UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

January 24, 2005

James J. Sheppard, President and
Chief Executive Officer
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SUMMARY OF SOUTH TEXAS PROJECT RISK-INFORMED TECHNICAL SPECIFICATIONS PUBLIC MEETING

Dear Mr. Sheppard:

This refers to the public meeting conducted at Arlington, Texas, on January 18, 2005, between the NRC and your staff. The participants discussed issues related to a risk-informed technical specification initiative at South Texas Project.

The attendance list is enclosed with this summary (Enclosure 1). Presentation slides from the NRC (Enclosure 2) and South Texas Project (Enclosure 3) are also attached.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Dwight D. Chamberlain, Director
Division of Reactor Safety

Dockets: 50-498; 50-499
Licenses: NPF-76; NPF-80

Enclosure:
1. Attendance List
2. NRC Presentation Slides
3. STP Presentation Slides

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Branch Chief, DRP/A **(WDJ)**
Senior Project Engineer, DRP/A **(TRF)**
Team Leader, DRP/TSS **(RLN1)**
RITS Coordinator **(KEG)**

SISP Review Completed: Yes_____ ADAMS: ☒ Yes ☐ No Initials: MFR_____

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MFRunyan/lmb	DDChamberlain			
/RA/	/RA/			
1/24/05	1/24/05			

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Enclosure 1
Attendance List

South Texas Project

J. Phelps, Unit 2 Operations Manager
S. Head, Manger, Licensing
R. Grantom, Manager, Risk Management
W. Harrison, Senior Staff Licensing Engineer
D. Richards, Lead Engineer, Risk Management

NRC

D. Chamberlain, Director, Division of Reactor Safety
M. Shaffer, Acting Deputy Director, Division of Reactor Safety
T. Vegel, Deputy Director, Division of Reactor Safety
T. Farnholtz, Senior Project Engineer
R. Bywater, Senior Reactor Analyst
D. Loveless, Senior Reactor Analyst
M. Runyan, Senior Reactor Analyst
R. Tjader, Office of Nuclear Reactor Regulation
T. Boyce, Office of Nuclear Reactor Regulation
S. Alexander, Office of Nuclear Reactor Regulation

Enclosure 2

NRC Presentation Slides

Risk Management Technical Specifications (RMTS) Initiative 4b Risk Informed Completion Times

Presentation to the

NRC Region IV Staff

January 18, 2005

Presentation Participants

Bob Tjader, NRR TS Section

Tom Boyce, NRR TS Section

Stephen Alexander, NRR MR Section

Development

- Standard Technical Specifications – 1974
- NUREG-1024, Technical Specifications, Enhancing the Safety Impact – 1983
- Interim Tech Spec Policy Statement - 1987
- Improved Standard Technical Specifications – 1992
- PRA Policy Statement - 1995
- Implementation of 50.65(a)(4) – 2000
- Risk Management Technical Specifications (RMTS) Initiatives – 1998 to Present

Principles for RMTS Development

- Achieve coherence with other risk-informed regulation development (MRule, 50.69, PRA Quality): Focus on Safety
- Credit for 50.65(a)(4) programs in RMTS Initiatives
- Licensee's risk programs/PRA models must meet standards for quality & comprehensiveness
- Involve NRC staff with cognizance for operation, training, inspection, maintenance, regions/STA, and risk assessment

STATUS OF INITIATIVES

- Reliance on existing (a)(4) Program
  - Initiative 2: Missed Surveillances (NRC Approved)
  - Initiative 3: Mode Change Flexibility (NRC Approved)
- Analysis of Specific Plant Configurations
  - Initiative 1: Modified End States (1-2 yrs)
  - Initiative 6: LCO 3.0.3 Action Times (1-2 yrs)
  - Initiative 7: Non-TS Support System Operability (1 yr)
- Quantitative Risk Assessment
  - Initiative 4: Flexible Completion Times (1-3 yrs)
  - Initiative 5: Surveillance Frequency Program (1-3 yrs)
- Rulemaking
  - Initiative 8: Relocate non-risk significant systems from TS (3+yrs)

Initiative 4 – Risk-Informed Completion Times

- Effect: Extend completion time from a nominal value up to a predetermined “backstop” maximum using configuration risk management.
- Description: Submittal to include: approved decision-making process; implementation guidance; requirements for PRA technical adequacy; quantitative configuration & cumulative risk metrics, including criteria for shutdown.
- Status: Industry submitted draft guidance document & pilot proposals; staff provided feedback. Pilot plants are STP, Hope Creek, Prairie Island, & Fort Calhoun (CE TSTF-424 pilot).

