



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555-0001

April 20, 1995

LICENSEE: Houston Lighting and Power Company (HL&P), et al.

FACILITY: South Texas Project (STP), Units 1 and 2

SUBJECT: SUMMARY OF MEETING HELD ON APRIL 19, 1995, CONCERNING POTENTIAL  
PROBABILISTIC SAFETY ASSESSMENT (PSA) APPLICATIONS AND RISK  
MANAGEMENT AT SOUTH TEXAS PROJECT

On April 19, 1995, representatives of HL&P met with the NRC staff on potential probabilistic safety assessment applications and risk management at STP. The objectives of the meeting were to: (1) explore the development of regulatory process to implement PRA-based actions; (2) explore the feasibility, scope, and schedule for applications of PRA; (3) determine how HL&P and the NRC interface to accomplish mutual goals, including consideration of STP as a pilot for graded Quality Assurance (QA); (4) identify areas where PSA application will be straight forward and areas which may be more challenging; and, (5) establish preliminary agreement on how to proceed pending approval by HL&P and NRC senior management. The lead representative of the licensee stated that no proprietary material would be presented to the staff. A list of meeting attendees is provided in Attachment 1. The HL&P meeting handout, "Comprehensive Risk Management at the South Texas Project," is provided in Attachment 2.

Representatives of the licensee presented material on a risk management strategy at STP and its application to improve station performance. The application of PSA methodology was discussed as applied to on-line maintenance, dynamic risk importance factors, risk-based evaluations of equipment out-of-service, and program applications (e.g., station and system health status, graded QA, engineering, maintenance, licensing, operations, emergency/accident response, procurement, training, scheduling, and corrective action). Graded QA was discussed in terms of a QA program that improves plant safety by using risk insights to oversee equipment and work processes based on PSA. The application of PSA in the Technical Specification arena, both past and future uses, was discussed. In particular, the conversion to the improved Standard Technical Specifications in conjunction with a PSA-based approach to define allowable outage times was presented.

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In each case, the licensee recognized that NRC staff review and approval will be necessary to fully implement a graded QA program and Technical Specification improvement program. The licensee stated that they found the meeting to be helpful, and would like to continue an exchange of ideas. The staff agreed to continue a dialogue with the licensee on these issues.

ORIGINAL SIGNED BY:

Lawrence E. Kokajko, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

- Attachments:
1. List of Meeting Attendees
  2. HL&P Meeting Handout, "Comprehensive Risk Management at the South Texas Project"

cc w/atts: See next page

DISTRIBUTION:

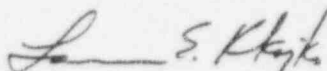
Docket File  
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PDIV-1 R/F  
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OGC  
EJordan, AEOD  
ABeach, RIV  
WJohnson, RIV  
TAlaxion  
JMitchell, EDO  
NRC Meeting Attendees

Document Name: HLPPRA.MTG

OFC	PD4-1
NAME	LKokajko
DATE	04/20/95
COPY	YES/NO

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In each case, the licensee recognized that NRC staff review and approval will be necessary to fully implement a graded QA program and Technical Specification improvement program. The licensee stated that they found the meeting to be helpful, and would like to continue an exchange of ideas. The staff agreed to continue a dialogue with the licensee on these issues.



Lawrence E. Kokajko, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

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cc w/atts: See next page

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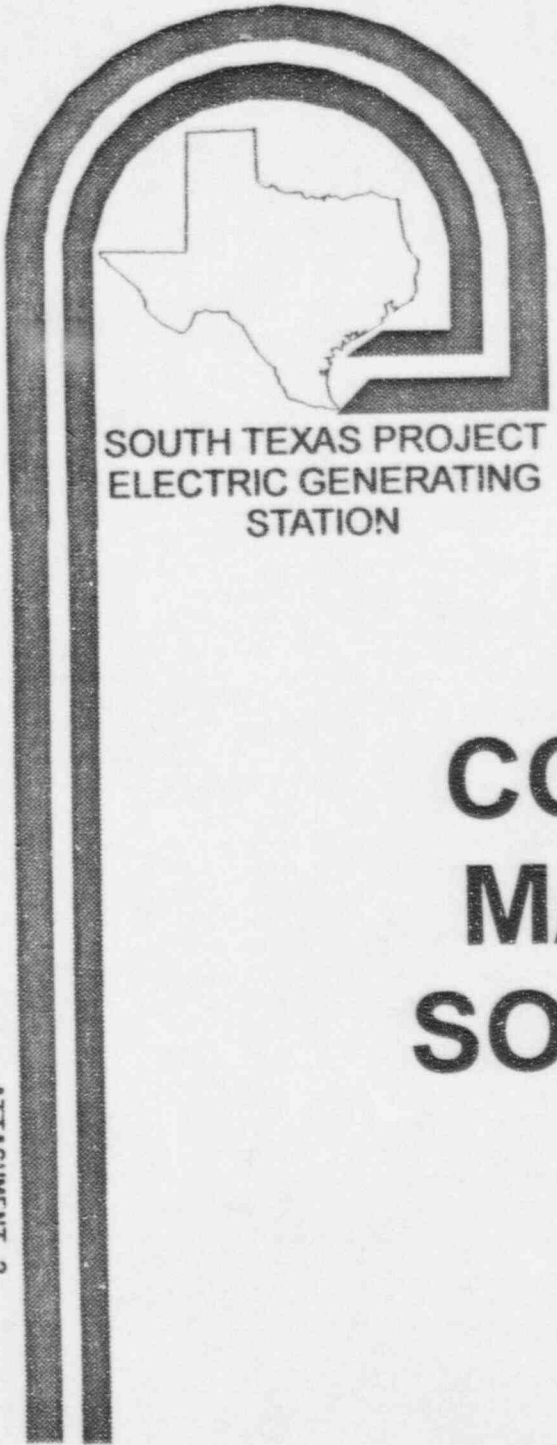
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MEETING BETWEEN HL&P AND NRC  
REGARDING  
PSA APPLICATIONS AT SOUTH TEXAS PROJECT

April 19, 1995

<u>Name</u>	<u>Organization</u>
1. Lawrence E. Kokajko	NRC/NRR/DRPW/PDIV-1
2. Wayne C. Sifre	NRC/RIV/DRP/TSS
3. Ed Butcher	NRC/NRR/SPSB
4. Steve Rosen	HL&P/STP - Industry Relations
5. Roy Rehkugler	HL&P/STP - Quality
6. Rick Grantom	HL&P/STP - Risk & Reliability Analysis
7. Lawrence E. Martin	HL&P/STP - General Manager, NA&L
8. Millard Wohl	NRC/NRR/SPSB
9. R. M. Latta	NRC/NRR/TQMB
10. Joseph R. Fracola	SAIC - NY
11. Adrain Heymer	NEI
12. Ron Fincher	HL&P/STP - Quality
13. R. S. Hamilton	HL&P/STP - Licensing
14. Steven E. Mays	NRC/AEOD/RRAB
15. Steve Long	NRC/NRR/SPSB
16. Mark Rubin	NRC/NRR/SPSB
17. Suzanne Black	NRC/NRR/TQMB
18. Bob Gramm	NRC/NRR/TQMB
19. Tom Bergman	NRC/NRR/TQMB
20. Mark McBurnett	HL&P/STP - Licensing Manager
21. Juan Peralta	NRC/NRR/TQMB
22. Farid Zikria	HNUS - R&R
23. Thomas Cannon	Arizona Public Service Co.
24. L. Zerr	STS
25. V. Leung	NRC/NRES/GSIB
26. Charles Serpan	NRC/RES/DET
27. Chris Grimes	NRC/NRR/OTSB
28. Bennett M. Brady	NRC/AEOD/RRAB
29. Steven Bloom	NRC/NRR/DRPW/PDIV-2



