



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

September 20, 1990

Docket No. 50-416

LICENSEE: Entergy Operations, Inc.

FACILITY: Grand Gulf Nuclear Station, Unit 1

SUBJECT: SUMMARY OF SEPTEMBER 5, 1990 MEETING REGARDING PROGRAM FOR TESTING
MOTOR OPERATED VALVES AND LICENSING ACTIVITIES

The NRC staff met with the licensee at the NRC Office in Rockville, Maryland, to (1) hear and discuss licensee's program to test motor operated valves (MOV) in response to Generic Letter 89-10, and (2) discuss safety-related licensing activities. A list of attendees is given in Enclosure 1. Enclosure 2 is a handout prepared by the licensee. Enclosure 3 is a tabulation of the status of four licensing issues prepared by the licensee and used in an August 29, 1990 NRC - Entergy Operations management meeting.

Motor-Operated Valve Program

The licensee has begun implementation of its MOV program with significant additional effort planned to begin during its October 1990 outage. The licensee has performed the design basis reviews recommended in the generic letter for most of the 278 MOVs within the scope of the program.

The licensee has conducted only a few tests of MOVs under high differential pressure and flow conditions. The licensee appears to be adequately addressing the potential for valve mispositioning as discussed in Supplement 1 to Generic Letter 89-10. However, rather than testing all MOVs within the program where practicable as recommended in the generic letter, the licensee, to date, is attempting to place the MOVs into groups so as to limit the number of MOVs that need to be tested under high differential pressure and flow conditions. The staff considered the small amount of testing of installed MOVs under high differential pressure and flow conditions to be a weakness in the licensee's MOV program. The staff will expect the licensee to justify those instances where an MOV will not be tested under design differential pressure and flow conditions even though such testing is practicable. The staff requested that the licensee identify those MOVs that could be tested under design-basis differential pressure and flow conditions, and note those MOVs that will be tested under such conditions.

The licensee indicated that the thrust verification portion of its program has not been fully developed. The staff stated that this portion of the MOV program will come under particular scrutiny by NRC inspectors and that the licensee should work to complete the development of its necessary procedures. For example, the licensee will be expected to justify the application of test results from one MOV to another, especially where that MOV could have been tested. The staff asked the licensee to include the schedule for completion of thrust verification procedures in its October 1, 1990 submittal and to notify the NRC project manager when its procedures for the thrust verification portion of its MOV program are available onsite.

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Finally, the staff requested that the licensee review Supplement 1 to provide assurance that its program is consistent with the staff's intent with respect to Generic letter 89-10 and to justify any differences with Supplement 1 in its program description. The staff particularly noted that the licensee should address any differences with the recommendation in the generic letter of testing "where practicable."

Overall, the staff stated that the outline of the licensee's MOV program was well prepared and that the staff is optimistic regarding the licensee's efforts to resolve for Grand Gulf Nuclear Station, Unit 1, the concerns that led to Generic Letter 89-10.

The licensee stated that the schedule for the GGNS MOV program will be submitted October 1, 1990. Program completion is expected to take four refueling outages, beginning with the October 1990 outage and ending in June 1995. The submittal should justify a schedule longer than the three refueling outages recommended in Generic Letter 89-10 and include a discussion of priorities to complete tests of safety significant valves early in the program.

Licensing Activities

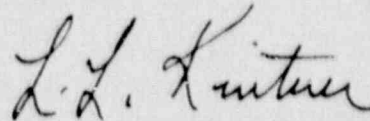
The Licensing Director, Entergy Operations, Inc. met with the NRC Project Manager for Grand Gulf Nuclear Station to discuss the review of several licensing activities. Enclosure 3 gives the licensee's summary of the status of these issues.

The staff provided its perspective on the issues. Three of the issues are deficiencies identified by the licensee: (1) inadequate secondary containment requirements in Technical Specifications (TS), (2) non-conservative TS for allowable sodium pentaborate concentration in the standby liquid control system (SLCS), and (3) as-built design of motor-operated control room isolation valves have single-failure vulnerability and are not consistent with TS. The fourth issue, inadequate cooling capability of spent fuel pool cooling system for high density spent fuel storage, was identified by the staff in its review of the high density spent fuel rack design (Letter to licensee dated August 18, 1986). The staff considers all these issues to be safety significant. The staff has met with the licensee, and identified the concerns and potential corrective measures in meeting summaries. The staff said that the Technical Specification Improvement Program (TSIP) referred to in Enclosure 3, is not applicable to any of the four issues, since they are deficiencies in design or TS for Grand Gulf Nuclear Station. Subsequent to the meeting, the staff Project Manager advised the licensee, after consultation with the staff in the NRC Technical Specification Branch, that the improved standard technical specifications do address handling loads over spent fuel by requiring secondary containment to be operable.