RMTS INITIATIVE 4b and PRA QUALITY

- Use of plant configuration risk results to determine Completion Times in near real-time is a significant change to Technical Specifications
  - Licensee's use of PRA
  - NRC Review & Oversight
- PRA must be of adequate quality for the application
- Configuration Risk Management process must be able to reliably assess risk
- Reliance on CRM tool requires licensee QC and NRC review

PRA QUALITY MUST BE ADEQUATE TO SUPPORT I4b

- Quality is defined in terms of scope (initiating events, plant operating modes), level of detail, and technical adequacy
- Pilot plant reviews for RG 1.200 assesses only internal events PRA
- Staff will need to perform PRA reviews for external events, transition and shutdown modes
- Current thinking is that the I4b scope should include internal & external initiating events, and transition & shutdown risk

Initiative 4b Example

- See proposed 4b Tech Spec; discuss concepts
- Initiative 4b concepts
  - Front Stop; current CT
  - CRMP-based CT
  - Back Stop
  - Risk Assessment Tools provide reliable results in a timely manner
  - Use of reliable Decision Making Process

TABLE 3-1
GENERIC RISK-INFORMED CTs WITH A BACK-STOP: EXAMPLE FORMAT

Actions Condition	Required Action	Completion Time
B. One [HPSI] subsystem inoperable.	B.1 Restore SI 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 (i.e., within 24 hours of a subsequent configuration change)
	AND	
	B.2.3 Restore subsystems SI to OPERABLE status.	30 days or acceptable completion time , whichever is less.

POTENTIAL IMPLEMENTATION STRUCTURE

- Program Requirements in Technical Specifications Administrative Controls
  - PRA Quality (RG 1.200)
  - Guidance Documents (RG 1.177+, RMG)
- Licensee Program Guidance
- Oversight

Pilot Plant General Acceptance Criteria

- Exportability;
  - Reliability
  - Repeatability
  - Enforceable/Oversight

REVIEW ISSUES

- PRA Quality (proof of concept)
  - Scope
  - Level of Detail
  - Technical Acceptability
- Criteria for temporary risk increments (planned maintenance vs emergent conditions)
- Control/assessment of cumulative risk
- Credit for contingency actions & comp measures
- Uncertainty and impact on CTs/AOTs
- Configuration Risk Monitors and Assessment Tools
  - Extent of PRA Incorporation
  - QA/QC of software & updates

Backup Slides

Pilots for PRA Quality

- PRA Quality (RG 1.200) pilot program in parallel with RMTS Initiative 4b pilot program
- RG-1.200 Pilots to test PRA internal events only; I4b to test broader scope of PRA
- STP is a Pilot for both RG 1.200 and RMTS Initiative 4b

PRA QUALITY MUST BE ADEQUATE TO SUPPORT I4b (cont'd)

- For internal events PRA:
  - Use ASME standard & RG 1.200
  - Establish a basis for PRA technical adequacy that is sufficient to meet adequacy requirements (e.g., ASME capability cat 2)
  - Use PRA model peer review findings & observations
  - Use results of self assessment process to identify areas where PRA does not meet the prescribed basis (ASME Capability Category 2)
  - Assess the impact of those ASME Supporting Requirements that are met on I4b process; upgrade PRA
- For external events, internal fires, transient & shutdown risk staff will need to perform reviews of licensee's PRA
- Account for application specific key sources of uncertainty (e.g., PRA assumptions)

Enclosure 3

STP Presentation Slides

Nuclear Operating Company

STP Risk-Informed Technical Specifications Application

NRC Region IV

January 18, 2005

Introduction

- STP Participants
  - Jay Phelps — Operations Manager, Unit 2
  - Scott Head — Manager, Licensing
  - Rick Grantom — Manager, Risk Management
  - Drew Richards — Lead Engineer, Risk Management Applications & Development
  - Wayne Harrison — Sr. Staff Licensing Engineer

Agenda

- Submittal schedule
- Overview of the STP application
- Implementation
- STP PRA Quality (RG 1.200 Pilot)

Submittal Schedule

- Submitted “Letter of Intent” with proposed changes in March 2003
- License Amendment Request submitted in August 2004
- Final approval in 2005

Overview

- Industry pilot for risk-informed Technical Specifications using configuration risk management
- Applies STP's Maintenance Rule (a)(4) approach to determine configuration based allowed outage times.
  - Will apply the industry Risk Managed Technical Specifications Guide
- Pilot application for PRA Quality RG 1.200

Overview (cont.)

- Current Technical Specification structure and format retained
- Allows operators to use risk management option to determine allowed outage time when the existing allowed outage time or “frontstop” time is exceeded
- Imposes a “backstop” time to return inoperable equipment to service

Overview - TS 3.13.1

3/4.13 RISK MANAGEMENT

3/4.13.1 ALLOWED OUTAGE TIME DETERMINATIONS

LIMITING CONDITION FOR OPERATION

3.13.1 When referred to this specification, equipment that has been declared inoperable shall be evaluated for its impact on plant risk and allowed outage times determined accordingly.