SOUTH TEXAS PROJECT  
ELECTRIC GENERATING  
STATION

# COMPREHENSIVE RISK MANAGEMENT AT THE SOUTH TEXAS PROJECT

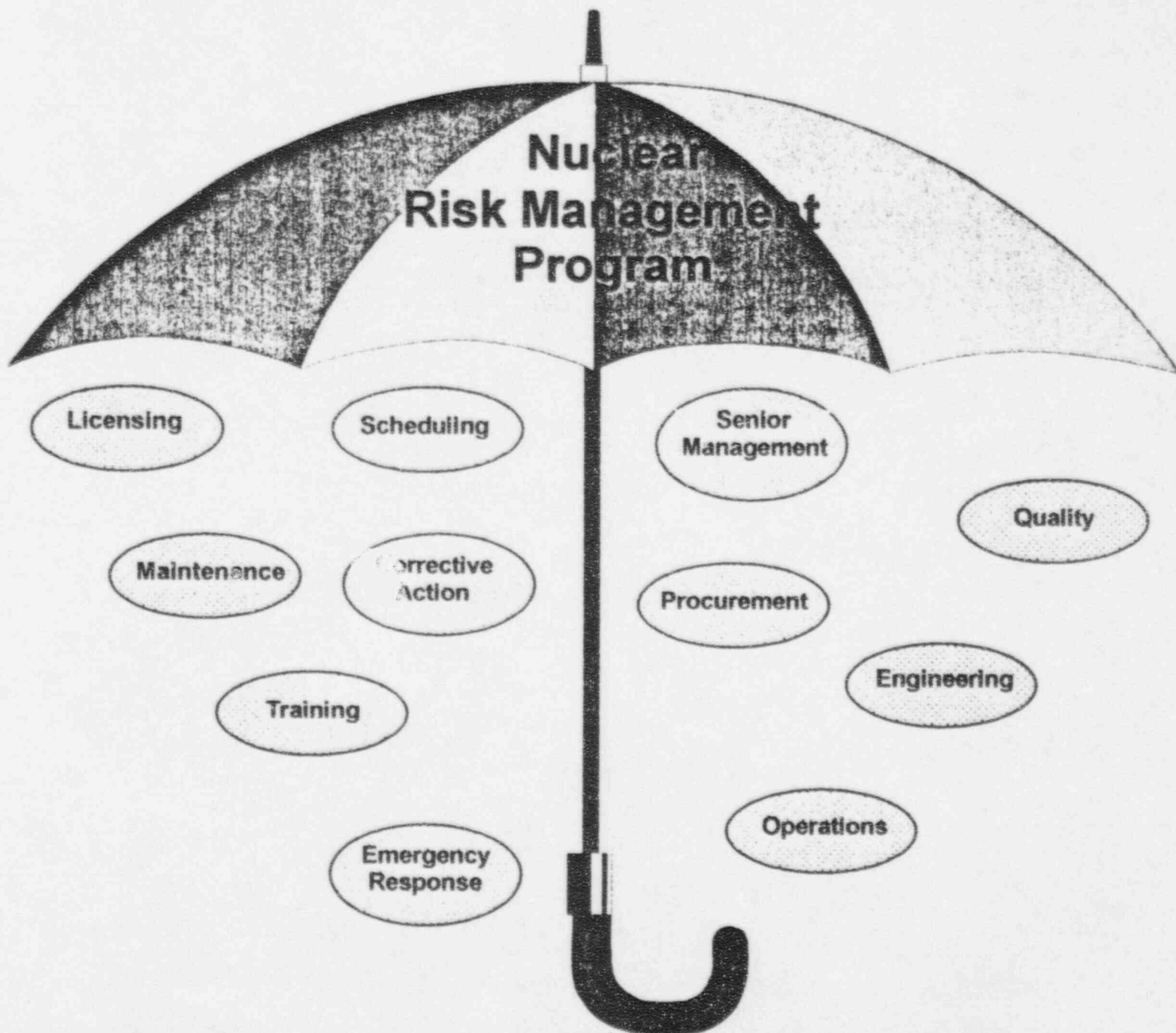
# COMPREHENSIVE RISK MANAGEMENT AT THE SOUTH TEXAS PROJECT

- **INTRODUCTION** - Lawrence Martin
  - DESCRIBE AGENDA AND INTRODUCE SPEAKERS
  - OBJECTIVES OF MEETING
  - NUCLEAR RISK MANAGEMENT PROGRAM
  - VISION
- **APPLICATION OF PSA METHODOLOGY** - Rick Grantom
  - ON LINE MAINTENANCE
  - DYNAMIC RISK IMPORTANCE FACTORS
  - RISK BASED EVALUATION OF EQUIPMENT OUT OF SERVICE
  - PROGRAM APPLICATIONS
- **GRADED QA** - Roy Rehkugler
  - OBJECTIVE
  - GRADED QA BASES
  - PROGRAM/PROCESS ACTIONS
- **TECH SPECS** - Mark McBurnett
  - APPLICATION OF PSA TO DATE
  - CONVERSION TO ISTS
  - PROPOSED APPROACH FOR AOTs
- **CONCLUSION** - Lawrence Martin

# **OBJECTIVES OF MEETING**

- **EXPLORE DEVELOPMENT OF REGULATORY PROCESS TO IMPLEMENT PSA BASED ACTIONS**
- **EXPLORE FEASIBILITY, SCOPE, AND SCHEDULE FOR APPLICATIONS OF PSA**
- **DETERMINE HOW HL&P AND NRC INTERFACE TO ACCOMPLISH MUTUAL GOALS, INCLUDING CONSIDERATION OF STP AS A PILOT FOR GRADED QA**
- **IDENTIFY AREAS WHERE PSA APPLICATION WILL BE STRAIGHT FORWARD AND AREAS WHICH MAY BE MORE CHALLENGING**
- **ESTABLISH PRELIMINARY AGREEMENT ON HOW TO PROCEED PENDING APPROVAL BY HL&P'S AND NRC'S SENIOR MANAGEMENT**





# VISION

- DEVELOP AND IMPLEMENT COMPREHENSIVE AND FULLY INTEGRATED RISK MANAGEMENT PROGRAM TO ENHANCE NUCLEAR SAFETY AND REDUCE COSTS
  
- TWO PILOT APPLICATIONS PRESENTLY UNDER CONSIDERATION
  - GRADED QA
  - TECH SPEC ALLOWED OUTAGE TIMES
  
- OTHER SPECIFIC PSA APPLICATIONS
  - MOTOR OPERATED VALVE TEST FREQUENCY
  - INSERVICE TEST FREQUENCY
  - LOCAL LEAK RATE TEST FREQUENCY
  - SURVEILLANCE TEST INTERVALS
  - SPENT FUEL POOL PSA
  - SEVERE ACCIDENT MANAGEMENT
  - SHUTDOWN RISK ASSESSMENT
  - SHUTDOWN TECH SPECS

# VISION



**APPLICATION OF  
PSA  
METHODOLOGY**

# **APPLICATION OF PSA METHODOLOGY**

- **ON-LINE MAINTENANCE**
- **RISK IMPORTANCE FACTORS**
- **RISK BASED EVALUATION OF EQUIPMENT OUT OF SERVICE**
- **PROGRAM APPLICATIONS**

# **ON-LINE MAINTENANCE PRESENT USES**

- **EVALUATE PLANNED MAINTENANCE ACTIVITIES TO DETERMINE WINDOWS OF INCREASED RISK**
  - 1E-6 THRESHOLD BASED ON EPRI'S DRAFT PSA APPLICATIONS GUIDE AS THE LEVEL OF RISK SIGNIFICANCE FOR INCREASED MANAGEMENT OVERSIGHT/APPROVAL AND COMPENSATORY MEASURES, AS APPROPRIATE.
  
- **ASSESS THE CUMULATIVE RISK OF EQUIPMENT OUT-OF-SERVICE**
  - ADDRESSES NRC ISSUES ON VOLUNTARY LCOs, BUT ALSO DIRECTLY SATISFIES MAINTENANCE RULE REQUIREMENTS {10CFR50.65, (A)(3)} TO ASSESS THE RISK IMPACT OF UNAVAILABLE EQUIPMENT AT POWER.

# **ON-LINE MAINTENANCE PROJECTED NEAR-TERM USES**

- **RISK SIGNIFICANCE THRESHOLD BOUNDARIES FOR DETERMINING LCO ALLOWED OUTAGE**

- ALSO, NEW AREAS FOR TECH SPEC IMPROVEMENT BEYOND THE EXISTING TECH SPEC IMPROVEMENT PROGRAM ARE NOW POSSIBLE.

- **ALLOWS PERIODIC ASSESSMENT OF ACTUAL YEARLY CORE DAMAGE FREQUENCY**

- IF ACTUAL PERIODIC ASSESSMENTS OF ANNUAL CORE DAMAGE FREQUENCY (CDF), BASED ON ACTUAL EQUIPMENT HISTORY, STAYS THE SAME OR TRENDS DOWN, THEN POSITIVE DEFINITIVE CONCLUSIONS RELATIVE TO MAINTENANCE EFFECTIVENESS, THE IMPACT OF OUT-OF-SERVICE, AND RISK MANAGEMENT ARE DEMONSTRATED.