The licensee's Director Nuclear Licensing, suggested that letters with written staff positions (e.g., requests for additional information or denial of inadequate license amendment proposals) may result in improved communication and more timely resolution of the issues. He stated he would review the documentation of concerns and corrective actions for these issues in meeting summaries upon his return to his office .

The staff Project Manager said he will formalize communications to the extent believed necessary to improve the quality of communication of staff requests for additional information and staff positions.

Sincerely,



Lester L. Kintner, Senior Project Manager
Project Directorate IV-1
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

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As stated

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Grand Gulf Nuclear Station

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ENCLOSURE 1

NRC - ENTERGY OPERATIONS, INC.

SEPTEMBER 5, 1990 MEETING

REGARDING TEST PROGRAM FOR MOTOR-OPERATED VALVES

<u>Name</u>	<u>Affiliation</u>
T.G. Scarbrough	NRR/NRR/DET/EMEB
F.T. Grubreich	NRR/NRR/DET/EMEB
R.J. Kiessel	NRC/NRR/DOEA/OGCB
E.J. Sullivan	NRC/NRR/DET/EMEB
M.J. Meisner*	Entergy Operations - Grand Gulf
M.D. Withrow	Entergy Operations - Grand Gulf
D.P. Jones	Entergy Operations - Grand Gulf
W.K. Hughey	Entergy Operations - Grand Gulf
D.G. Cupstid	Entergy Operations - Grand Gulf
A.T. Gody, Jr.	NRR/DRSP
L.L. Kintner*	NRC Project Manager - GGNS
M. Gudrini**	Search Licensing/Bechtel

* Also met to discuss licensing activities

** Observer

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NRC - ENTERGY OPERATIONS, INC.

SEPTEMBER 5, 1990 MEETING

REGARDING TEST PROGRAM FOR MOTOR-OPERATED VALVES

<u>Name</u>	<u>Affiliation</u>
T.G. Scarbrough	NRR/NRR/DET/EMEB
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R.J. Kiessel	NRC/NRR/DOEA/OGCB
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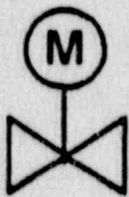
* Also met to discuss licensing activities

** Observer

Presentation of SMART Program Plan

GGNS Program to Respond
to Generic Letter 89-10

NRC
9/5/90



S ystematic
M otor
A ctuator
R eliability
T esting

D.P. Jones
Project Manager
Project SMART

(1)

AGENDA
MOTOR OPERATED VALVE TESTING PROGRAM
NRC - ENTERGY OPERATIONS, INC.
SEPTEMBER 5, 1990

INTRODUCTION	W. K. HUGHEY
BACKGROUND	W. K. HUGHEY
SMART PROGRAM PLAN	D. P. JONES
OPEN DISCUSSION	(ALL)
CLOSING REMARKS	W. K. HUGHEY



Systematic
Motor
Actuator
Reliability
Testing

PURPOSE

- REVIEW PROGRAM PLAN
- OBTAIN COMMENTS & INPUT



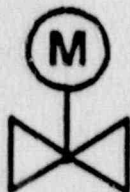
BACKGROUND

GENERIC LETTER 89-10
RECEIVED JULY 13, 1989

- o RECOMMENDED THAT LICENSEES DEVELOP AND IMPLEMENT A PROGRAM TO PROVIDE FOR THE TESTING, INSPECTION, AND MAINTENANCE OF MOVs TO PROVIDE ASSURANCE THAT THEY WILL FUNCTION WHEN SUBJECTED TO DESIGN-BASIS CONDITIONS

GGNS RESPONSE TO GL 89-10
DATED DECEMBER 21, 1989

- o REVIEWED THE RECOMMENDATIONS CONTAINED IN GL 89-10
- o MOV PROGRAM WILL PRIORITIZE AND TEST VALVES ACCORDING TO SAFETY SIGNIFICANCE CONSISTENT WITH SYSTEM'S OUTAGE CONSTRAINTS
- o PROGRAM PLAN WILL BE COMPLETED PRIOR TO RF04
- o STATED GGNS'S POSITION ON RECOMMENDED ACTIONS