APPLICABILITY: As required by the referencing specification(s)

ACTION:

Determine that the configuration is acceptable for extension of the allowed outage time beyond the allowed outage time for the referencing specification(s),

AND

Determine that the configuration is acceptable for continued operation beyond the allowed outage time for the referencing specification(s) whenever configuration changes occur that may affect plant risk,

AND

Restore required inoperable subsystem, component to OPERABLE status within the acceptable allowed outage time extension or 30 days, whichever is shorter.

Note: The 30-day limitation may be applied individually to each specification for which Specification 3.13.1 has been entered.

OR

Take the ACTION(s) required in the referencing specification(s) for required action or completion time not met

SURVEILLANCE REQUIREMENTS

4.13.1 As required by the referencing specification(s)

Overview - Sample TS for ECW

PLANT SYSTEMS

3/4.7.4 ESSENTIAL COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4 At least three independent essential cooling water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With only two essential cooling water loops OPERABLE, **within 7 days** restore at least three loops to OPERABLE status **or apply the requirements of Specification 3.13.1, or b**e in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. **With two or more essential cooling water loops inoperable, within 12 hours restore at least two loops to OPERABLE status or apply the requirements of Specification 3.13.1, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours**.

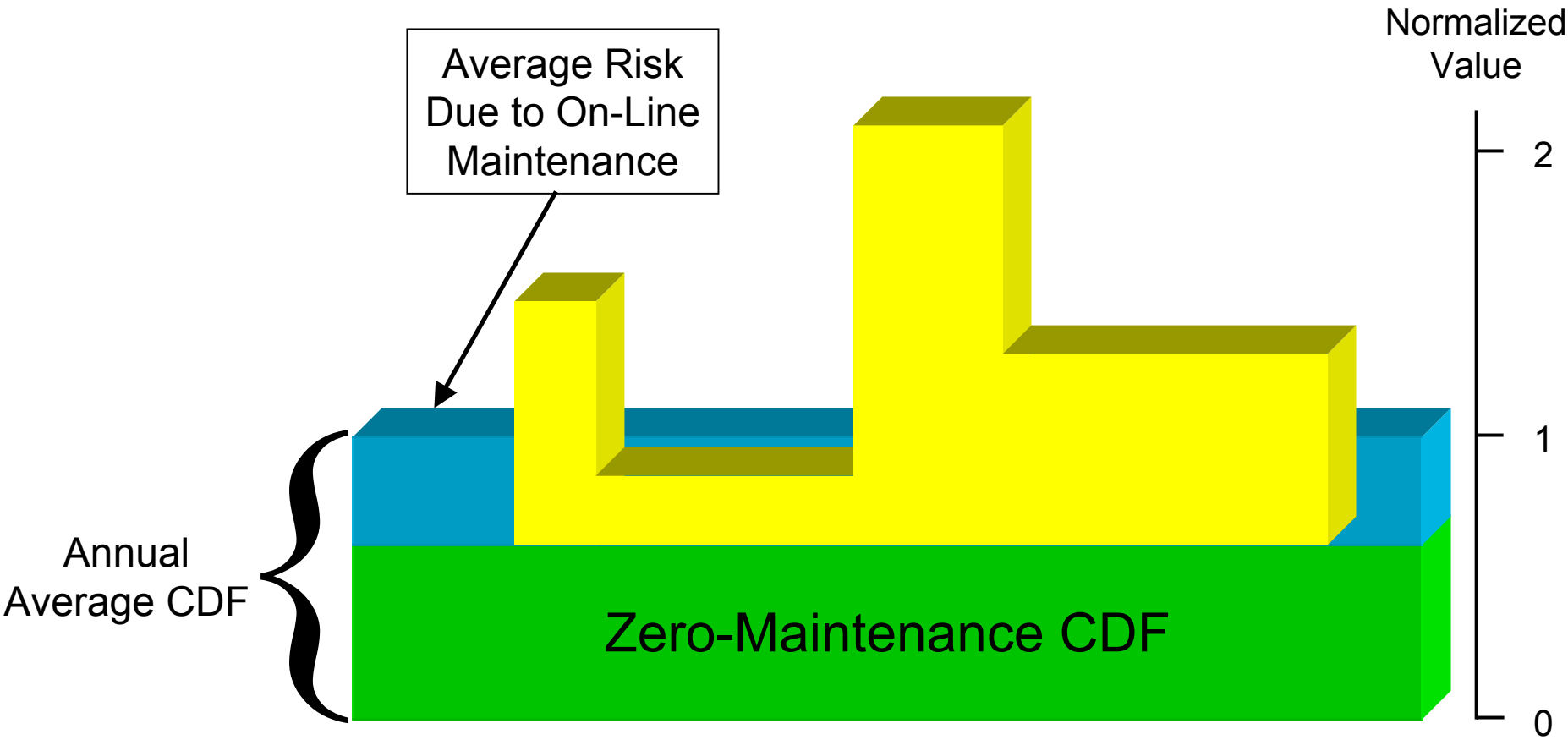
Overview - Scope of Applicable TS

- Selected instrumentation of TS 3.3
- Code safety valves
- Pressurizer PORVs
- Accumulators
- ECCS
- RHR
- RWST
- RCB Purge
- Containment Isolation Valves
- Containment Spray
- Containment Fan Coolers
- AFW
- MSIVs
- MFIVs
- Atmospheric Steam Relief
- Component Cooling Water
- Essential Cooling Water
- Essential Chilled Water
- SDGs and Off-site circuits
- Batteries
- ESF Buses

