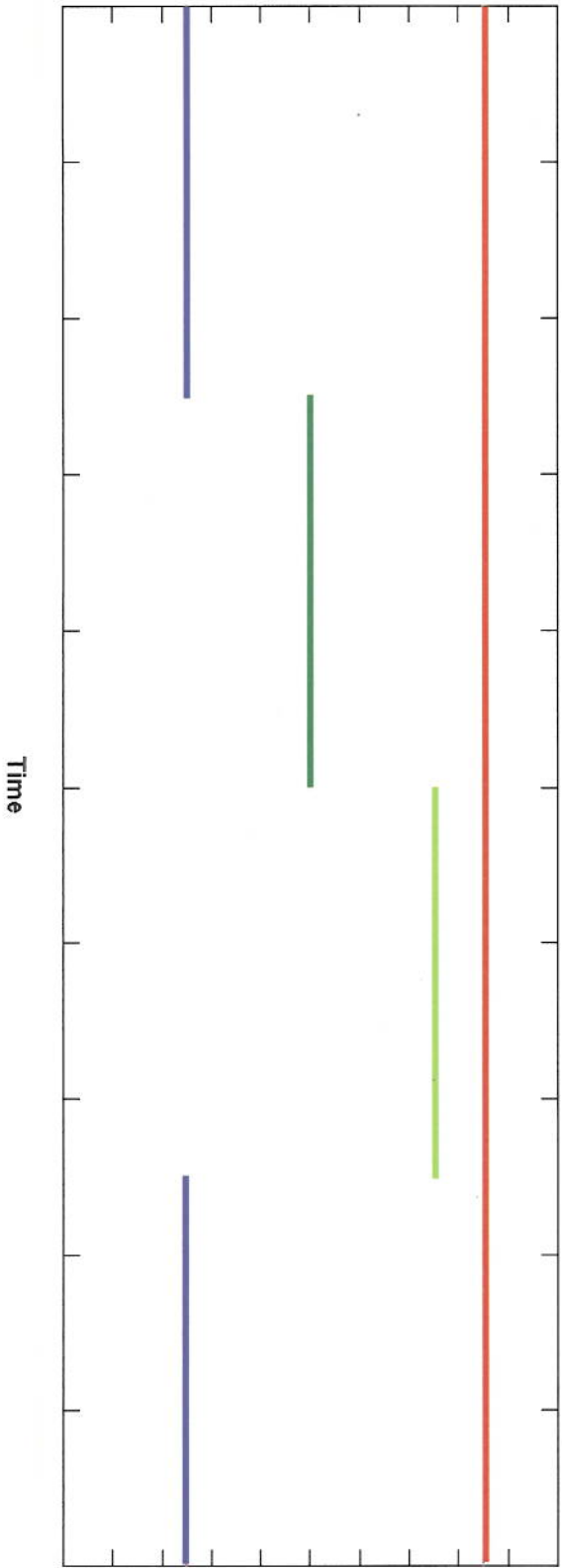
I4b RICT Approach

- CT Features
  - Front Stop; current CT
  - CRMP-based CT (RICT)
  - Back Stop (30 Days)
  - Risk Assessment Tools Must Provide Timely Reliable Result
  - Decision Making Process Reliable
- Proposed 4b Tech Spec

Table 3-2 RICT
Example TS Format

CONDITION	REQUIRED ACTION	COMPLETION TIME
B.1 Subsystem Inoperable	B.1 Restore subsystem to OPERABLE status.	72 hours
	OR	
	B.2.1 Determine that the completion time extension beyond 72 hours is acceptable in accordance with established RMTS thresholds.	72 hours
	AND	
	B.2.2 Verify completion time extension beyond 72 hours remains acceptable.	In accordance with the RMTS Program.
	AND	
	B.2.3 Restore subsystem to OPERABLE status.	30 days or acceptable RICT, whichever is less.