Systematic
Motor
Actuator
Reliability
Testing

GL 89-10 PROJECT TEAM

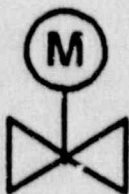
CREATED OCTOBER 1989 IN RESPONSE
TO GL 89-10

PROJECT TEAM MEMBERS

- o PROJECT MANAGEMENT
- o NUCLEAR PLANT ENGINEERING
- o MAINTENANCE
- o PERFORMANCE & SYSTEM ENGINEERING
- o NUCLEAR LICENSING
- o OPERATIONS

PROJECT TEAM ACTIVITIES

- o PROGRAM PLAN ESSENTIALLY DEVELOPED
- o DESIGN BASIS REVIEWS ESSENTIALLY COMPLETE
- o TEST TEAMS TRAINED AND TESTING STARTED
- o MONITORING/PARTICIPATION IN INDUSTRY ACTIVITIES



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Motor
Actuator
Reliability
Testing

GGNS INDUSTRY PARTICIPATION

- Active BWROG MOV Committee Member
- Active MUG Member with Seat on Equipment Claims Committee
- Party to EPRI Test Program with intent to Contribute Test Specimens
- Visits to Plants with Significant Testing Experience (San Onofre, Davis Besse)
- Solicited INPO Review of Program Plan
- Plans for INPO On-Site Program Review



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M otor
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R eliability
T esting

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ORGANIZATIONAL STRUCTURE

PROJECT MANAGEMENT

- OVERALL PROJECT MANAGEMENT
- THRUST VERIFICATION

NUCLEAR PLANT ENGINEERING

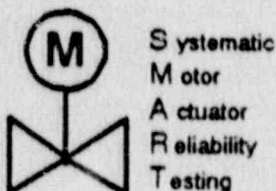
- DESIGN BASIS REVIEWS
- SPECIFY THRUST REQUIREMENTS
- ISSUE NECESSARY DESIGN CHANGES

MAINTENANCE

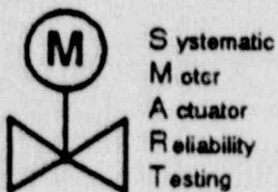
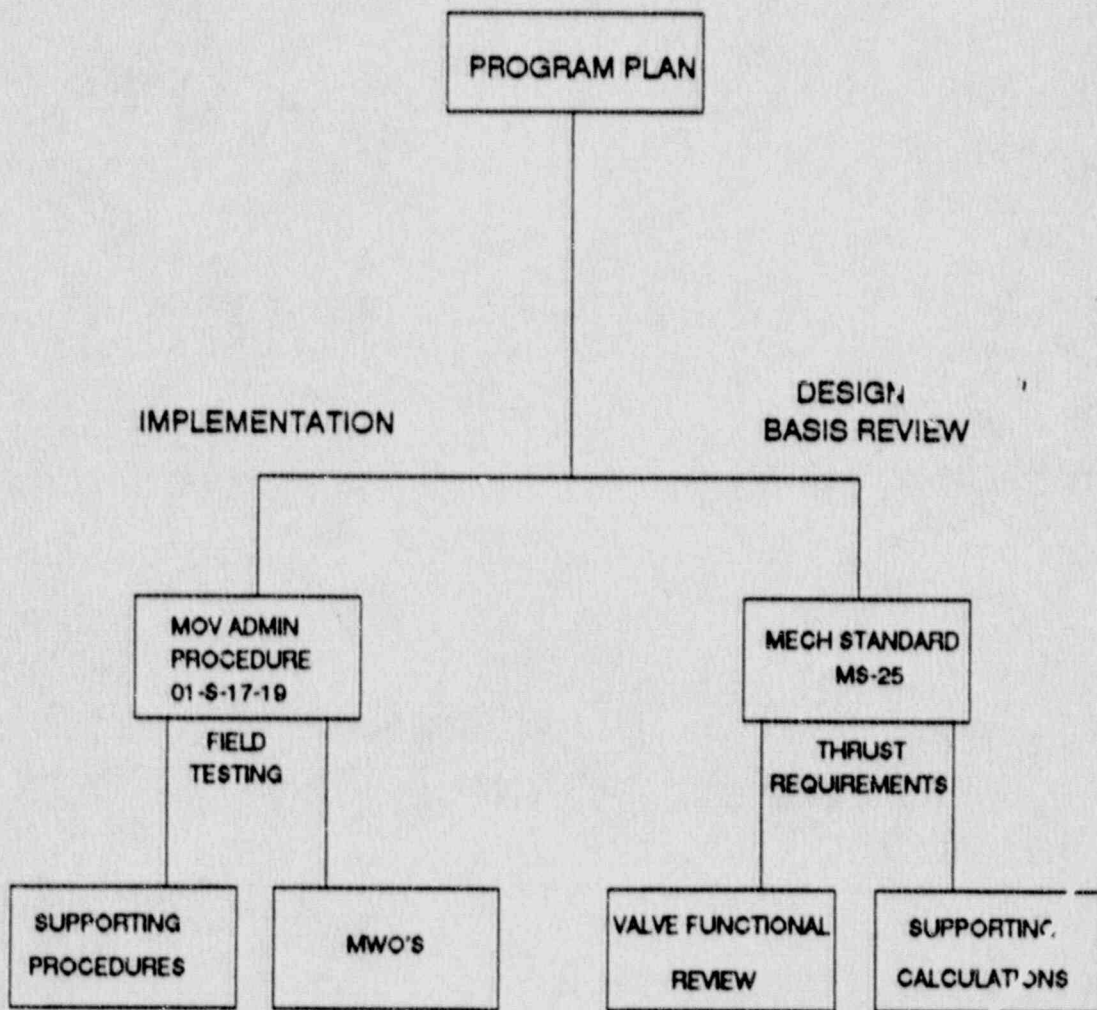
- SWITCH SETTING
- DIAGNOSTIC EQUIPMENT OPERATION
- DATA STORAGE