- **ALLOW RISK RANKING OF PLANT EQUIPMENT**

- PROVIDE MEANS TO FOCUS RESOURCES ON MOST RISK SIGNIFICANT EQUIPMENT





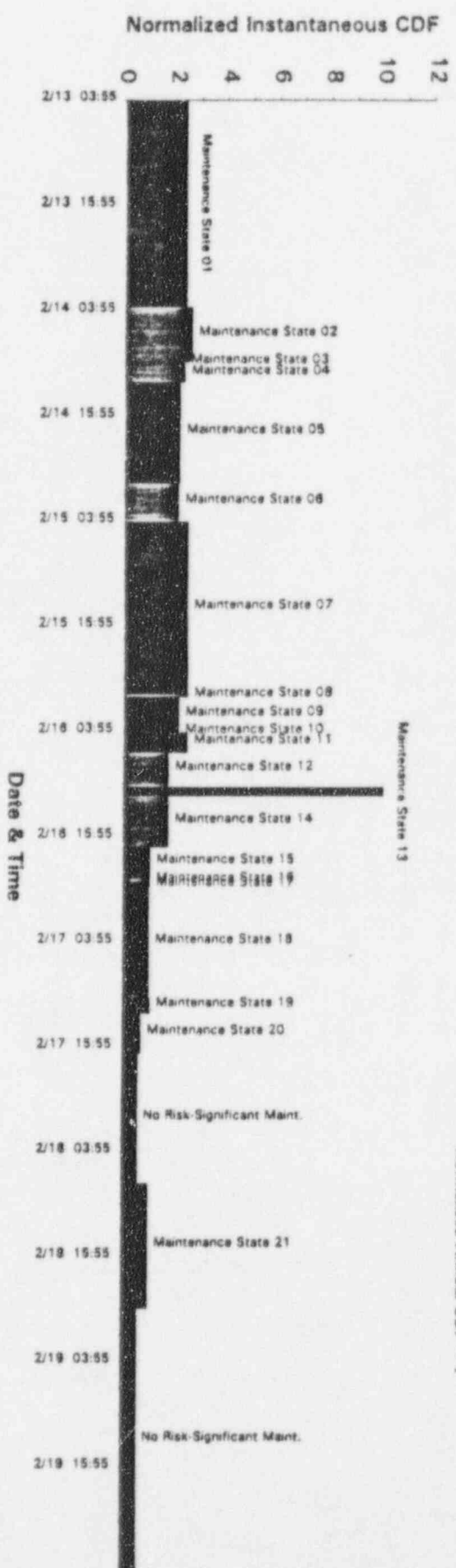
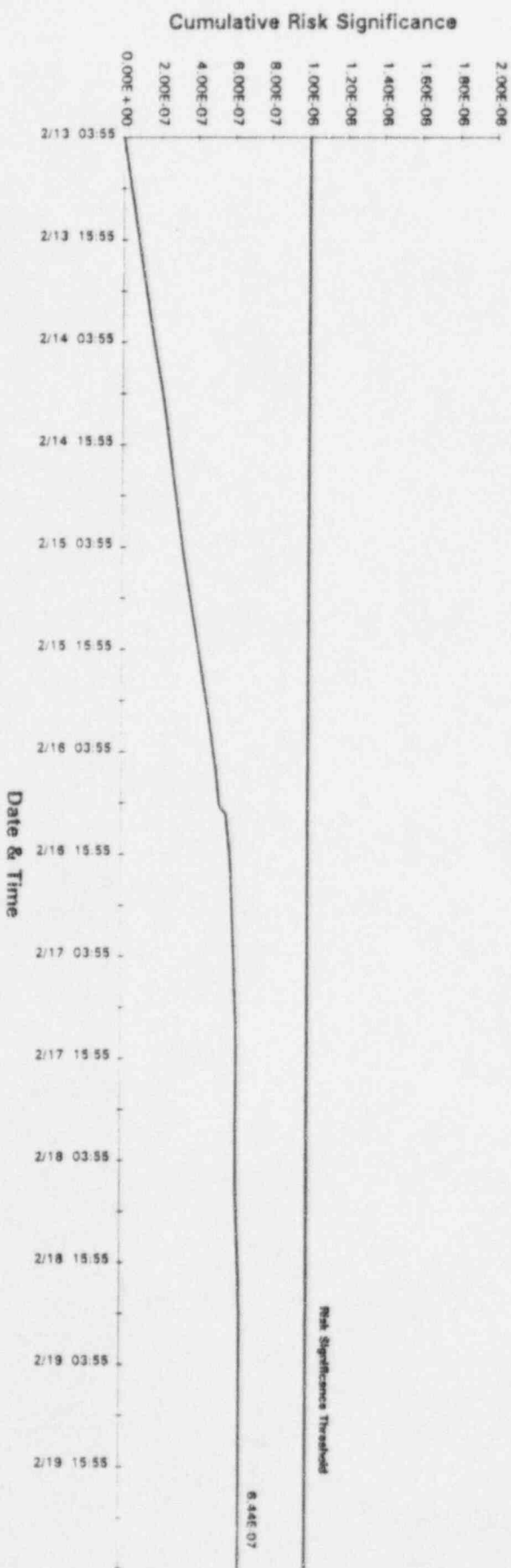
## *Unit 1 Risk Profile for Week of 02/13/95*

<i>ms_start</i>	<i>ms_end</i>	<i>state_label</i>	<i>systems_out</i>
2/13 04:00	2/13 21:00	Maintenance State 01	EW DG
2/13 21:00	2/14 01:00	Maintenance State 02	DG
2/14 01:00	2/14 04:00	No Risk-Significant Maint.	No Systems Out
2/14 04:00	2/14 08:00	Maintenance State 03	HE
2/14 08:00	2/14 14:00	Maintenance State 04	RHR HE CC
2/14 14:00	2/15 05:00	No Risk-Significant Maint.	No Systems Out
2/15 05:00	2/15 08:00	Maintenance State 05	RHR CC
2/15 08:00	2/15 10:00	Maintenance State 06	RHR LH CS CH CC
2/15 10:00	2/15 15:00	Maintenance State 07	RHR CS CH CC
2/15 15:00	2/15 16:00	Maintenance State 08	RHR CH CC
2/15 16:00	2/15 19:00	Maintenance State 09	RHR CC
2/15 19:00	2/15 21:00	Maintenance State 10	CC
2/15 21:00	2/16 08:00	No Risk-Significant Maint.	No Systems Out
2/16 08:00	2/16 09:00	Maintenance State 11	RHR LH CH
2/16 09:00	2/16 14:00	Maintenance State 12	RHR LH CH AFD
2/16 14:00	2/16 16:00	Maintenance State 13	CH AFD
2/16 16:00	2/16 17:00	Maintenance State 14	AFD
2/16 17:00	2/17 08:00	No Risk-Significant Maint.	No Systems Out
2/17 08:00	2/17 11:00	Maintenance State 15	CC
2/17 11:00	2/18 07:00	No Risk-Significant Maint.	No Systems Out
2/18 07:00	2/18 16:00	Maintenance State 16	LH
2/18 16:00	2/20 04:00	No Risk-Significant Maint.	No Systems Out