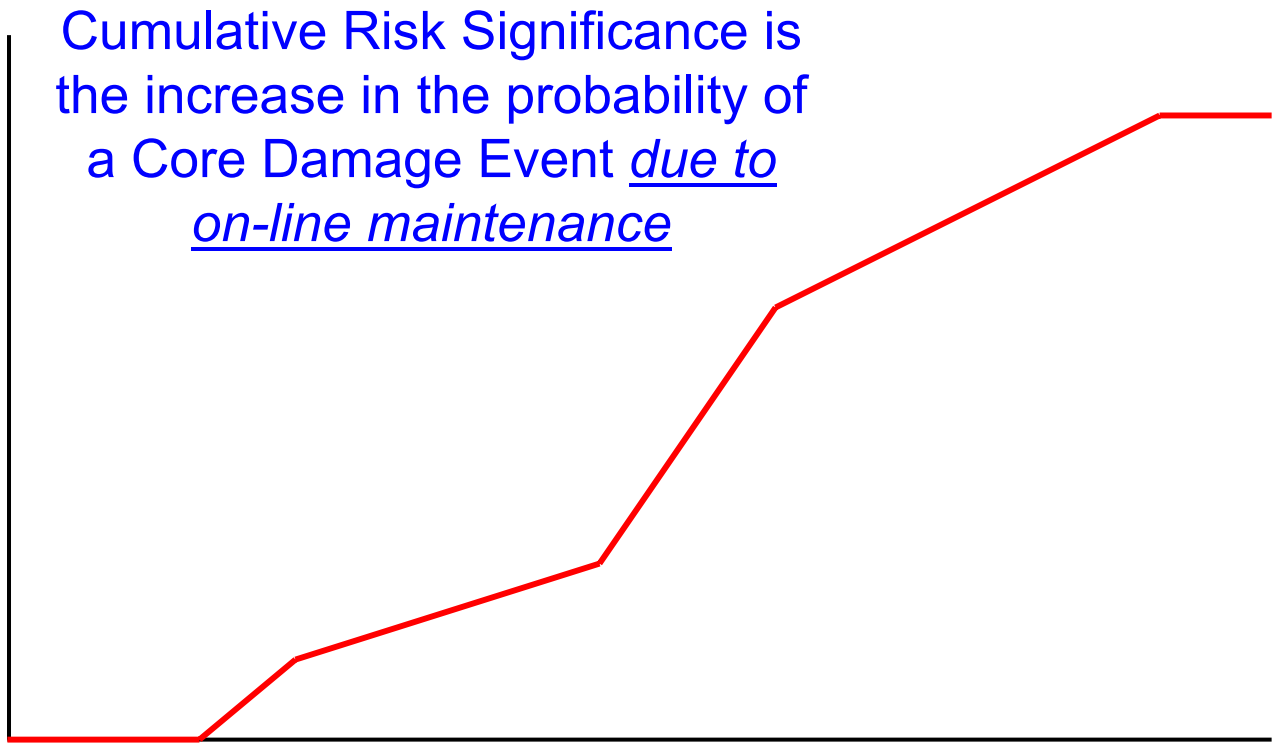
Implementation

- Applies the STPNOC Configuration Risk Management Program (CRMP)
  - Same program used for 10CFR50.65(a)(4)
- STP has extensive experience in applying the CRMP
  - Routinely used to manage weekly work
  - Effectively applied to manage the recent extended diesel generator outage