PERFORMANCE & SYSTEM ENGINEERING

- SPECIFY & MONITOR FIELD TESTING
- DATA ANALYSIS

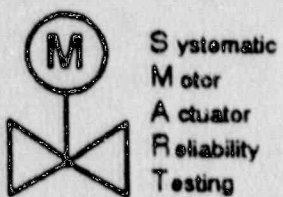
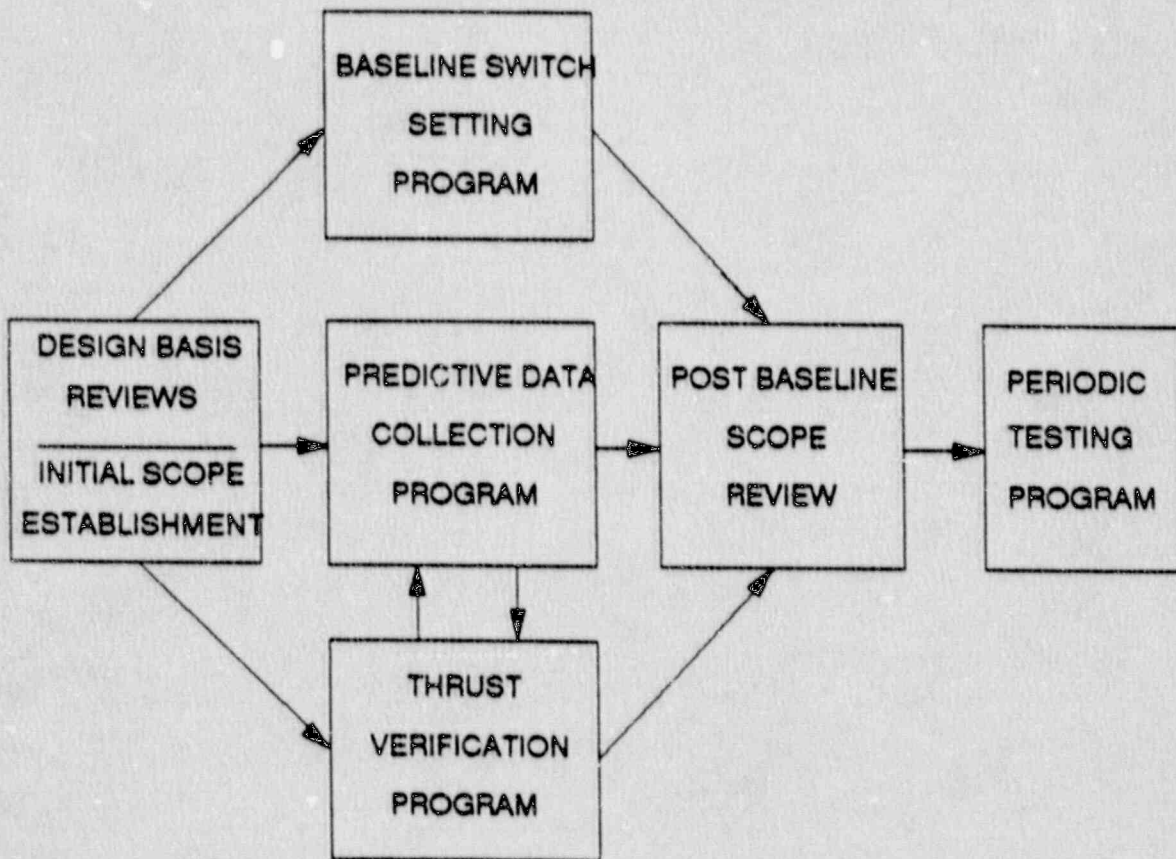