### Unit 1 Risk Profile for Week of 2/13/95

Maintenance State	System	Start Time	End Time	Train	Risk Significant Maintenance Activity
Maintenance State 1	EW	2/13/95 4:00	2/13/95 8:00		Tag out Train C "EW"
	EW	2/13/95 8:00	2/13/95 14:00	C	MWR:EW-200927-EW-PSV-6906 LEAKS PAST SEAT. REPAIR AS REQUIRED.
	EW	2/13/95 8:00	2/13/95 15:00	N	PM-MM-1-EW-90001799 (D1) CLEAN/INSPECT/REPLACE ECW PUMP LUBRICATION FILTER 1E
	EW	2/13/95 8:00	2/13/95 15:00	C	MWR:EW-330844-WHEN ECW PUMP ON TRAIN C WAS SECURED THERE WAS NOT A POP OR A SUCKING OF AIR. NEED
	EW	2/13/95 8:00	2/13/95 14:00	C	MWR:EW-200609-PSV-6874 LEAKS BY SEAT APPROX 15 DPM W/ C TRAIN ECW SECURED /REPAIR LEAK.
	EW	2/13/95 14:00	2/13/95 15:00	N	PM-MM-1-EW-90001609 (520) BENCH TEST EAB HVAC CHILLER 6 TRAIN C PRESSURE RELIEF
	EW	2/13/95 14:00	2/13/95 15:00	N	PM-MM-1-EW-90001611 (C6) BENCH TEST EAB HVAC CHILLER 3 TRAIN C PRESSURE RELIEF
	EW	2/13/95 15:00	2/13/95 21:00		Train C "EW" remove ECOs and perform valve lineups
	DG	2/13/95 4:00	2/13/95 8:00		Tag out Train C "DG" LCO
	DG	2/13/95 8:00	2/13/95 12:00	C	PM-EM-1-DG-86011086 (78) INSPECT/LUBE STANDBY DG #13 L O CIRC PUMP
	DG	2/13/95 8:00	2/13/95 13:00	C	MWR:DG-328785-STANDBY DIESEL GEN. #13 HAS LEAKING CRANKCASE BREATHER OUTLET PIPING. THIS LEAK IS
	DG	2/13/95 8:00	2/13/95 16:00		PM-EM-1-DG-93000620 REPLACE NON-1E ENERGIZED RELAYS SBDG #13 ENG CONT PNL ZLP106
	DG	2/13/95 8:00	2/13/95 16:00		PM-EM-1-DG-94002801 - REPLACE NON-1E ENERGIZED RELAY SBDG #13 GEN CONT PNL ZLP105.
	DG	2/13/95 8:00	2/13/95 16:00		PM-EM-1-DG-93000616 REPLACE ENERGIZED 1E PLUG-IN RELAYS SBDG #13 ENG CONT PNL ZLP106.
	DG	2/13/95 8:00	2/13/95 16:00	C	PM-MM-1-DG-93002863 (16) LUBRICATE ENGINE COMPONENTS STANDBY DIESEL GEN #13
Maintenance State 2	DG	2/13/95 21:00	2/14/95 1:00		Restore Train C "DG" LCO
Maintenance State 3	HE	2/14/95 4:00	2/14/95 6:00		Tag out Train C "HE"
Maintenance State 4	HE	2/14/95 8:00	2/14/95 11:00	N	PM-MM-1-HE-94002489 (104) LUBE & INSPECT DAMPER AND OPERATOR SMOKE PURGE INLET DAMPER TRAIN C
	HE	2/14/95 8:00	2/14/95 12:00	C	PM-MM-1-HE-94002739 (156) EXTERNAL INSPECTION / LUBRICATE DAMPER- OPPOSED BLADE 30 X 32
	HE	2/14/95 8:00	2/14/95 12:00	C	PM-MM-1-HE-94002483 (104) LUBE & INSPECT DAMPER AND OPERATOR C TRAIN EAB RETURN FAN DISCHARGE
	HE	2/14/95 8:00	2/14/95 10:00	N	PM-MM-1-HE-86013927 (52) REPLACE FILTERS PENETRATION SPACE NORMAL AHU
	HE	2/14/95 12:00	2/14/95 14:00		Remove tags from Train C "HE"
Maintenance State 4	CC	2/14/95 8:00	2/14/95 14:00	C	PM-EM-1-CC-90000812 (C1) INSPECT LUBE (MOV-HBC-1) RLCFC WATER RETURN INSIDE CONT. ISOL. VALVE TRN A
	CC/RHR	2/14/95 8:00	2/14/95 14:00	A	PM-EM-1-CC-90000804 (C1) INSPECT/LUBE (MOV-HBC-2) CCW RHR RETURN INSIDE CONT. ISOL. VALVE TRAIN A
Maintenance State 5	CC	2/15/95 5:00	2/15/95 9:00		Hang tags on Train C "CC"
Maintenance State 6	CC	2/15/95 8:00	2/15/95 12:00	C	PM-EM-1-CC-90000757 (78) INSPECT/LUBE (MOV-HBC-0) CCW TO CHARGING PUMPS SUPPLY VALVE
Maintenance State 7	CC	2/15/95 8:00	2/15/95 12:00	C	PM-EM-1-CC-90000732 (C1) INSPECT/LUBE (MOV-HBC-0) RCF C CHILLED WATER INLET ISOL. VALVE TRAIN C
Maintenance State 8	PK/CC	2/15/95 9:00	2/15/95 14:00	C	PM-EM-1-PK-93002647 (C6) REPLACE AGASTAT RELAY (DEV.#62) CCW PUMP 1C FEEDER BREAKER
Maintenance State 9	CC	2/15/95 13:00	2/16/95 9:00	C	PM-IC-1-CC-86007458 (78) CALIBRATE CCW HEAT EXCHANGER C DISCHARGE
Maintenance State 10	CC	2/15/95 17:00	2/15/95 21:00		Remove tags from Train C "CC"
Maintenance State 5	RH	2/15/95 5:00	2/15/95 9:00		Hang tags on Train C "RH"
Maintenance State 6	RH	2/15/95 9:00	2/15/95 13:00	C	< PM-IC-1-RH-86007901 (78) CALIBRATE RHR PUMP 1C SUCTION PRESSURE
Maintenance State 7	RH	2/15/95 13:00	2/15/95 17:00		Remove tags from Train C "RH"
Maintenance State 8	RH	2/15/95 8:00	2/15/95 19:00	C	PM-IC-1-RH-92000533 (78) CALIBRATE RHR PUMP 1C DISCHARGE
Maintenance State 9					
Maintenance State 6	CH	2/15/95 8:00	2/15/95 16:00	C	PM-EM-1-CH-93001000 (26) TEST/ONLINE ESSENTIAL CHILLER 11C
Maintenance State 7					
Maintenance State 8					
Maintenance State 6	CS	2/15/95 8:00	2/15/95 15:00	C	PM-EM-1-CS-90001032 (C1) INSPECT/LUBE (MOV) CONTAINMENT SPRAY PUMP 1C DISCH ISOL VLV XCS-001C
Maintenance State 7					
Maintenance State 6	SI	2/15/95 8:00	2/15/95 10:00	C	PM-EM-1-SI-90001565 (C1) INSPECT/LUBE (MOV) LHSI PUMP DISCHARGE ISOLATION VALVE TRAIN C
Maintenance State 11	CH	2/16/95 8:00	2/16/95 16:00	C	PM-EM-1-CH-93001001 (26) TEST/ONLINE ESSENTIAL CHILLER 12C
Maintenance State 12					
Maintenance State 13					
Maintenance State 11	RH	2/16/95 8:00	2/16/95 14:00	C	PM-EM-1-RH-90001788 (C1) INSPECT/LUBE (MOV) RHR RECIRCULATION VALVE TRAIN C
Maintenance State 12	LHSI	2/16/95 8:00	2/16/95 14:00	C	PM-EM-1-SI-90001552 (C1) INSPECT/LUBE (MOV) CONTAINMENT SUMP ISOLATION VALVE TRAIN C
	LHSI	2/16/95 8:00	2/16/95 14:00	C	PM-EM-1-SI-90001633 (C1) INSPECT/LUBE (MOV) LHSI COLD LEG ISOLATION VALVE TRAIN C
	LHSI	2/16/95 8:00	2/16/95 14:00	C	PM-EM-1-SI-90001547 (78) INSPECT/LUBE (MOV) LHSI RECIRC ISOLATION VALVE TRAIN C
Maintenance State 12	AF	2/16/95 9:00	2/16/95 12:00	D	PM-MM-1-AF-94006309 (2) PULL TEST TURBINE DRIVER
Maintenance State 13	AF	2/16/95 9:00	2/16/95 17:00	D	< MWR:AF-304149 WHEN RESETTING THE TRIP LINKAGE- IT IS POSSIBLE TO PULL THE CONNECTING ROD SO FAR
Maintenance State 14					
Maintenance State 15	CC	2/17/95 8:00	2/17/95 11:00	C	PM-EM-1-CC-90002110 (C3) DIAG DYNAMIC TEST (MOV-HBC-2) RCF C TRAIN C CCW RETURN HEADER
Maintenance State 16	SI	2/18/95 7:00	2/18/95 9:00	C	MWR:SI-329122-AS LEFT CLOSED STEAM CLOSED FACTOR (0.0141) GREATER THAN DESIGN STEM FACTOR (0.0102)
	SI	2/18/95 8:00	2/18/95 16:00	C	PM-EM-1-SI-90001514 (78) INSPECT/LUBE (MOV) LHSI RECIRC ISOLATION VALVE TRAIN C

