Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247
402/636-2000

June 29, 1994
LIC-94-0140

L. J. Callan, Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

References:
1. Docket No. 50-285
2. Letter from NRC (S. J. Collins) to OPPD (T. L. Patterson) dated January 11, 1994
3. U.S. NRC Administrative Letter 94-03: Announcing an NRC Inspection Procedure on Licensee Self-Assessment Programs for NRC Area-of-Emphasis Inspections
4. Letter from OPPD (W. G. Gates) to NRC (S. J. Collins) dated March 23, 1994

Dear Mr. Callan:

SUBJECT: SERVICE WATER SYSTEM OPERATIONAL PERFORMANCE SELF-ASSESSMENT PROPOSAL

As outlined in Nuclear Regulatory Commission (NRC) Inspection Procedure (IP) 40501 "Licensee Self Assessments Related to Area-of-Emphasis Inspections" announced in Reference 3 and as proposed in Reference 4, please find attached (Attachments A-E) the Omaha Public Power District (OPPD) detailed plan for conducting a self-assessment of the Fort Calhoun Station (FCS) Service Water System in lieu of a full scope NRC team inspection of this area.

The proposed Service Water System Operational Performance Self-Assessment would be conducted on five major areas. Each of these areas correlates to the guidance provided in Temporary Instruction (TI) 2515/118, Revision 1, "Service Water System Operational Performance Inspection" (SWOPI). The specific areas to be addressed are: (1) Design Review/Configuration; (2) Operations; (3) Maintenance; (4) Surveillance/Testing; and (5) Quality Assurance and Corrective Actions. The preparation of the Self-Assessment Checklist (Attachment A) which is contained within the body of the Self-Assessment Program (Attachments A-E) utilized the TI as its basis document. This was to ensure that the guidance of the Self-Assessment Program, outlined in NRC Inspection Manual IP 40501, would be met. In addition to TI 2515/118, Rev. 1, U.S. NRC NUREG-0800 "Standard Review Plan", previous industry SWOPI reports, NRC Information Notice 94-03 "Deficiencies Identified During Service Water

System Operational Performance Inspections", and NUREG/CR-5865 "Generic Service Water Risk-Based Inspection Guide" were used to supplement the checklist. Plant specific and OPPD management issues are also included.

OPPD proposes to conduct the Service Water System Operational Performance Self-Assessment for a three week period during the timeframe of October or November of 1994, with the final schedule to be agreed upon by OPPD and the NRC. The Self-Assessment Team would be comprised of seven members who were selected based upon assessment experience, previous SWOPI experience, plant specific knowledge, engineering expertise, and Fort Calhoun Station and industry operational experience. The team is composed of five plant personnel and two contract personnel. This will allow one team member, who is independent of service water activities at the station, to be responsible for each of the areas to be assessed. The other two team members will be available for assistance in all of the areas and they will also perform in-depth reviews of potential concerns identified from the assessment. The membership of the Self-Assessment Team correlates to the requirements of TI 2515/118, Rev.1. The team will consist of:

- an OPPD Co-Leader/Operations Inspector,
- a Contractor Co-Leader/Operations Engineer,
- a Contractor Engineer,
- a Mechanical Design Engineer,
- an Operations Engineer,
- an Operations Inspector, and
- an Electrical Design Engineer.

OPPD is using the Co-Leader concept to provide broad based experience and solid leadership to the team leader position. The Contractor Co-Leader provides industry experience and technical expertise and the OPPD Co-Leader provides FCS specific knowledge to the assessment team. Team member qualifications are described in Attachment D.

The proposed Self-Assessment activities will include interviews, system walkdowns, document reviews, observations, and program reviews. Daily team and management debriefs are scheduled, as are entrance and exit meetings. Included in the schedule are an NRC entrance, debriefings, and an exit for the second week of the Self-Assessment for the NRC in-process audit of our Self-Assessment. A tentative schedule is included as Attachment B.

The Self-Assessment Team will schedule interviews with plant personnel and provide a listing of the information needed to Fort Calhoun Station Licensing for completion of the assessment. A listing of proposed interviewees is included as Attachment C. Additionally, the Self-Assessment Team will provide a summary of findings at the scheduled exit meeting. The final Self-Assessment Report will be completed and issued within thirty (30) days of the final exit meeting.

