

DCS

APR 4 1994

Docket No. 50-271

Mr. Donald A. Reid
Vice President, Operations
Vermont Yankee Nuclear Power Corporation
RD 5, Box 169
Ferry Road
Brattleboro, Vermont 05301

Dear Mr. Reid:

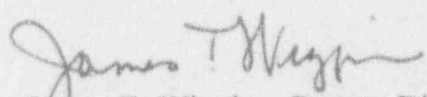
SUBJECT: VERMONT YANKEE SERVICE WATER SELF-ASSESSMENT STATUS
AND RESULTS

This letter documents the status and results of the Vermont Yankee service water system self-assessment. On March 30, 1994, representatives from Vermont Yankee presented the results of their service water system self-assessment to the Nuclear Regulatory Commission (NRC) staff in the Region I office. The meeting was beneficial in understanding the results of your self-assessment, the apparent causes for the findings, and ongoing corrective actions to ensure that the requested actions of NRC Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," are met. Attendees at the meeting are listed in Attachment 1. The handouts provided in the meeting are contained in Attachment 2.

The NRC will continue to monitor your ongoing corrective actions and disposition of the self-assessment findings. NRC final inspection of your self-assessment activities will be scheduled at a future date.

Your cooperation with us on these matters is appreciated.

Sincerely,



James T. Wiggins, Deputy Director
Division of Reactor Safety

Enclosures: As stated

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APR 4 1994

Vermont Yankee Nuclear
Power Corporation

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cc w/encl:

- R. Wanczyk, Plant Manager
- J. Thayer, Vice President, Yankee Atomic Electric Company
- L. Tremblay, Senior Licensing Engineer, Yankee Atomic Electric Company
- J. Gilroy, Director, Vermont Public Interest Research Group, Inc.
- D. Tefft, Administrator, Bureau of Radiological Health, State of New Hampshire
- Chief, Safety Unit, Office of the Attorney General, Commonwealth of Massachusetts
- R. Gad, Esquire
- G. Bisbee, Esquire
- R. Sedano, Vermont Department of Public Service
- T. Rapone, Massachusetts Executive Office of Public Safety
- Public Document Room (PDR)
- Local Public Document Room (LPDR)
- Nuclear Safety Information Center (NSIC)
- NRC Resident Inspector
- State of New Hampshire, SLO Designee
- State of Vermont, SLO Designee
- Commonwealth of Massachusetts, SLO Designee

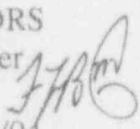
bcc w/encl:

- Region I Docket Room (with concurrences)
- J. Shedlosky, DRP
- V. McCree, OEDO
- D. Dorman, NRR
- W. Butler, NRR
- D. Norkin, NRR
- P. Drysdale, DRS
- L. Privity, DRS
- E. Kelly, DRS
- T. Kenny, DRS
- F. Bower, DRS

RI:DRS

Bower

3/31/94



RI:DRS

Privity

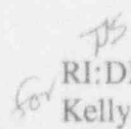
4/1/94



RI:DRS

Kelly

4/1/94



RI:DRS

Wiggins

4/4/94



OFFICIAL RECORD COPY
A:VYSWS-AS.MTG

ATTACHMENT 1

ATTENDANCE AT MARCH 30, 1994, MEETING

Vermont Yankee Service Water Self-Assessment Status and Results

Vermont Yankee Nuclear Power Corporation

A. Doyle
B. Hinkley
M. Metell
G. Overbeck
R. D. Pagodin
A. Parker
J. Pelletier

U. S. Nuclear Regulatory Commission

F. Bower
W. R. Butler
R. Conte
P. Drysdale
H. Eichenholz
M. W. Hodges
T. Kenny
J. Linville
L. Prividy
J. Shedlosky
J. Wiggins
B. Whitacre

VERMONT YANKEE NUCLEAR POWER CORPORATION

SERVICE WATER SYSTEM SELF-ASSESSMENT

PRESENTATION TO THE NRC

MARCH 30, 1994

SERVICE WATER SYSTEM SELF ASSESSMENT AGENDA

Introduction/History	JPP
Overview of Results	BEH
Self Assessment Results	ADP
Operability Assessments	HMM
Resolution of Issues	RDP
Future Considerations	JPP