# Unit 1 Actual Risk Profile for Week of 2/13/95



Normalized Annual CDF = 1

## *Unit 1 Actual Risk Profile for Week of 2/13/95*

<i>ms_start</i>	<i>ms_end</i>	<i>state_label</i>	<i>systems_out</i>
2/13 3:55	2/14 3:30	Maintenance State 01	EW DG CH
2/14 3:30	2/14 9:45	Maintenance State 02	HE EW DG CH
2/14 9:45	2/14 9:50	Maintenance State 03	HE DG CH
2/14 9:50	2/14 12:00	Maintenance State 04	RHR HE DG CH CC
2/14 12:00	2/14 23:35	Maintenance State 05	RHR HE CH CC
2/14 23:35	2/15 4:00	Maintenance State 06	HE CH
2/15 4:00	2/15 23:45	Maintenance State 07	LH HE CS CH CC
2/15 23:45	2/16 0:00	Maintenance State 08	LH HE CH CC
2/16 0:00	2/16 4:00	Maintenance State 09	HE CH CC
2/16 4:00	2/16 4:05	Maintenance State 10	RHR HE CH CC
2/16 4:05	2/16 6:20	Maintenance State 11	RHR LH HE CS CH CC
2/16 6:20	2/16 10:15	Maintenance State 12	RHR LH CS CH CC
2/16 10:15	2/16 11:15	Maintenance State 13	RHR LH CS CH CC AFD
2/16 11:15	2/16 17:05	Maintenance State 14	RHR LH CS CH CC
2/16 17:05	2/16 20:40	Maintenance State 15	RHR LH CS CC
2/16 20:40	2/16 21:15	Maintenance State 16	RHR LH CS
2/16 21:15	2/16 21:35	Maintenance State 17	RHR LH
2/16 21:35	2/17 10:20	Maintenance State 18	LH
2/17 10:20	2/17 12:05	Maintenance State 19	LH CC
2/17 12:05	2/17 16:35	Maintenance State 20	CC
2/17 16:35	2/18 7:35	No Risk-Significant Maint.	No Systems Out
2/18 7:35	2/18 21:50	Maintenance State 21	LH
2/18 21:50	2/20 3:55	No Risk-Significant Maint.	No Systems Out

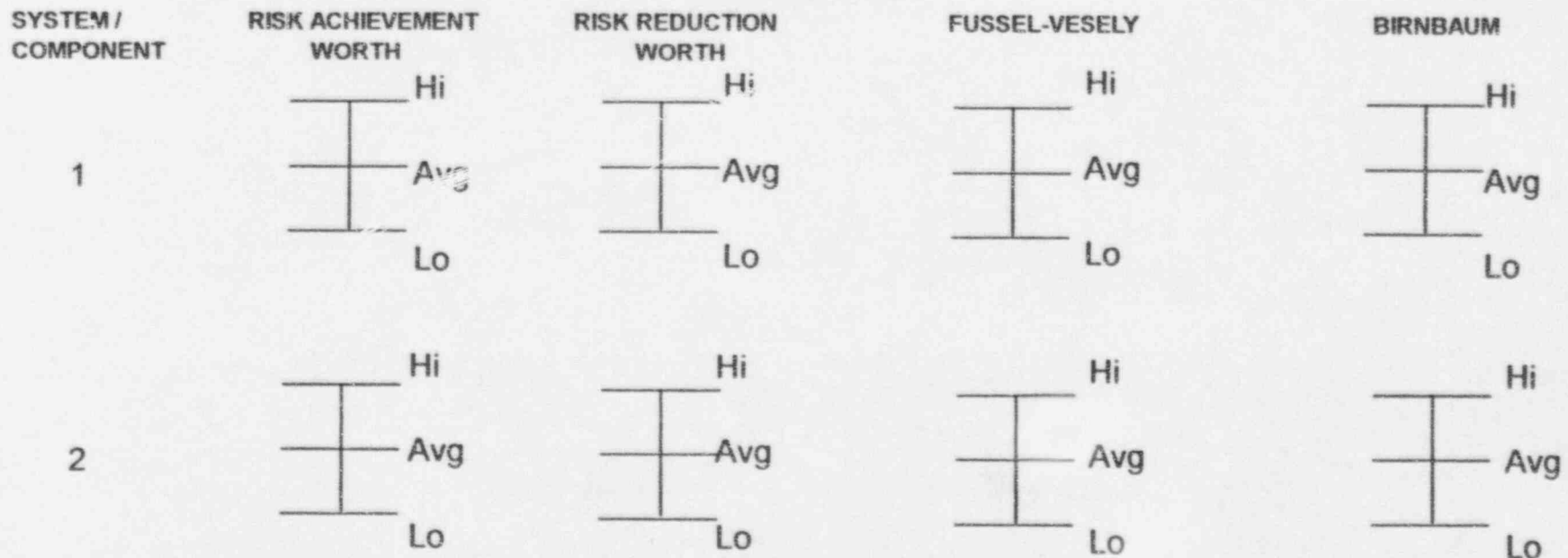
# **DYNAMIC RISK IMPORTANCE FACTORS**

- **TIME DEPENDENT VARIANCE OF STANDARD RISK IMPORTANCE MEASURES, BASED ON ACTUAL PLANT CONFIGURATIONS**
- **EQUIPMENT RISK IMPORTANCE MEASURES VARY OVER TIME DEPENDING UPON FACTOR SUCH AS:**
  - **PLANNED/UNPLANNED MAINTENANCE (TIME REMOVED FROM SERVICE/TIME RETURNED TO SERVICE)**
  - **TESTING (FREQUENCY X DURATION)**
  - **CONTRIBUTION TO FREQUENCY OF OCCURRENCE OF INITIATING EVENTS**
  - **SYSTEM SUCCESS CRITERIA**
- **SOME EQUIPMENT IMPORTANCES CAN VARY WIDELY AS A RESULT OF THE ABOVE FACTORS, PARTICULARLY MAINTENANCE UNAVAILABILITY**

# TRACKING TIME DEPENDENT VARIANCE OF STANDARD RISK IMPORTANCE MEASURES

- GENERATION OF PLANNED AND ACTUAL RISK PROFILES
- MUST DEVELOP INTERFACE WITH PLANNING/SCHEDULING AND WORK CONTROL ORGANIZATIONS TO OBTAIN NECESSARY DATA
- EACH MAINTENANCE STATE CARRIES A UNIQUE RANKING OF EQUIPMENT IMPORTANCES

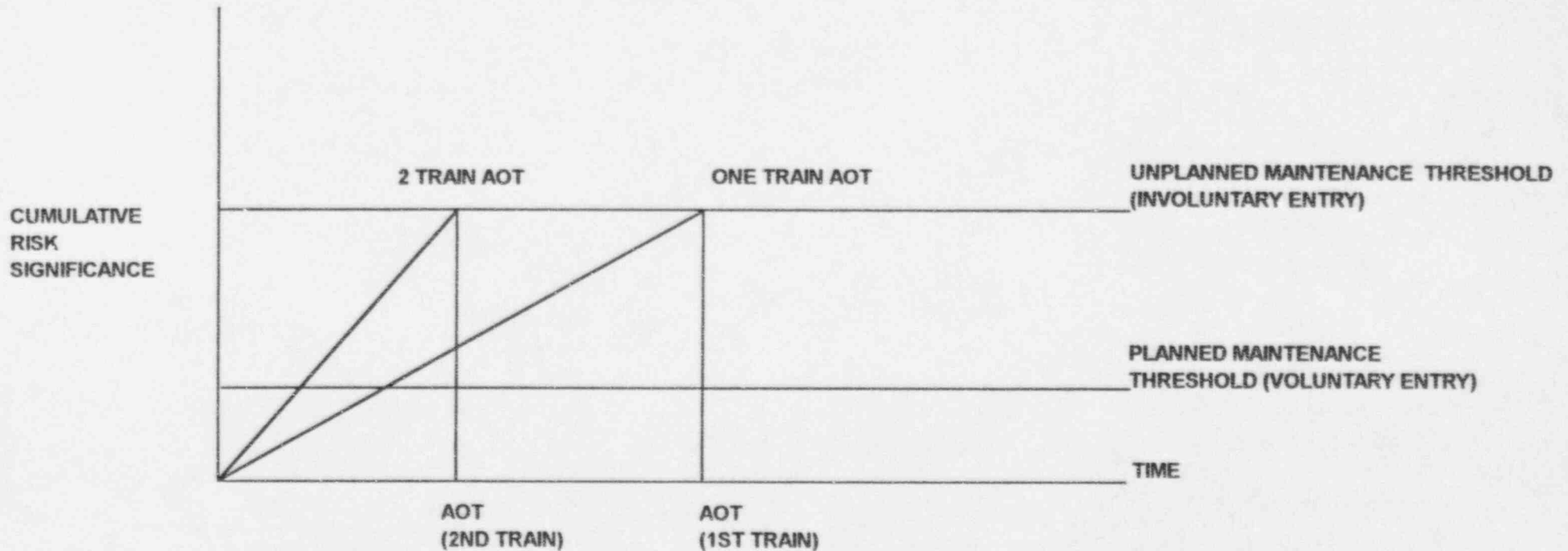
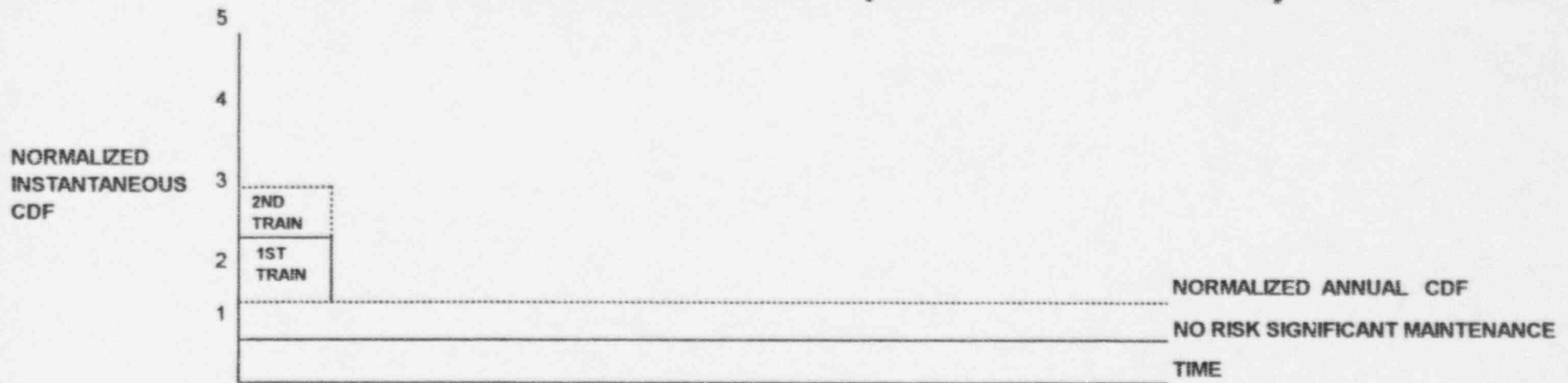
## IMPORTANCE MEASURE