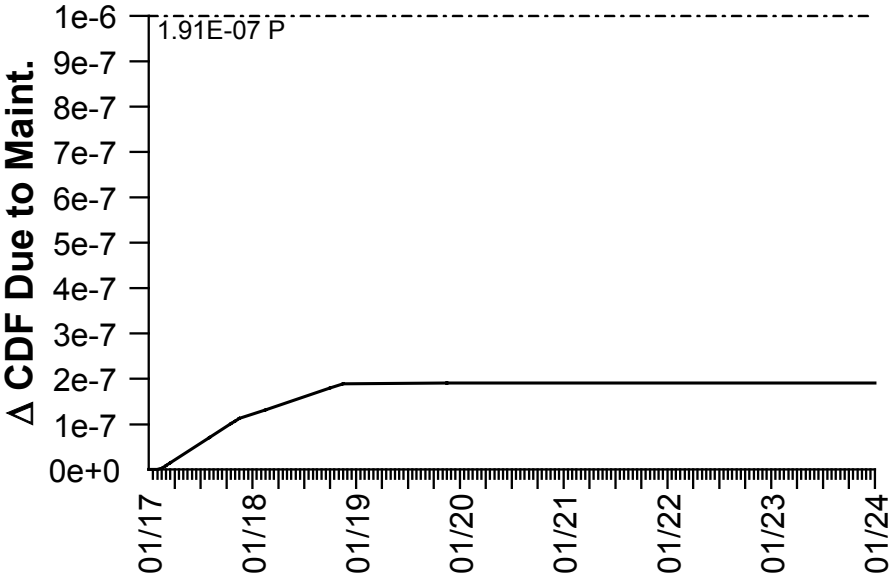
How Risk Values Stack Up

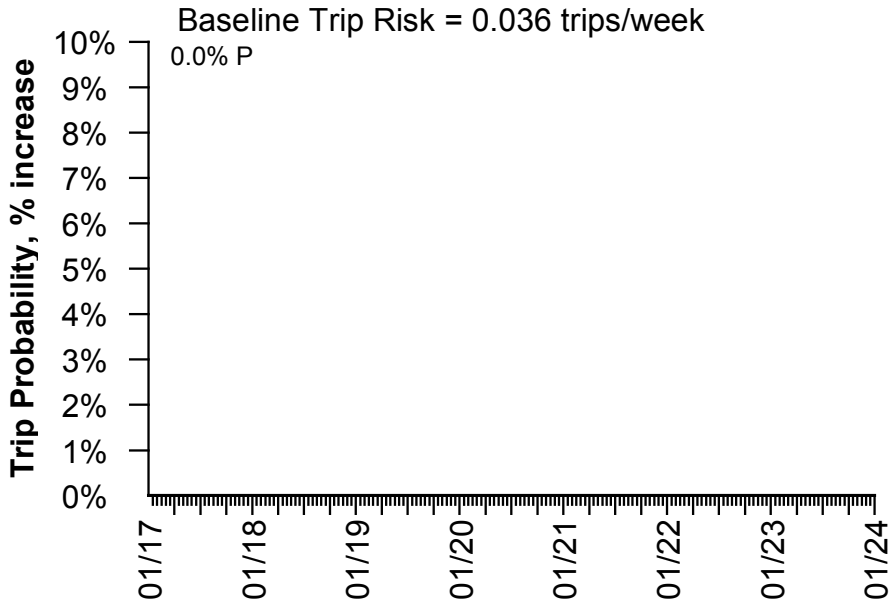


How Risk Values Add Up



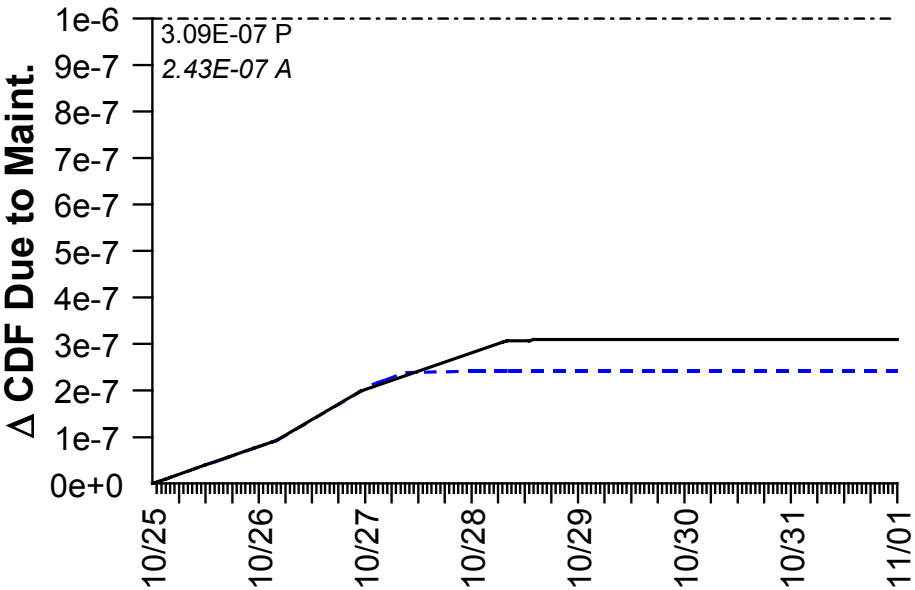
Planned Risk Profiles for Unit 1 Week of 01/17/2005