BACK-UP SLIDES

Acceptance CDF Guidelines

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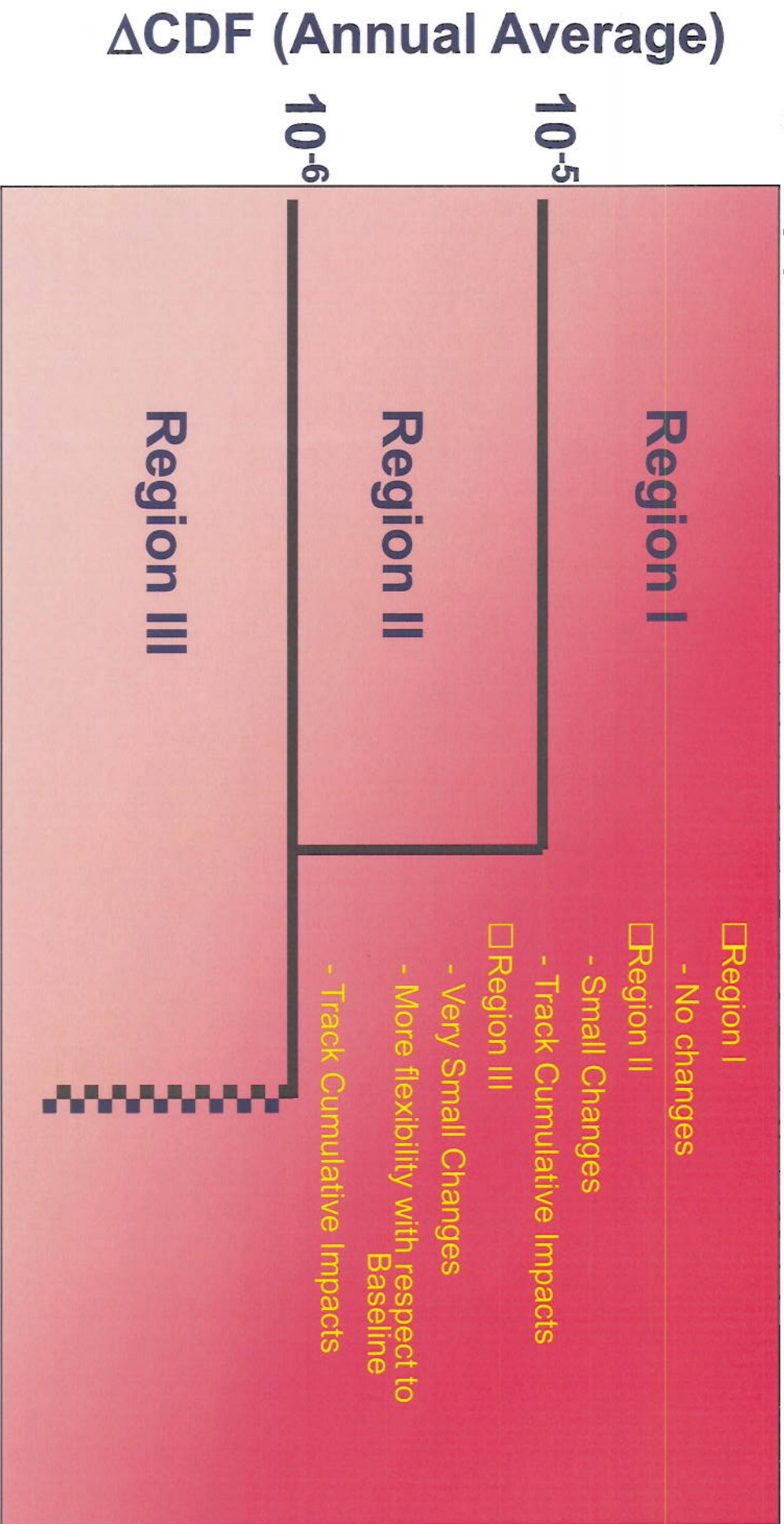Protecting People and the Environment