SERVICE WATER SYSTEM SELF ASSESSMENT HISTORY

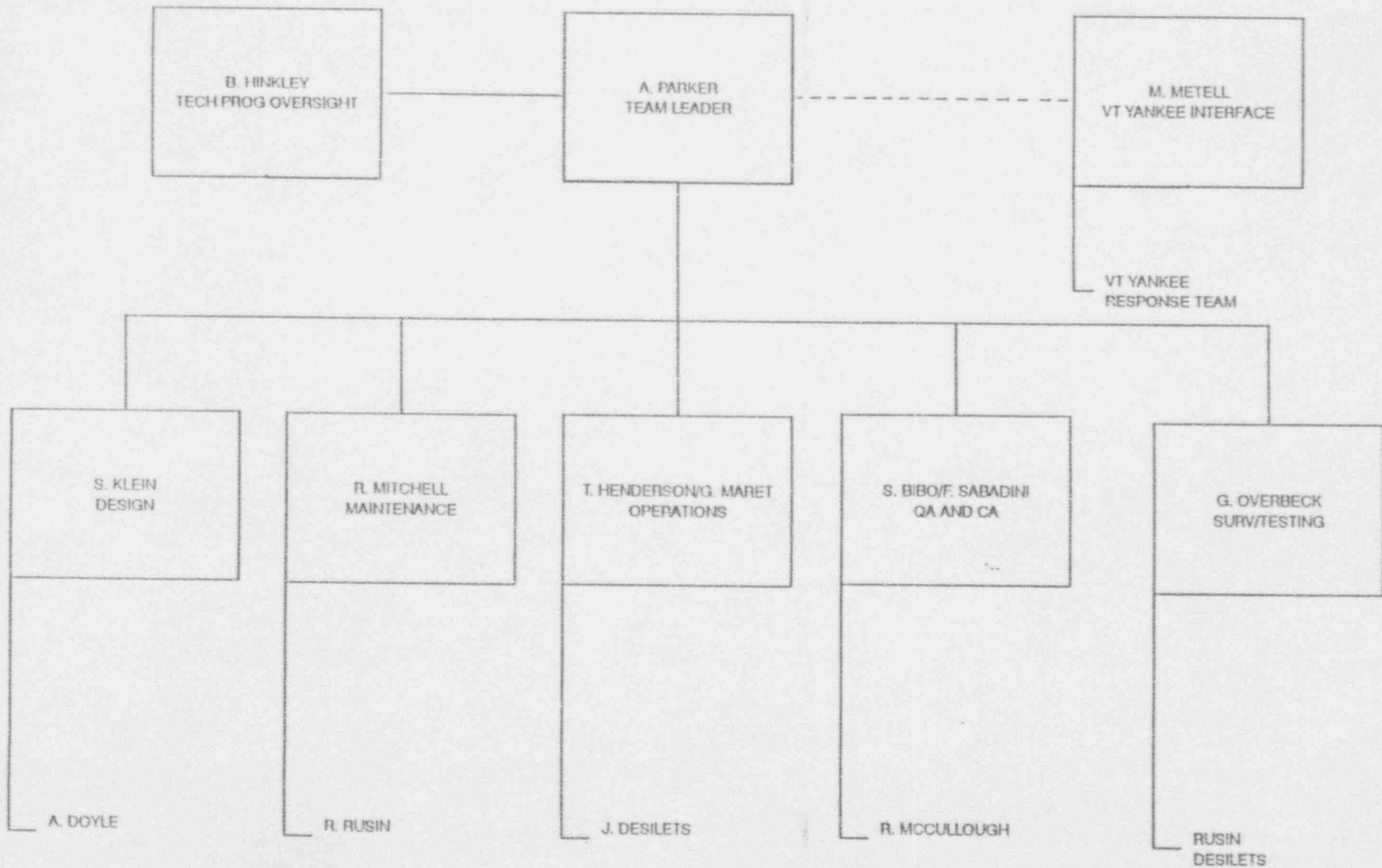
Present SW Self Assessment Plan to NRC	10/20/93
Team Orientation	12/15/93
Assessment Team On-Site	01/10/94
NRC Inspection 94-03	01/24-27/94
Exit Meeting On-Site	02/11/94
SW Project Team Formed	03/02/94
Final Report Issued	03/11/94

SERVICE WATER SYSTEM SELF ASSESSMENT OVERVIEW OF RESULTS

- LEVEL OF EFFORT
 - Multi-Discipline Assessment Team
 - Assessment Team Staff Hours (> 2000)
 - Dedicated Plant Response Team
- LEVEL OF DEPTH EQUIVALENT TO NRC
 - 114 Questions/Concerns Issued
 - 29 Considered of No Consequence
 - 15 Concerns Required Potential Reportable Occurrence Reports
 - There Were No Immediate Operability Concerns