OPPD is confident that the proposed Self-Assessment Program and Self-Assessment Team meet the guidance in NRC IP 40501. In order to support the NRC review of this proposed Self-Assessment my staff and I are available to answer any questions you may have.

In order to make any changes requested to this plan in an expeditious manner, OPPD respectfully requests feedback on the acceptability of this plan by July 25, 1994.

Sincerely,

W. G. Gates

W. G. Gates
Vice President

WGG/epm

Attachments

c: LeBoeuf, Lamb, Green & MacRae
T. P. Gwynn, NRC Director, Division of Reactor Safety
W. D. Johnson, NRC Chief, Reactor Projects Section A
S. D. Bloom, NRC Project Manager
R. P. Mullikin, NRC Senior Resident Inspector
Document Control Desk

LIC-94-0140

ATTACHMENT A

Fort Calhoun Station
Service Water System Operational Performance Inspection
Self-Assessment Checklist and Responsibilities

References:

1. NRC Temporary Instruction 2515/118, Revision 1
2. NRC NUREG-0800 "Standard Review Plan" (SRP)
3. NRC NUREG/CR-5865 "Generic Service Water System Risk Based Inspection Guide"
4. SWOPI Reports From Previous NRC Inspections
5. Plant Specific Areas
6. Previous Fort Calhoun Inspections
7. OPPD Management Requested Items

Note: The small numbers in bold and bold parenthesis to the left of each inspection item refer to the specific reference used for the inspection item.

The team member responsible for each major assessment area is listed in bold after the area.

1.0 **Design Review and Configuration Control** **(Contractor Engineer)**

(1) 1.1 Review the design-basis and other design documents and determine the functional requirements for each active component* during normal and abnormal conditions.

(1) 1.1.1 System design is in accordance with the facility's licensing commitments and regulatory requirements.

(1,2) 1.1.2 System will meet the thermal and hydraulic performance requirements. Verify the assumed requirements are adequate to fulfill the design functions.

(3) 1.1.3 Associated design output documents and procurement specifications are consistent with the design basis and engineering analysis.

(3) 1.1.4 Verify that the design calculations were performed using an approved methodology and conservative assumptions (e.g.; lowest river level).

(5) 1.1.5 Review the analyses for Operations with one (1) Raw Water (RW) pump in a post DBA condition with LOOP, one (1) Diesel

* Active components are listed in Attachment E.

Generator, and River Temperature below 60°.

(1) 1.2 Review the configuration drawings for consistency with design documents, NRC requirements, and licensing commitments.

(1) 1.3 Review the system operation as compared to the design documents.

(1) 1.4 Evaluate single active failure vulnerabilities of the system, with specific emphasis on:

(1) 1.4.1 The resulting impact on interfacing system components.

(1) 1.4.2 Effect on Component Cooling Water (CCW) and RW Systems operability of failures to interfacing and support systems, such as instrument air and service water.

(1,2,3) 1.4.3 Potential common mode failures from fouling of common intakes or traveling screens, flooding, fire, tornado, etc.

(1) 1.4.4 Adequacy of instrument air backup accumulator tanks.

(4) 1.4.5 System response and operating requirements under LOOP conditions coincident with worst case single active failures.

(1) 1.5 Review the effectiveness of any design features installed to minimize sanding, silting, and biofouling of piping and components.

(1,3) 1.5.1 Flow balance verification should be performed for worst combinations of pump operation.

(1,3) 1.5.2 Verify pump runout conditions are not present with minimum number of pumps running with worst case alignment of non-safety related loads.

(1) 1.5.3 Evaluate the maximum and minimum limits for valve positions and ensure these limits are properly translated into operational controls.

(1) 1.5.4 Verify system flow balance data is consistent with key design parameters.

(5) 1.5.5 Verify system flow balance data and calculations for the effects of sanding in the RW System.

(1,3) 1.6 Check whether design features are provided to mitigate the

* Active components are listed in Attachment E.

effects of flooding caused by CCW or RW leaks.

(1) 1.7 Review the safety related portion of the system for seismic qualification.

(1) 1.7.1 Verify non-safety portions can be isolated in accordance with the design bases.

(2,4) 1.7.2 Verify that the isolation devices are safety related and included in a test program (coordinate with the Operations Engineer).

(2,4) 1.7.3 Verify the isometric drawings are consistent with the as built design and calculations.