Acceptance LERF Guidelines

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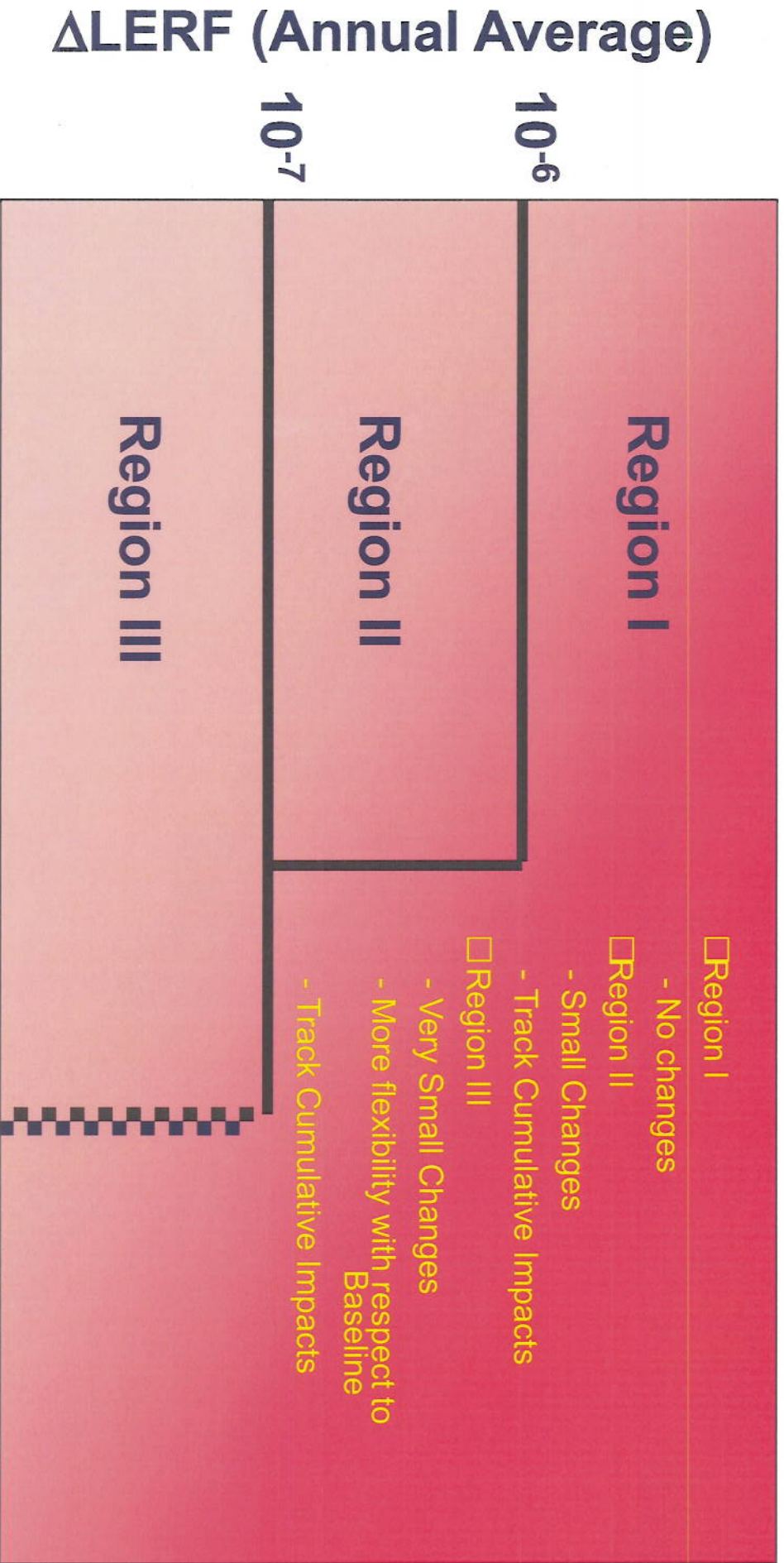*Protecting People and the Environment*

Has TS been entered that allows use of RICT?	
Yes, proceed	No, Apply current TS CT
Is Front Stop CT expected to be exceeded?	
Yes, Calc RMAT & RICT	No, Apply current TS CT
Has RICT or Backstop CT been reached?	
Yes, Take TS Actions	No, Proceed
Have associated RICT TS Actions been exited?	
Yes, Apply current TS	No, as applicable take RMAs & recalculate RICT upon emergent conditions
Continue until TS exited.	

RMTS Quantitative Thresholds

CRITERION				MR Risk Guidance	RMTS I4b Guidance
CDF	≥ 1.0E-3	LERF	≥ 1.0E-4	Careful consideration prior to enter configuration	RMAs, No Voluntary entry
ICDP	≥ 1.0E-5	ILERP	≥ 1.0E-6	No Voluntary entry	Follow TS Required Actions
	≥ 1.0E-6		≥ 1.0E-7	RMAs, Assess non-quant factors	RMAT & RICT req RMAs, Assess non-quant factors
	< 1.0E-6		< 1.0E-7	Normal work controls	Normal work controls

- High PRA quality expectations:
  – ASME Capability Category II
  – Quantitative capability for internal fires and other significant external event contributors
  – Programs/procedures to assure PRA model is current with as-built/as-operated plant
  – PRA training and capability of staff
  – Staff intends to perform more extensive audit of PRA and supporting programs and training