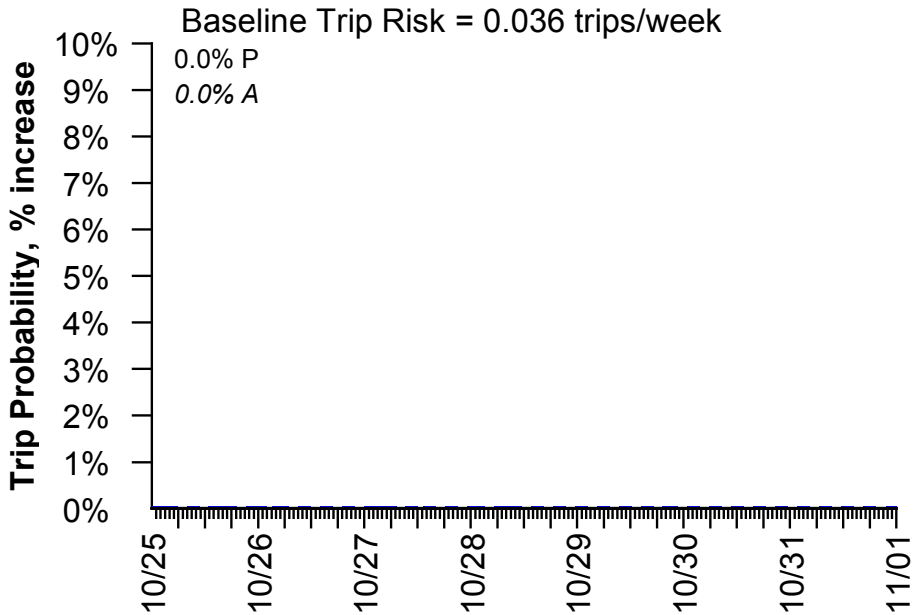




PRA Maint. State	BOP Maint. State	Start	End	Duration (hh:mm)	PRA Norm.	BOP Norm.
No Risk-Significant Maintenance	No Risk-Significant Maintenance	01/17 00:00	01/17 02:00	002:00	0.79	1.00
CCA HEA(EAB)	No Risk-Significant Maintenance	01/17 02:00	01/17 03:00	001:00	3.78	1.00
CCA CSA DGA EWA HEA(EAB)	No Risk-Significant Maintenance	01/17 03:00	01/17 04:00	001:00	6.70	1.00
CCA CHA CSA DGA EWA HEA(EAB)	No Risk-Significant Maintenance	01/17 04:00	01/17 05:00	001:00	6.70	1.00
CCA CHA CSA DGA EWA HEA(EAB) LHA	No Risk-Significant Maintenance	01/17 05:00	01/17 14:00	009:00	6.70	1.00
CCA CHA CSA DGA EWA HEA(EAB)	No Risk-Significant Maintenance	01/17 14:00	01/17 19:00	005:00	6.70	1.00
CCA CHA DGA EWA HEA(EAB)	No Risk-Significant Maintenance	01/17 19:00	01/17 20:00	001:00	6.70	1.00
CCA CHA DGA HEA(EAB)	No Risk-Significant Maintenance	01/17 20:00	01/17 21:00	001:00	6.70	1.00
CCA CHA HEA(EAB)	No Risk-Significant Maintenance	01/17 21:00	01/18 03:00	006:00	3.79	1.00
CCA CHA HEA(CR) HEA(EAB)	No Risk-Significant Maintenance	01/18 03:00	01/18 14:00	011:00	3.86	1.00
CCA HEA(CR) HEA(EAB)	No Risk-Significant Maintenance	01/18 14:00	01/18 18:00	004:00	3.86	1.00
HEA(CR) HEA(EAB)	No Risk-Significant Maintenance	01/18 18:00	01/18 21:00	003:00	3.83	1.00
HEA(CR)	No Risk-Significant Maintenance	01/18 21:00	01/19 21:00	024:00	0.87	1.00
No Risk-Significant Maintenance	No Risk-Significant Maintenance	01/19 21:00	01/24 00:00	099:00	0.79	1.00