# RISK-BASED EVALUATION OF EQUIPMENT OUT-OF-SERVICE

- **PLANNED (VOLUNTARY) MAINTENANCE THRESHOLD BASED ON EPRI PSA APPLICATION GUIDE**
  - SUFFICIENTLY LOW TO PREVENT ADVERSE IMPACT TO CUMULATIVE RISK (ANNUAL AVERAGE CDF)
  
- **UNPLANNED (INVOLUNTARY) MAINTENANCE - THRESHOLD BASED ON THREE TRAIN DESIGN**
  - ESTABLISHES A BACKSTOP FOR EQUIPMENT UNAVAILABILITY BASED ON UNPLANNED HARDWARE FAILURE
  - ALLOWS SUFFICIENT TIME TO ASSESS PLANT CONDITIONS AND EFFECT CORRECTIVE ACTIONS AS APPROPRIATE
  
- **CUMULATIVE RISK ACCOUNTS FOR INSTANTANEOUS PEAKS AND DURATIONS AS REFLECTED IN CALCULATED SYSTEM SPECIFIC ALLOWED OUTAGE TIMES**

# 1 & 2 TRAIN UNPLANNED AOT DETERMINATION (BACKSTOPS)

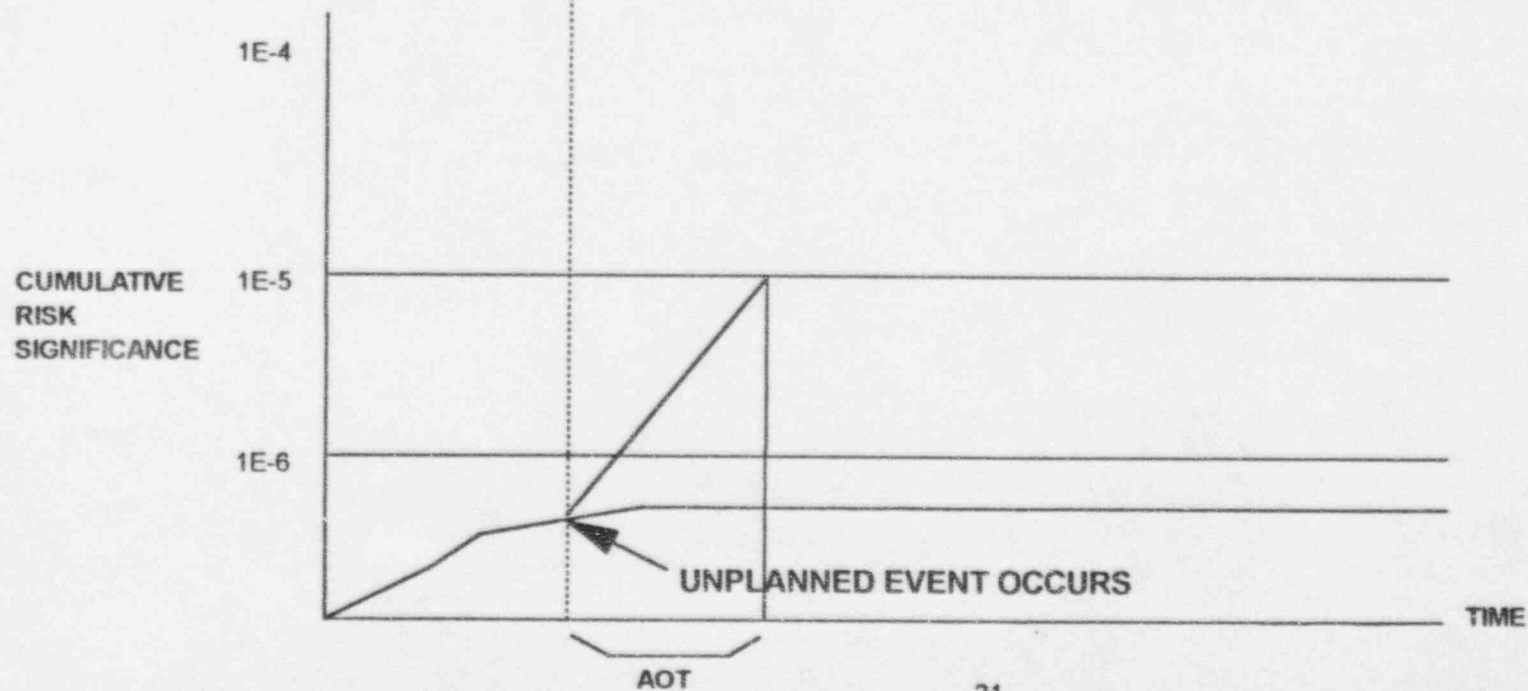
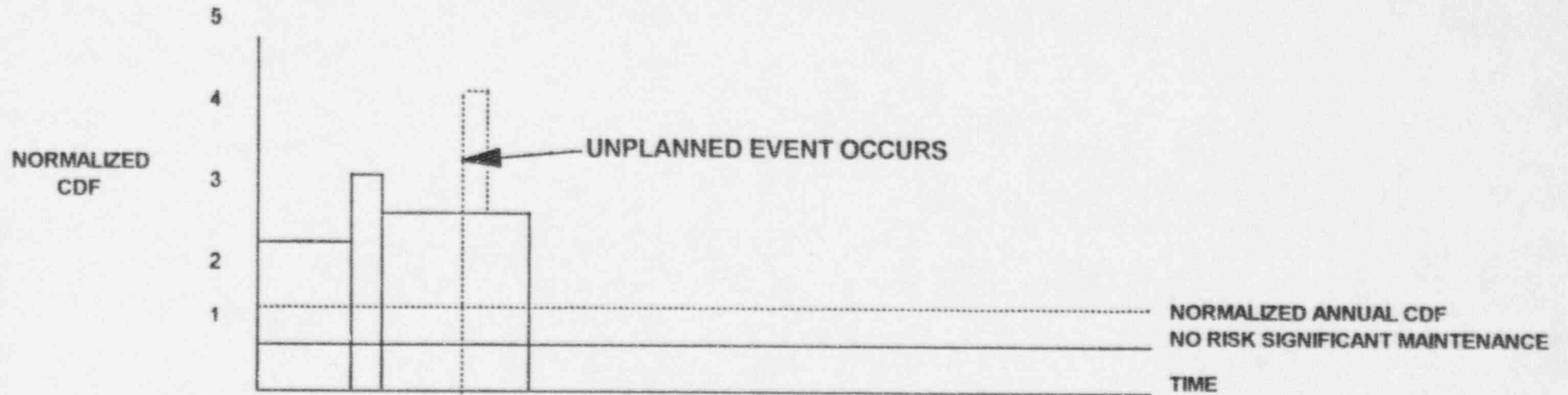