SW SYSTEM SELF ASSESSMENT RESULTS

TEAM ORGANIZATION & INTERFACE



**SERVICE WATER SYSTEM SELF ASSESSMENT RESULTS
GENERIC LETTER 89-13**

- **MAINTENANCE PROGRAMS/PRACTICES WEAK**
 - No Specific Inspection Guidance
 - No Acceptance Criteria
- **SOME ITEMS WERE NOT ADEQUATELY ADDRESSED**
 - Only One Silting Inspection Has Been Performed To Date
- **CERTAIN ITEMS WERE NOT RESOLVED IN A TIMELY MANNER**
 - Not All Design Cases Were Run On The SW Flow Model
- **FIRE PROTECTION SYSTEM HAS NOT BEEN INCLUDED WITHIN SCOPE OF GL 89-13 RESPONSE**

**SERVICE WATER SYSTEM SELF ASSESSMENT RESULTS
GENERIC LETTER 89-13 (Continued)**

APPARENT CAUSES

- COMMITMENTS VAGUE
- NO GENERIC LETTER 89-13 CONTINUING PROGRAM
- COMMITMENT MANAGEMENT/ACCOUNTABILITY
- RELIANCE ON MINIMAL PROGRAMS, PROCEDURE AND STRUCTURE
- COMMUNICATION WEAKNESS

SERVICE WATER SYSTEM SELF ASSESSMENT RESULTS DESIGN

INCOMPLETE ALTERNATE COOLING SYSTEM DESIGN BASIS

- SELF IDENTIFIED BY PLANT RESPONSE TEAM
 - Appendix R
 - Flooding

INCOMPLETE DESIGN ANALYSIS

- SERVICE WATER
 - Flow Balance & Pump Runout
 - Potential For Flashing at High Points
 - Consequence of Tube Plugging
 - Water Hammer
 - Fouling Factor
- ALTERNATE COOLING
 - Water Loss
 - High Initial Basin Temperatures
 - Lack of Flow Balance Analysis

SERVICE WATER SYSTEM SELF ASSESSMENT RESULTS OPERATIONS

- PROCEDURE/PROGRAM WEAKNESSES
 - Safety Related Throttle Valve Setting Via OP 2181 Appendix B
- DRAWINGS
 - Cumbersome (CR) and Could Use Improvement
 - TSC Drawing Control
 - Minor Discrepancies vs Field
 - Minor Discrepancies vs Procedures
- PROCEDURES/PROGRAMS MISSING
 - Surveillance of DG Fire Hose/Cooling Equipment
 - Icing Considerations for Cooling Tower Fan
 - Expected Cooling Tower Basin Levels
 - Surveillance of Cooling Tower #2 Valve Pit
- TRAINING
 - Adequate Coverage of Design Changes
 - Good Focus on Manual Actions

SERVICE WATER SYSTEM SELF ASSESSMENT RESULTS MAINTENANCE

- MANAGEMENT OF COMMITMENTS
 - Hinge Pin Diameter Inspection of Check Valves
 - No Formal Trending of Inspection Results of Valves
 - Missed Silting Inspections
 - Lack of Commitment Awareness
- PROCEDURES AND PRACTICES
 - Lack of Details and Inspection/Acceptance Criteria
 - Uncontrolled Checklists
 - Uncontrolled Guidelines and Forms
 - Heat Exchanger Preventive Maintenance
 - Check Valve Inspection Program
 - SW System Valve Refurbishment Program
 - LCO Maintenance Form
 - Records of Completed Maintenance Not Always Explicit

SERVICE WATER SYSTEM SELF ASSESSMENT RESULTS MAINTENANCE (Continued)

- CONFIGURATION CONTROL

- V70-43B Hinge Arm Modification
- Heat Exchanger Tube Plugging
- Ventilation Dampers in Intake Structure

- MATERIAL CONDITION

- All Safety-Related RRU Coils Replaced
- Corrosion Inspection Program Since 1981
- Intake Structure Housekeeping
- Control of Maintenance Practices/Attention to Detail

- TRAINING

- Reliance on Skill of the Craft
- No Training on EPRI Methodology

SERVICE WATER SYSTEM SELF ASSESSMENT RESULTS TESTING

- RRU THROTTLE VALVE POSITION & DESIGN FLOW ARE ESTABLISHED WITHOUT APPROVED PROCEDURES
 - Acceptance Criteria (Flows & Delta P Not Effectively Communicated)
 - No As-Found Conditions Recorded
 - Recommended Flush of Throttle Valve Not Performed
 - Final Throttle Positions Are Not Controlled (i.e., Locked)
 - Flow Measuring Device Accuracy is Not Considered
- NO FORMAL SW SYSTEM FLOW BALANCE PROCEDURE
- STROKE TESTING OF SEISMIC II/I INTERFACE VALVES AND ALTERNATE COOLING VALVES
- INCOMPLETE PRE-OPERATION TESTING OF ALTERNATE COOLING SYSTEM