Actual Risk Profiles for Unit 1 Week of 10/25/2004





PRA Component	Planned Time Non-Functional	Planned Time Functional	Duration (hh:mm)		Actual Time Non-Functional	Actual Time Functional	Duration (hh:mm)
CCA	10/26/2004 03:00	10/28/2004 08:00	053:00		10/26/2004 03:00	10/27/2004 13:16	034:16
CHA	10/25/2004 00:00	10/28/2004 11:00	083:00		10/25/2004 00:00	10/28/2004 00:16	072:16
DGA	10/25/2004 03:00	10/28/2004 08:00	077:00		10/25/2004 00:00	10/27/2004 09:05	057:05
EWA	10/25/2004 00:00	10/28/2004 08:00	080:00		10/25/2004 00:00	10/27/2004 04:30	052:30
HEA(CR)	10/25/2004 03:00	10/25/2004 17:00	014:00		10/25/2004 03:00	10/25/2004 12:45	009:45
HHA	10/26/2004 04:00	10/26/2004 23:00	019:00		10/26/2004 04:00	10/27/2004 02:20	022:20
LHA	10/25/2004 23:00	10/28/2004 07:00	056:00		10/25/2004 23:00	10/28/2004 05:17	054:17
LHA	10/25/2004 04:00	10/25/2004 12:00	008:00		10/25/2004 13:47	10/25/2004 16:20	002:33
QDPSA	N/A	N/A	N/A		10/29/2004 19:01	10/29/2004 19:44	000:43
RHRA	10/25/2004 23:00	10/28/2004 08:00	057:00		10/25/2004 23:00	10/28/2004 05:17	054:17
SICA	10/28/2004 13:00	10/28/2004 14:00	001:00		10/28/2004 08:03	10/28/2004 08:33	000:30

BOP Component	Planned Time Non-Functional	Planned Time Functional	Duration (hh:mm)		Actual Time Non-Functional	Actual Time Functional	Duration (hh:mm)
NONE			N/A				

Application of RITS

Example 1: Routine Train A work week with emergent Train B condition

Time (hh:mm)	**Event**	**Frontstop**	**Calculated AOT (time to reach 1E-05)**	**Risk (/hr)**	**Comment**
00:00	Begin Train A work week (SDG, ECW, CCW, HHSI)	HHSI (3.5.2.a): 7 days CCW (3.7..3.a): 7 days ECW (3.7.4.a): 7 days SDG (3.8.1.1.b): 14 days	NA, planned to remain within frontstop AOT.	5.9E-09	Routine planned maintenance
24:00	Train B HHSI found to be inoperable	3.5.2.b: 6 hours to apply TS 3.13.1	24 days	1.7E-08	Emergent condition where CTS would require TS 3.0.3 entry. RITS permits the station to address the condition with normal work controls.
36:00	Train B HHSI restored	Exit TS 3.5.2.b and TS 3.13.1 applicability. Back on the work week clock with 36 hours elapsed.	NA	5.9E-09	

Application of RITS

Example 2: Emergent condition while in configuration where TS 3.13 is in use

Time (hh:mm)	**Event**	**Frontstop**	**Calculated AOT (time to reach 1E-05)**	**Risk (/hr)**	**Comment**
00:00	ECW pump replacement expected to last 10 days.	TS 3.7.4.a: 7 days (Also makes associated SDG inoperable)	1 train of ECW could be allowed OOS up to the 30-day backstop	4.5E-09	TS 3.13.1 requirements apply after 7 days. The risk is calculated from the time the ECW is taken out of service.
8 days	Turbine-driven AFW found to be inoperable	TS 3.7.1.2.b: 72 hours TS 3.8.1.1.d: 24 hours	27 days	1.5E-08	Regardless of the frontstop time for the TDAFW pump, TS 3.13.1 applies because the ECW has gone beyond its frontstop. TS 3.13.1 requires a determination of the acceptability of the configuration with the additional inoperable TDAFW. Application of the CRMP would determine the configuration is acceptable.
9 days	ECW pump is restored	TS 3.7.1.2.b: 72 hours less the 24 hours that have transpired.	> 30 days (backstop would apply)	1.5E-09	The condition that caused TS 3.13.1 to apply has been exited and there are no TS beyond their frontstop time. The frontstop AOT may be applied to the TDAFW.

Application of RITS

Example 3: Same as Example 2, except that the emergent condition is restored first

Time (hh:mm)	**Event**	**Frontstop**	**Calculated AOT (time to reach 1E-05)**	**Risk (/hr)**	**Comment**
00:00	ECW pump replacement expected to last 10 days.	TS 3.7.4.a: 7 days	1 train of ECW could be allowed OOS up to the 30-day backstop	4.5E-09	TS 3.13.1 requirements apply after 7 days. The risk is calculated from the time the ECW is taken out of service
8 days	Turbine-driven AFW found to be inoperable	TS 3.7.1.2.b: 72 hours TS 3.8.1.1.d: 24 hours	27 days	1.5E-08	Regardless of the frontstop time for the TDAFW pump, TS 3.13.1 applies because the ECW has gone beyond its frontstop. TS 3.13.1 requires a determination of the acceptability of the configuration with the additional inoperable TDAFW. Application of the CRMP would determine the configuration is acceptable.
9 days	TD AFW restored	NA	> 30 days	4.5E-09	TS 3.13.1 still applies. TDAFW no longer contributes to risk calculation. A new completion time may be calculated.