(7) 1.7.4 Verify that seismic support is maintained for the underground piping.

(1,3) 1.8 Review all modifications to the CCW and RW Systems and select three significant packages for detailed review.

(1,3) 1.8.1 Review the associated 10 CFR 50.59 evaluations.

(1,3) 1.8.2 Verify the changes have not compromised the design bases.

(1,2,3) 1.8.3 Revised maintenance requirements and procedures, operating procedures, training, and periodic testing are included and consistent with the design bases.

(5,7) 1.8.4 Associated procedure changes are completed and issued at the time of Operational System Acceptance (OP SAC).

(1,4) 1.9 Evaluate the assessment of Action IV of Generic Letter 89-13.

(1,2,4) 1.10 Review the program for monitoring system degradation

(1,4) 1.10.1 Performance trending

(1,4) 1.10.2 Adequacy of Engineering evaluation.

(1,4,5) 1.10.3 Operability determinations.

(1) 1.11 Review setpoints for alarms and actuations to ensure they are consistent with the design bases and assumptions.

(2,4) 1.12 Review the history of and evaluate the potential for, water

* Active components are listed in Attachment E.

hammer events.

(3,5) 1.13 Review the use of fire water as a backup to RW.

(5) 1.13.1 Determine if procedural requirements are consistent with the design basis.

(5) 1.13.2 Determine if the operating conditions are consistent with the design basis.

(4,5) 1.14 Evaluate plant aging and the effects on system reliability.

2.0 <u>Operations</u> (Operations Inspector)

(1) 2.1 Perform an in-depth system walkdown.

(1) 2.1.1 Review system configuration for consistency with the design drawings.

(2,4) 2.1.2 Verify protection from high and moderate energy line breaks and from Seismic class II/I configurations.

(1) 2.2 Review alarm response, normal, abnormal, and emergency procedures to assure system is operated within the design envelope.

(1) 2.2.1 Review ease of implementation of the procedures.

(2,4,5) 2.2.2 Verify that all components are consistently labeled in procedures, on drawings, and in the field.

(1) 2.2.3 Assess adequacy of flow, pressure, and temperature instrumentation during accident conditions.

(1,4) 2.2.4 Review operating logs for adequacy of temperature, pressure, and flow monitoring data used for performance trending.

(2,4) 2.2.5 Verify vendor operating requirements have been incorporated into the procedures (e.g.; pump starts, limitorques).

(2,4,5) 2.2.6 Verify adequate freeze protection provisions are established. (e.g. Would freezing be a problem during an extended LOOP?)

(1) 2.3 Review operator training for the CCW and RW Systems.

(1) 2.3.1 Technical completeness and accuracy of training manual and

* Active components are listed in Attachment E.

lesson plans.

(1) 2.3.2 Ensure lesson plans reflect modifications.

(1,4) 2.3.3 Ensure Licensed Operators, STAs, appropriate Staff personnel, and appropriate Engineers receive training on system modifications.

(1) 2.4 Review implementation of procedure for verifying periodic and post-maintenance alignments of valves.

(1) 2.4.1 Valves that isolate flow to safety related components.*

(1) 2.4.2 Verify required accident condition flow is not degraded during normal system valve alignments.

(1) 2.4.3 Review methods to verify proper system throttle valve position.

(1) 2.4.4 Review control of heat exchanger flow variations due to changing climate conditions.

(2,3,4) 2.4.5 Review the design basis for normal operation and ensure the required accident parameters can be achieved.

(1) 2.5 Walk through the system operating procedures, system piping diagrams, and instrument diagrams with Engineering and Operations staff.

(1,4) 2.5.1 Use plant simulator for walk through.

(1,4) 2.5.2 Verify the procedures can be performed.

(1,4,7) 2.5.3 Verify the equipment is accessible for normal and emergency operation including post DBA radiation levels.

(1,4) 2.5.4 Verify if special equipment is accessible, available, and in good working order.

(1,4) 2.5.5 Verify operators' knowledge of equipment location and operation.

(2,3,4) 2.5.6 If practical, observe a training crew's actions on the simulator in response to normal system evolutions and an emergency or problem.

* Active components are listed in Attachment E.

(5) 2.5.7 Verify system operation is performed in accordance with the design basis documents.

(1,4) 2.6 Interview the operators to determine their technical knowledge.

(1,4) 2.6.1 Operation of the system.