DOCUMENTATION STRUCTURE

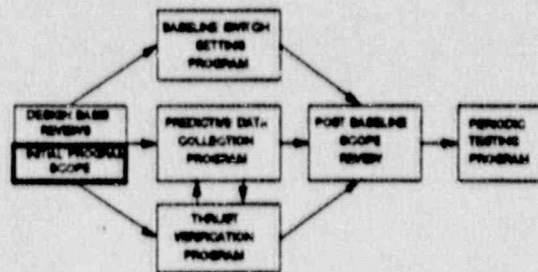


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SUB-PROGRAM STRUCTURE



INITIAL PROGRAM SCOPE



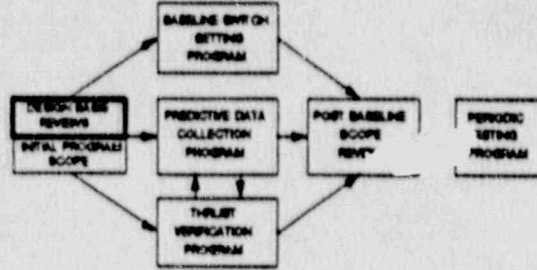
INCLUDES

- SAFETY RELATED MOV'S (ACTIVE SAFETY FUNCTION)
- POSITION CHANGEABLE MOV'S (PASSIVE SAFETY FUNCTION)

EXCLUDES

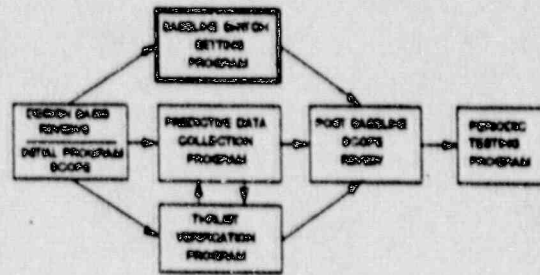
- MOV'S IN DUCTWORK SYSTEMS
- MOV'S ON VENETIAN DAMPERS
- PASSIVE VALVES WHERE MISPOSITIONING CAUSES NO CONCERN
- PASSIVE VALVES THAT CAN BE LOCKED WHEN MISPOSITIONING IS A CONCERN
- VALVES THAT ARE NOT USED

DESIGN BASIS REVIEWS



1. SAFETY FUNCTION REVIEW
2. CALCULATE MAX DP
 - Consider Valve Mispositioning
3. CALCULATE MIN REQUIRED THRUST
 - Valve Friction Factor
 - Max DP
 - Packing Load
 - Internal Pressure
4. CALCULATE MAX ACHIEVABLE THRUST
 - Degraded Voltage
 - Actuator Rating
 - Limiter Plate Setting
 - Spring Pack Capacity
 - Motor Size
 - Gearing
5. CALCULATE MAX ALLOWABLE THRUST
 - System Pressure Loads
 - Seismic/Hydrodynamic Loads
 - Thrust Loads
 - ASME Code Allowable Stresses
6. EVALUATE MIN/MAX RANGE
 - OK - Issue in MS-25
 - Too Small - Further Evaluation