SDG 22 113 Day Extended AOT

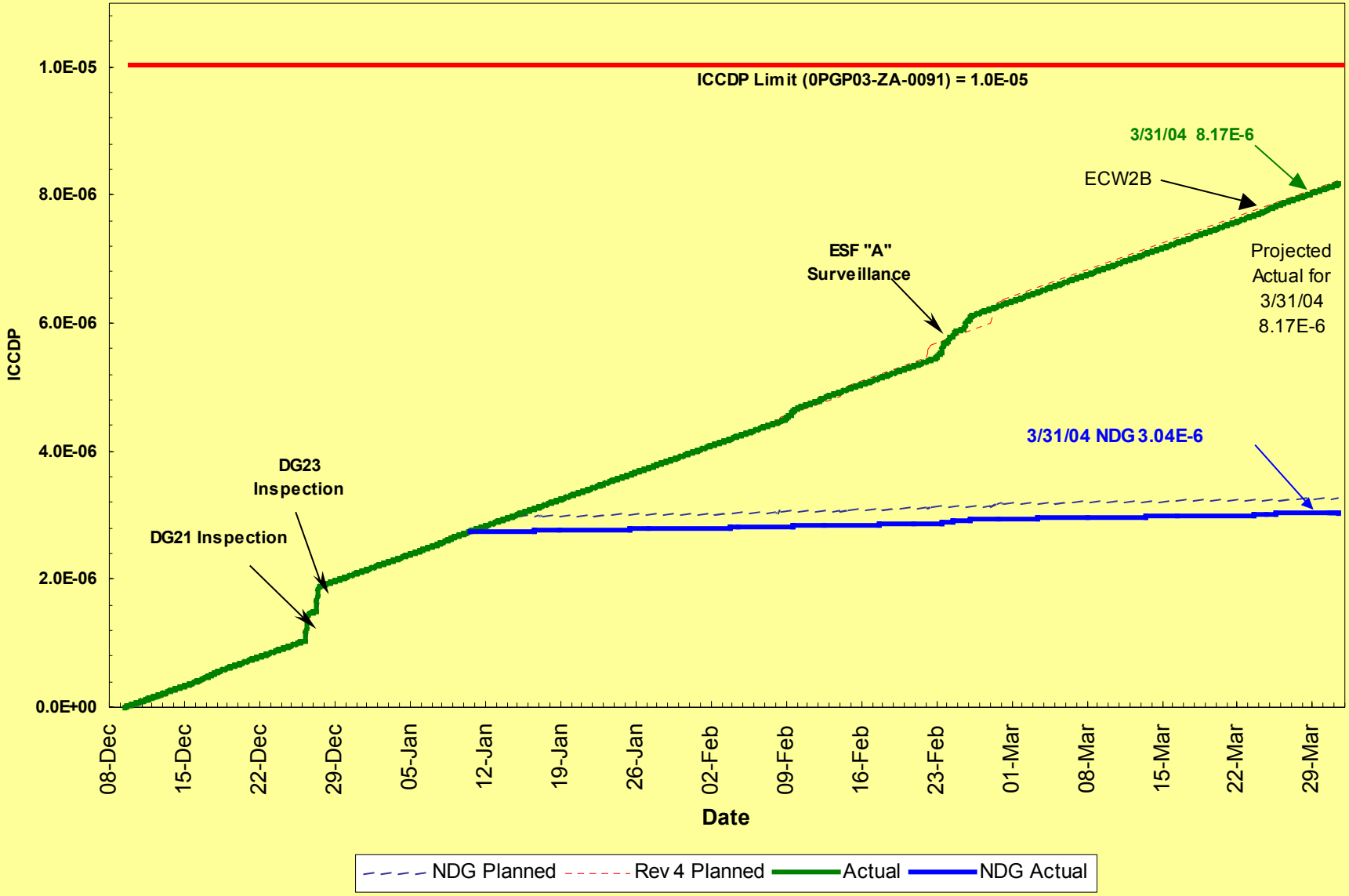
- One-time emergency TS Change approved on December 30, 2003
- Configuration risk to be managed by application of the STP Configuration Risk Management Program (CRMP).
- Good example of how the CRMP works
  - Duration and risk bound any that would be encountered using proposed RITS

SDG 22 113 Day Extended AOT

- AOT extension met RG 1.174 and RG 1.182 acceptance criteria
- Installed non-safety DGs (NDG) as compensatory action
  - RG criteria met without credit for NDGs

Comparison of Planned and Actual Risk (ICCDP) for Unit 2 During SDG 22 Outage

Data source: NDG Planned - PRA Rev 4 Model including NDG effect on risk (NDG failure and associated operator data are assumed)
Rev 4 Planned - PRA Rev 4 Model assuming no NDG effect on risk
Actuals - RAsCAL data for previous work week and PRA Rev 4



STP PRA Quality

- PRA quality issues to be addressed as part of the RG 1.200 pilot
- PRA quality scope to include industry peer review, ASME Stnd (ASME RA-S-2002), and RG 1.200
- PRA quality needed for 4B application will also be evaluated