(1,4) 2.6.2 System's role in accident mitigation.

(1,4) 2.6.3 Technical Specification surveillance requirements.

(1,4) 2.6.4 Operability determinations.

(1) 2.7 Review local operation of equipment.

(1) 2.7.1 Indication is available to operate the equipment in accordance with the applicable procedures.

(1) 2.7.2 Verify environmental conditions (lighting, temperature, steam, and accessibility) assumed under accident conditions.

(2,4) 2.7.3 Verify that all required equipment (including valves and instrumentation) is environmentally qualified, as needed.

(1) 2.8 Assess operational controls for traveling screens and circulating water pumps to preclude excessive drawdown. (Mechanical Engineer)

(2,4,5) 2.9 Determine if the parameters being trended are sufficient to provide an adequate assessment of system operational performance.

(5) 2.9.1 Verify procedures in place to control and assess RW pump flushing for sanding.

(5) 2.9.2 Verify data trended to assess sanding minimization, and component effectiveness.

(4,5) 2.9.3 Review component replacement history based on trending data.

(7) 2.9.4 Review/verify piping thickness and corrosion testing for the underground piping.

(2,4,5) 2.10 Verify that the system design characteristics described in the USAR are DBD are properly reflected in the electrical schematic diagrams. (Electrical Engineer)

(5) 2.10.1 Coordinate with the Design Review Team to determine the

* Active components are listed in Attachment E.

capability of shifting swing buses between electrical trains.

3.0 Maintenance (Contractor Co-leader)

(1) 3.1 Coordinate an in-depth system walkdown with the operations area evaluator to review the as-configured system for material condition.

(1) 3.1.1 Good lubrication practices are evident.

(1) 3.1.2 Material deficiencies are included in the Maintenance Work Order (MWO) System.

(1) 3.1.3 Equipment is protected from adverse environmental conditions.

(1) 3.1.4 Pump motor filters are clean and unobstructed.

(1) 3.1.5 MOV operators have all fasteners installed and are tight.

(1) 3.1.6 Excessive oil leaks, puddles not cleaned up, excessive use of absorbent material.

(1) 3.1.7 Fluid leakage from packing/gaskets.

(1) 3.1.8 Plant equipment and instruments are properly labeled.

(1) 3.1.9 Fasteners and supports are properly installed and maintained.

(1) 3.2 Observe maintenance performed on the system.

(1) 3.2.1 Review work package preparation.

(1) 3.2.2 Observe Quality Control involvement.

(5) 3.2.3 Review effectiveness of scheduled work to actual work.

(2,4,5) 3.2.4 Observe proper procedural compliance.

(5) 3.2.5 Review problem resolutions and observe re-reviews being performed.

(4,5) 3.2.6 Verify the tagouts are adequate for the work being performed.

* Active components are listed in Attachment E.

(1) 3.3 Review maintenance procedures for technical adequacy.

(1) 3.3.1 Sufficient to perform the maintenance task.

(1) 3.3.2 Provide for identification and evaluation of deficiencies.

(1) 3.3.3 Procedures incorporate vendor recommendations.

(1) 3.3.4 Vendor manuals are complete and up to date.

(2,4) 3.3.5 Verify that industry information is incorporated (as appropriate) into the procedures (e.g.; replacement/repair intervals adjusted).

(2,4) 3.3.6 Verify that the service life of system components, including instrumentation, is tracked (e.g; gaskets, seals, lubricants).

(1,5) 3.4 Review the maintenance program for removal and repair of piping and interface system components due to sanding, silting, biofouling, corrosion, erosion, and failure of protective coating.

(1) 3.5 Review the maintenance history for the selected components* for the past two operating cycles.

(1) 3.5.1 Determine recurring equipment problems and if any trend exists.

(1) 3.5.2 Adequacy of root cause analyses and corrective actions.

(1) 3.5.3 Review several completed maintenance activities for technical accuracy, performance of appropriate post-maintenance testing, and satisfactory demonstration of equipment operability.

(5,7) 3.5.4 Determine if the resolutions were consistent with the design basis (e.g., Raw Water Pump Room Level Indication).

(1) 3.6 Conduct interviews with maintenance personnel.

(1) 3.6.1 Determine their technical knowledge of how components are maintained. Focus on the following equipment:

(1) 3.6.1.1 Setting of limit switches.