BASELINE SWITCH SETTING



PHASE 1

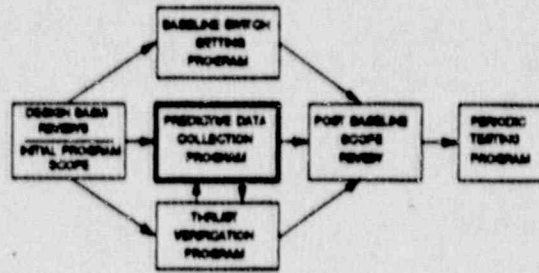
SET TORQUE SWITCHES USING BEST DATA
CURRENTLY AVAILABLE

- Signature Traces /Torque Switch Set Point
- Rewire Open Torque Switch Bypass Circuit
- Increase Open Torque Switch Bypass to 20% Stroke
- Perform Actuator Refurbishment
- Perform Spring Pack Functional

PHASE 2

RESET SWITCHES IF THRUST VERIFICATION
PROCESS SHOWS MORE THRUST NEEDED

PREDICTIVE DATA COLLECTION



DATA COLLECTION

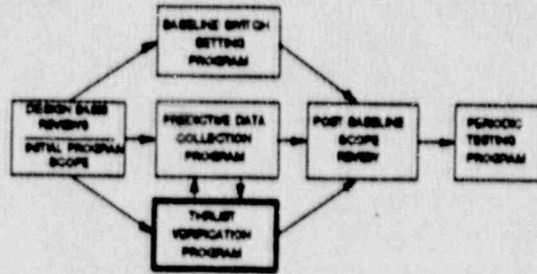
IN-SITU FLOW TEST APPROXIMATELY 40 VALVE FAMILIES

- Same Valve Type, Vendor, Size
- Test at Highest DP Possible Within Normal Operating Conditions

DATA USE

USE DATA IN THRUST VERIFICATION PROGRAM

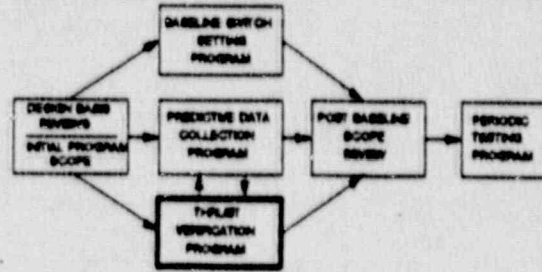
THRUST VERIFICATION



PURPOSE

- TO IDENTIFY ACCEPTABLE USE OF PHASE 1 DATA
 - Calculated Required Thrusts
 - "Reduced DP" Flow Tests
 - Similarity and Extrapolation
- TO IDENTIFY OR GENERATE BETTER DATA IF NEEDED
- TO SUBSTANTIATE/JUSTIFY CURRENT TORQUE SWITCH ADJUSTMENT METHODOLOGY

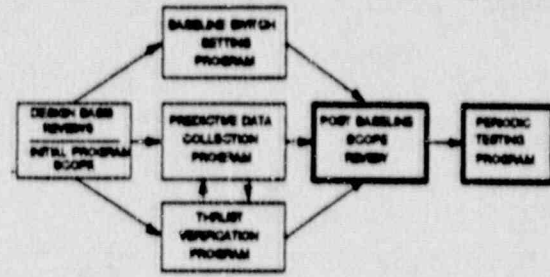
THRUST VERIFICATION



METHOD

- PERFORM DETAILED VALVE GROUPING
 - Vendor, Type, Size, Clearances, Materials, Condition, Etc.
- IDENTIFY ALL USABLE DATA
 - Vendor, Industry, GGNS, Etc.
- IDENTIFY VALVES WHERE BETTER DATA IS REQUIRED
- IDENTIFY ACTION PLAN FOR VALVES NEEDING BETTER DATA
 - a. Similarity Analysis
 - b. Extrapolate from existing data
 - c. Utilize EPRI Testing
 - d. Perform GGNS Unique Bench Prototype Test
- IMPLEMENT ACTION PLAN
 - a. Testing
 - b. Analysis
 - c. Justify No Action
- IDENTIFY REQUIRED PLANT MODIFICATIONS
 - a. Switch Resets
 - b. Valve Hardware Changes
- CORRELATE SWITCH ADJUSTMENTS MADE AT DP VS. NO DP
 - a. EPRI Test Program
 - b. GGNS Effort

SCOPE FINALIZATION & PERIODIC TESTING



PRIOR TO START OF PERIODIC TESTING PROGRAM
USE GGNS AND INDUSTRY TESTING EXPERIENCE
TO RECONSIDER

- PROGRAM SCOPE

- RETEST FREQUENCIES

PRIORITIZATION METHOD

PURPOSE

- Establish a Safety Significant Ranking of Valves for use in Outage Scheduling and Thrust Verification