# **RISK-BASED EVALUATION OF EQUIPMENT OUT-OF-SERVICE**

- **AOT CALCULATION IS MORE CONSERVATIVE IF AN UNPLANNED FAILURE OCCURS DURING A PLANNED MAINTENANCE STATE**
- **REGARDLESS OF TRAIN ASSOCIATION, THE AOT CALCULATION ASSESSES ALL RISK RELATED EQUIPMENT OUT-OF-SERVICE THEN CALCULATES NEW AOT BASED ON ESTABLISHED THRESHOLD**
- **AOT CAN BE RECALCULATED BASED ON EQUIPMENT RETURNED TO SERVICE OR ADDITIONAL UNPLANNED EVENTS**

# CONCURRENT PLANNED & UNPLANNED AOT DETERMINATION



# PROGRAM APPLICATIONS

- **SENIOR MANAGEMENT**
  - STATION SYSTEM HEALTH STATUS, PREDICTIONS, & PERFORMANCE MEASURES
  
- **QUALITY**
  - GRADED QA
  
- **ENGINEERING**
  - INSERVICE TESTING
  - VALVE TESTING
  - LOCAL LEAK RATE TESTING
  - DESIGN CHANGE EVALUATION
  - MAINTENANCE RULE
  
- **MAINTENANCE**
  - ON-LINE VS SHUTDOWN
  - BACKLOG EVALUATION
  - EQUIPMENT PRIORITIZATION

# **PROGRAM APPLICATIONS**

## **(CONTINUED)**

- **LICENSING**
  - TECHNICAL SPECIFICATIONS
  - PLANT LIFE EXTENSION
  
- **EMERGENCY RESPONSE- ACCIDENT RESPONSE**
  - SEVERE ACCIDENT MANAGEMENT
  
- **OPERATIONS**
  - TRIP AVOIDANCE AND REDUCTION
  - EMERGENCY PROCEDURE OPTIMIZATION
  - SPENT FUEL POOL PSA
  
- **PROCUREMENT**
  
- **TRAINING**
  
- **SCHEDULING**
  
- **CORRECTIVE ACTION**

# GRADED QA

# OBJECTIVE

- APPLY LEVELS OF QUALITY ASSURANCE PROGRAM CONTROL AND OVERSIGHT TO EQUIPMENT, EVOLUTIONS AND WORK PROCESSES BASED ON RISK MANAGEMENT AND PERFORMANCE INSIGHTS, THEREBY IMPROVING PLANT SAFETY

# GRADED QA BASES

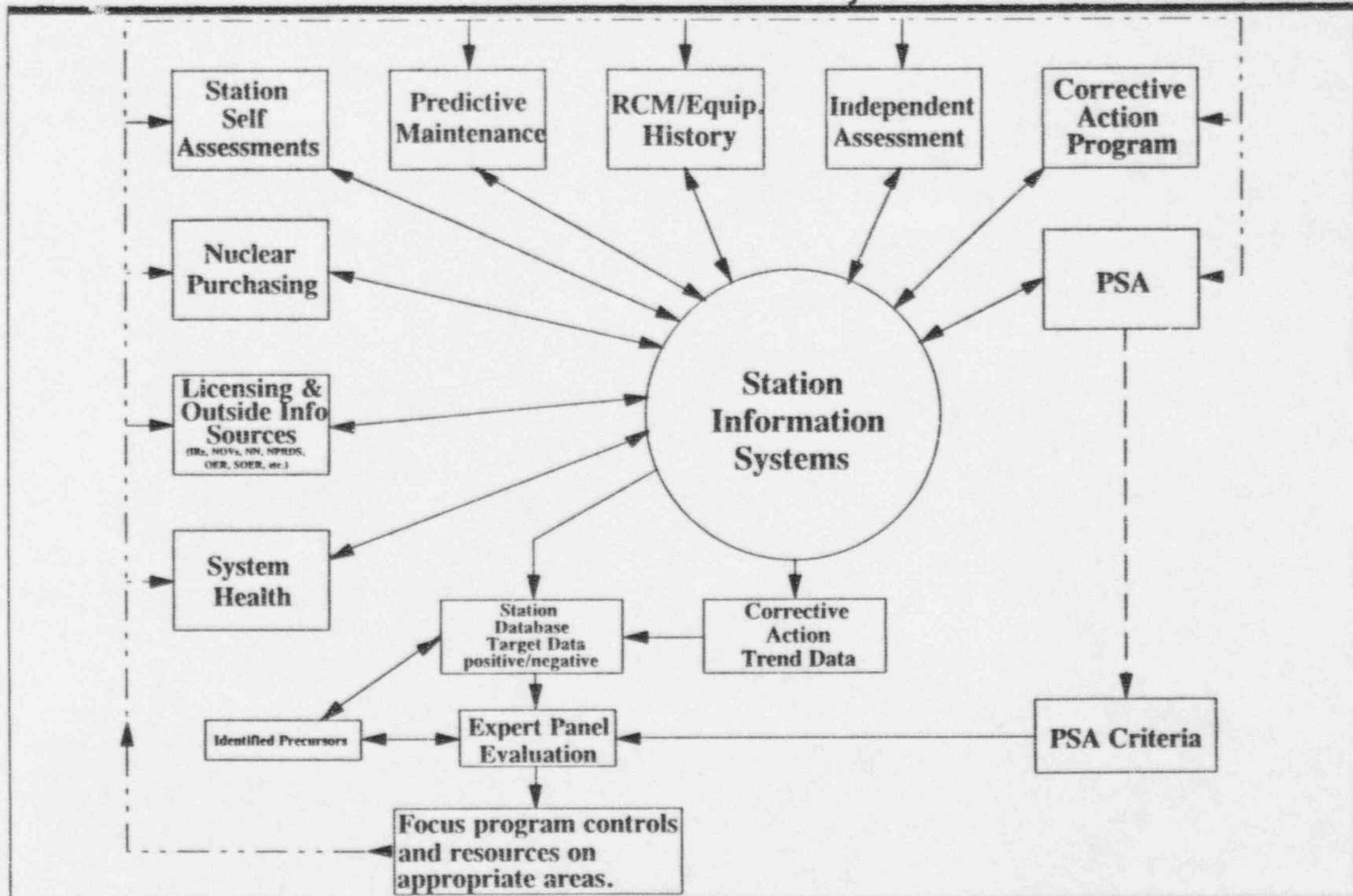
- SAFETY SIGNIFICANCE OF EQUIPMENT AND WORK PROCESSES  
(PRIMARY)
- PLANT AND ORGANIZATIONAL PERFORMANCE
- INDUSTRY EXPERIENCE

# PREREQUISITES TO GRADED QA

- SOUND AND DYNAMIC PROBABILISTIC SAFETY ASSESSMENT
- EFFECTIVE EQUIPMENT AND PERFORMANCE TREND PROCESSES
- EFFECTIVE PERFORMANCE ANALYSIS (POSITIVE AND NEGATIVE PERFORMANCE / PRECURSOR IDENTIFICATION)
- SOUND GRADING PROCESS AND CRITERIA
- TOTAL SITE BUY-IN



# Station Graded Quality Assurance South Texas Project



# PROGRAM / PROCESS ACTIONS

ACTION	10CFR 50.54.a	10CFR 50.59	RESTRAINT TO GQA FULL IMPLEMENTATION
DEVELOP QA PROGRAM TOPICAL REPORT / DELETE OQAP - - OR, REVISE OQAP TO REFLECT GQA	Y	Y	Y
REVISE INDEPENDENT ASSESSMENT PROCESSES, SCOPING, SCHEDULING TO REFLECT GQA	N	N	Y
DEVELOP GRADING CRITERIA / PROCESS	N	N	Y
IDENTIFY NON-SAFETY ITEMS WHICH INITIATE TRIPS OR CHALLENGES SAFETY SYSTEMS	N	N	Y
REVISE / RE-SCOPE STP CONFIGURATION MANAGEMENT PROGRAM, BASED ON ITEMS' SAFETY SIGNIFICANCE, AND ADDRESSING GQA	N	N	Y
MODIFY SITE WORK PROCESSES TO FACILITATE GRADED PROGRAM CONTROLS	N	N	Y