SERVICE WATER SYSTEM SELF ASSESSMENT

OPERABILITY ASSESSMENTS

- RESPONSE TEAM PROCESS
- BASIS FOR MAINTAINING OPERABILITY

SERVICE WATER SYSTEM SELF ASSESSMENT

RESPONSE TEAM PROCESS

- DEDICATED TEAM WITH ASSESSMENT COUNTERPARTS
- EARLY RESULTS NOT FULLY RESPONSIVE
- SOLICITED PLANT MANAGEMENT INVOLVEMENT
- TEAM LEADER REVIEW OF CONCERNS FOR OPERABILITY
- PRO PROCESS - 15 SUBMITTED, 1 LER RESULTING
- INDIVIDUALLY - NO OPERABILITY PROBLEMS
- CONTINUED EMPHASIS ON TIMELY OPERABILITY DETERMINATIONS

SERVICE WATER SYSTEM SELF ASSESSMENT

BASIS FOR MAINTAINING OPERABILITY (BMO)

- BMO = EXISTING PROCESS
- INTEGRATED FINDINGS VS SINGLE ISSUES
- OPERABLE UNDER CURRENT CONDITIONS
 - Thermal Margins
 - Recent Maintenance Activities
 - Augmented Testing
 - Past Performance
 - Favorable Configuration
- CONTINUED OPERABILITY WITH BOUNDING CONDITIONS
 - SW Pump Runout Resolution Before 45°F
 - Cooling Tower Fan Breaker Resolution
 - Thermal Penalty/Margin Established (65°F)
 - Deep Basin Temp Less Than 85 °F
- PORC/REVIEW AND PLANT MANAGER DISPOSITION
- SW PROJECT TEAM ASSIGNED RESOLUTION

SERVICE WATER SYSTEM SELF ASSESSMENT

BOUNDING CONDITIONS - WHEN THEY OCCUR

	<u>EARLY</u>	<u>AVG</u>	<u>LATE</u>
PUMP RUNOUT (RIVER = 45°F)	4/10	4/27	5/12
CT CIRCUIT BREAKERS (CT CLOSED CYCLE)	5/01	N/A	5/14
THERMAL MARGIN (RIVER = 65°F)	5/15	6/15	7/05
BASIN > 85°F	6/05	7/05	8/05

SW SYSTEM SELF ASSESSMENT RESOLUTION OF ISSUES

- SW PROJECT TEAM ASSIGNMENT
- DETAILED PROBLEM SOLVING PROCESS
 - Affinity Diagram
 - Identification & Prioritization
 - Action Plans/Milestones
- REVERIFICATION OF QUESTION/CONCERN RESPONSES
- DESIGN BASIS RECONSTITUTION
 - Updated FSAR & Technical Specifications
- ADDRESS SELF ASSESSMENT ITEMS
- CLOSE ALL NRC OPEN ITEMS
- THOROUGH REVIEW OF GENERIC LETTER 89-13
- DRAFT OPERATIONS & MAINTENANCE PROCEDURES

SW SYSTEM SELF ASSESSMENT RESOLUTION OF ISSUES

TIMEBOUND ISSUES:

- COMPLETION OF FLO SERIES MODEL DEVELOPMENT
- SERVICE WATER PUMP RUNOUT
- COOLING TOWER FAN MOTOR BREAKERS
- RRU TESTING, THROTTLE VALVE CONTROL
- DEEP BASIN TEMPERATURE ISSUES
- ALTERNATE COOLING SYSTEM TESTING
- SERVICE WATER THERMAL MARGIN
- WATER HAMMER ISSUE

SW SYSTEM SELF ASSESSMENT FUTURE CONSIDERATIONS

BROAD ISSUES

- DESIGN KNOWLEDGE AND AWARENESS
- MAINTENANCE PRACTICES
- CONFIGURATION CONTROL
- COMMITMENT MANAGEMENT PROCESS

LESSONS LEARNED

- RESPONSIVENESS TO ITEMS. OPERABILITY ASSESSMENTS
- USE SOME VY PEOPLE ON SELF ASSESSMENT TEAM
- MAKE RESPONSE TEAM RESPONSIBLE FOR RESOLVING ISSUES
- PREVENTION
- NOT AS WELL OFF AS THOUGHT IN DESIGN/DESIGN BASIS AREA
- INTERNAL COMMUNICATION