PARAMETERS CONSIDERED

- Valve Safety Significance
 - NUREG 1150 Risk Importance
 - Safety Function
- Valve Type
 - Flow Interruption Mechanism
 - Size
- Design Margin
 - DP Factor
 - Thrust Factor
 - Friction Factor

RESULT

- Composite MOV Ranking



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T esting

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SCHEDULE

SCHEDULE CONSIDERATIONS

- Scope
 - 278 MOV's
- On-Line Testing Limitations
 - Minimize Safety System Down Time
- Industry Sponsored Research
 - Preliminary Scheduled Completion Date 1993

ACTIONS

- Early Problem Identification
 - Design Basis Review Essentially Complete
 - Questionable Valves Addressed in Near Term
 - Deficiencies Addressed Immediately
- Prioritized Approach
 - Outage 1
 - Valves with Immediate Concerns
 - Valves with Active Safety Functions
 - Outages 2 & 3
 - Use 7 Parameter Prioritization System

TARGET SCHEDULE

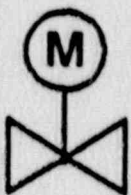
- 10/1/90 Submittal Will Indicate 4 RFO's



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CURRENT PROJECT STATUS

Total Number of Valves in Scope	278
Valves With Required Thrust Specified	200
Static Tests Complete	13 current 20 by RFO4
Flow Tests Complete	3 current 5 by RFO4



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RFO4 SCHEDULED WORK

System	# in RFO4	# in System
B21 Nuclear Boiler	6	17
B33 Reactor Recirc	6	10
C11 CRD Hydraulic	1	2
C41 Stby Lqd Control	2	2
D23 Drywell Monitoring	4	4
E12 RHR	26	55
E21 LPCS	4	4
E22 HPCS*	2	7
E30 Supp Pool Monitoring	4	12
E51 RCIC*	2	16
E61 Combustible Gas	4	20
G33 RWCU	4	16
M71 Ctrnt/Drywell Inst/Cont	7	7
P42 Compnt Cooling Water	3	18
P53 Instrument Air	2	2
P72 Drywell Chiller	3	6

* 23 HPCS and RCIC valves tested for IEB 85-03



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ISSUE	SELF-IDENTIFIED & INITIATED?	SAFETY ISSUES ADDRESSED?	COVERED IN TSIP?	STATUS
Light Loads (Secondary Containment integrity)	LER (10/88) Worked with BWROG and GE	Admin. controls in Refueling Procedure incorporate weight vs. height curve acceptable to NRC	TS Branch has taken position that Light Loads not appropriate for improved STS	Impasse on TS characterization of load restriction; may consider withdrawal
SLCS (boron concentration)	SSFA (8/88) Current TS may be non-conservative with respect to ATWS	Procedures control boron concentration < 15.2 w/o during normal operation	Current TS will remain in improved STS, however Bases will not incorporate ATWS	Impasse - staff position unduly restricts operation; basis for staff position in 8/17/90 has not been communicated
Control Room Valve Testing	Identified mistake in FSAR Table of CRIVs; attempting clarification through TS change	N/A - Valves in question are normally closed & not required to isolate to meet CR Isolation Design Basis	N/A	Impasse - staff position mandates explicit inclusion of valves into TS; may consider withdrawal and clarification through 50.59 and FSAR change
Fuel Pool Cooling & Cleanup (RHR capacity)	Issue associated with licensing of High Density Fuel Racks	Current TS restricts Spent Fuel Rack use to 2324 of 4348 cells; earliest need for RFO8 (approx. 1996)	N/A	Submittal in progress on appropriate priority considering need date

"Judging by the slow and inadequate response to Staff concerns on the above safety significant licensing issues, the NRC Project Manager stated that insufficient priority and manpower appear to be put on those issues by the licensee as compared to the TS changes requesting operational flexibility..." (8/17/90 NRC summary of 6/15/90 meeting with GGNS)

September 20, 1990

The licensee's Director Nuclear Licensing, suggested that letters with written staff positions (e.g., requests for additional information or denial of inadequate license amendment proposals) may result in improved communication and more timely resolution of the issues. He stated he would review the documentation of concerns and corrective actions for these issues in meeting summaries upon his return to his office.

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Sincerely,

Original signed by:

Lester L. Kintner, Senior Project Manager
Project Directorate IV-1
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/enclosures:
See next page

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