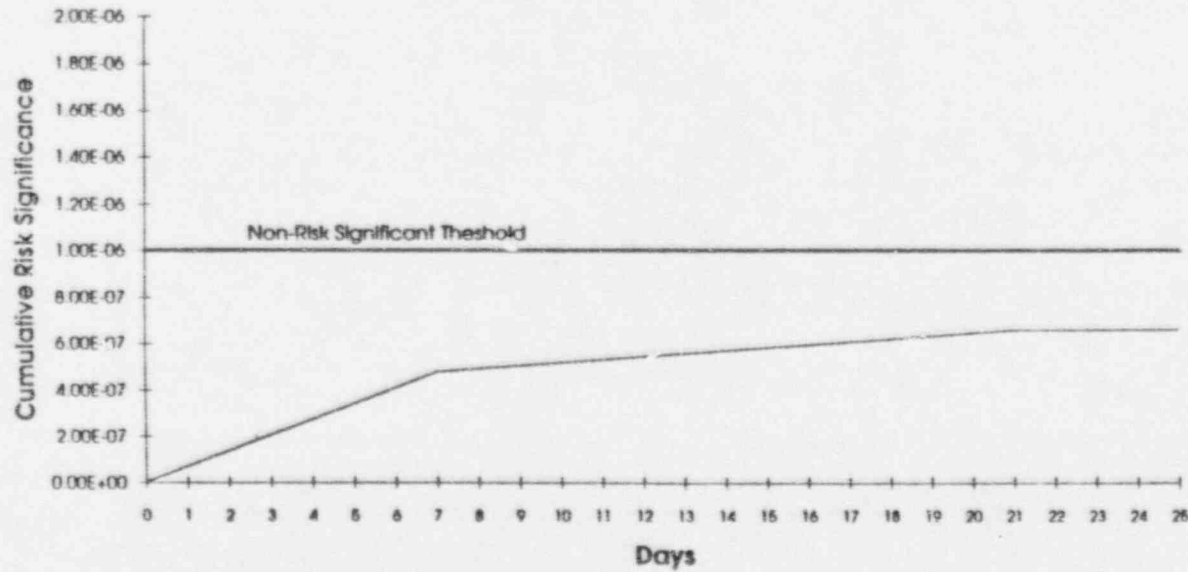
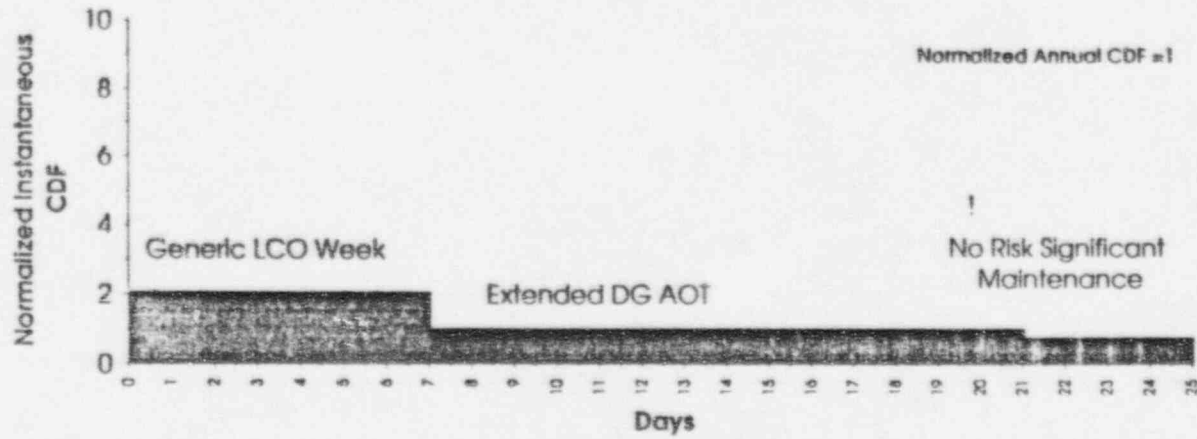
# TECHNICAL SPECIFICATIONS

# **TECHNICAL SPECIFICATIONS**

## **PSA APPLICATIONS TO DATE**

- **CHANGES TO AOTs FOR ELEVEN SYSTEMS AND CHANGES TO STIs FOR FIVE SYSTEMS APPROVED BASED ON SMALL CHANGE IN CDF IN FEBRUARY 1994**
  
- **REQUEST FOR SPECIAL TEST EXCEPTION EXPECTED TO BE SUBMITTED FOR NRC REVIEW BY APRIL 21, 1995 TO ALLOW FOR ONLINE MAINTENANCE OF THE SDG BASED ON SMALL CHANGE IN INSTANTANEOUS RISK AND CUMULATIVE RISK FOR THE DURATION OF MAINTENANCE BELOW SIGNIFICANCE THRESHOLD**
  - **Methodology is an application of the online risk management currently in use**
  - **Reflects a lower sensitivity of the three train design to having equipment out-of-service**

## Risk Profile for Proposed 21 Day DG & 7 Day ECW AOT



# TECHNICAL SPECIFICATIONS CONVERSION TO ISTS

- RECOGNITION OF ISTS AS A MEANS TO MAKE A SIGNIFICANT IMPROVEMENT IN THE STP TECH SPECS
  - BETTER INCORPORATION OF UNIQUE DESIGN FEATURES
  - FOCUS ON TECHs SPECS THAT ARE IMPORTANT TO THE OPERATOR
  - IMPROVED BASES, CLARITY AND HUMAN FACTORS
  - REDUCE NEED FOR LICENSE AMENDMENTS
  
- COMMITTED TO SUBMIT ITS BY 02/96
  
- CONVERSION TO RECOGNIZE 3 TRAIN DESIGN
  - AOTs FOR 1 AND 2 TRAINS INOPERABLE TO BE BASED ON PSA

# TECHNICAL SPECIFICATIONS PROPOSED APPROACH FOR AOTs

## ▪ FIRST AND SECOND APPROACHES

### - 1) DEVELOP AND INCLUDE AOTs IN IMPROVED TECH SPECS BASED NOT EXCEEDING THRESHOLDS

- I.E., ONE TRAIN ALLOWED OUT-OF-SERVICE FOR 7 DAYS, TWO TRAINS FOR 72 HOURS
- TRADITIONAL APPLICATION
- DOES NOT SUPPORT RISK MANAGEMENT PROGRAM

### - 2) DEVELOP TECH SPEC AOTs AS PART OF OVERALL RISK MANAGEMENT PROGRAM

- USE SAFETY MONITOR TO DETERMINE AOTs
- HARD VALUES TO BE PROVIDED AS LIMITS
- ACTUAL AOTs (SHORTER) TO BE CALCULATED BASED ON CONDITION
- APPROACH IS AN APPLICATION OF CURRENT ONLINE MAINTENANCE RISK MONITORING PROCESS
- ALLOWS MANAGEMENT OF OVERALL RISK
- FOCUSES PLANT MANAGEMENT AND RESOURCES ON SIGNIFICANT CONTRIBUTORS TO RISK

# TECHNICAL SPECIFICATIONS PROPOSED APPROACH FOR AOTs

## ▪ APPROACH 2 (cont)

### - PROGRAM DOCUMENT

- A PROGRAM DOCUMENT WOULD BE DEVELOPED AND IMPLEMENTED AS AN ADMINISTRATIVE REQUIREMENT OF THE TECH SPECS TO INCLUDE CONFIGURATION CONTROL, VALIDATION & VERIFICATION, THRESHOLDS, METHODOLOGY, ETC.

### - TECHNICAL SPECIFICATION

- TECH SPEC CHANGES TO LCOs WOULD BE MINIMAL
- ADMINISTRATIVE SECTION WOULD INCLUDE BRIEF PROGRAM DESCRIPTION

### - SAFETY MONITOR

- A QUICK MEANS TO PROVIDE QUANTIFICATION OF THE PSA MODEL GIVEN CERTAIN EQUIPMENT OUT-OF-SERVICE

### - PILOT TEST PERIOD

- A PERIOD FOR VALIDATION AND VERIFICATION OF PERFORMANCE OF RISK BASED TECH SPECS



# TECHNICAL SPECIFICATIONS PROPOSED APPROACH FOR AOTs

## ■ APPROACH 2 (cont)

### - PROPOSED SCHEDULE

- SENIOR MANAGEMENT APPROVAL - APRIL 1995
- DEVELOP SAFETY MONITOR - SEPTEMBER 1995
- BEGIN PILOT TEST PERIOD - OCTOBER 1995
  - Includes validation and verification
- COMPLETE PROGRAM DOCUMENT - DECEMBER 1995
- SUBMIT QA TOPICAL REPORT OR REVISED OQAP - JANUARY 1996
- SUBMIT PROPOSED TECH SPEC TO NRC - FEBRUARY 1996
  - Pilot test period to continue after submittal
- NRC APPROVAL - ?

# CONCLUSION

- IMPROVEMENT IN SAFETY
- REDUCTION IN COST
- COST BENEFICIAL LICENSING ACTION
- REVIEW ANY AGREEMENTS, ISSUES, KEY COMMENTS
- STATE WHERE WE GO FROM HERE