(1) 3.6.1.2 Alignment of pump couplings.

* Active components are listed in Attachment E.

(1) 3.6.1.3 Cleaning and replacing filters.

(1) 3.6.1.4 Maintenance of circuit breakers.

(1) 3.7 Determine if maintenance personnel receive adequate training.

(1) 3.7.1 Degree of training is consistent with the level of detail in the procedures.

(2,4) 3.7.2 Training manual and lesson plans reflect current modifications to the system.

(2,4) 3.7.3 Maintenance personnel are trained on modifications to the system.

(1,5) 3.8 Review the periodic inspection program used to detect sanding, corrosion, erosion, protective coating failure, silting, and biofouling.

(2,4,5) 3.9 Determine if the parameters being tracked are adequate to provide trends for system and component performance.

(4,5) 3.10 Review the replacement/repair parts inventory and availability for selected components* to ensure timely repairs and replacement can be achieved.

(1) 3.11 Determine active components are being adequately maintained to ensure operability under all accident conditions.

(1) 3.11.1 Review information regarding unavailability due to planned maintenance.

(5,7) 3.11.2 Review the administrative controls for voluntary entry into Technical Specification LCOs.

(6,7) 3.12 Determine the control and maintenance of system relief valves (e.g., without seal wires).

(5) 3.13 Review the RW/CCW inlet valve vibration history (coordinate with Design and Operations area).

4.0 Surveillance and Testing (Operations Engineer)

(1) 4.1 Review and evaluate the technical adequacy and accuracy of the procedures for the past two operating cycles.

* Active components are listed in Attachment E.

(1) 4.1.1 Technical Specification surveillance procedures.

(1) 4.1.2 Inservice test procedures.

(1) 4.2 Verify test acceptance criteria are consistent with the design and licensing basis. (Operations Engineer, Mechanical Engineer)

(1) 4.2.1 Review system performance indicators to identify testing adequacies.

(1,2,4) 4.2.2 Determine if surveillance tests comprehensively address required system responses presented in the USAR and DBD.

(1,3) 4.3 Review the preoperational testing to determine if system capabilities and limitations were appropriately demonstrated. (Mechanical Engineer, Electrical Engineer)

(1,3) 4.3.1 Appropriate controls were established to avoid unacceptable system or component operating regimes.

(1) 4.4 Coordinate with the engineering team to review the selected modifications and support systems to ensure surveillance testing has been performed. (Mechanical Engineer, Electrical Engineer)

(1,5,6,7) 4.4.1 Review adequacy of post maintenance testing associated with the CCW/RW Hx orifice temporary modification.

(1) 4.5 Review the inservice test records for pumps and valves in the system. (Operations Engineer)

(1) 4.5.1 Technical adequacy of the procedures.

(1) 4.5.2 Trending of test results.

(1) 4.5.3 Determination of recurrent failures.

(1) 4.5.4 Review the IST Program for completeness. (All components included and exceptions to Section XI requirements approved.)

(1) 4.6 Review how specific instruments are calibrated and tested, how valve stroke time testing is performed, how and where temporary test equipment is installed to verify operability, and verify tolerances used for instrumentation accuracy are acceptable. (Operations Engineer)

* Active components are listed in Attachment E.

(2,4) 4.6.1 Verify the adequacy and calibration of installed test instrumentation (range and accuracy) and ensure that procedures require the use of acceptable M & TE.

(5) 4.6.2 Verify that air operated valves stroke times are tested to ensure calculation assumption correctness and verify the adequacy of backup accumulator check valve testing.

(1) 4.7 Observe testing on the system. (Operations Engineer)

(1) 4.7.1 Post-maintenance testing.

(1) 4.7.2 Surveillance testing.

(1) 4.7.3 Inservice testing.

(1) 4.8 Review procedures for periodic testing of safety related heat exchanger heat transfer capability and the trending of such results. (Mechanical Engineer)

(5,6,7) 4.8.1 Review safety related heat exchanger flow test data adequacy of trends and evaluations of any identified degradation.

(1) 4.9 Review the system, train, component unavailability during power and shutdown conditions for the previous two cycles. (Operations Engineer, Electrical Engineer)

(1) 4.9.1 Compare actual component unavailability to the IPE.

(1) 4.9.2 Assess the accuracy of the unavailability input to the IPE.

(7) 4.9.3 Review IPE vulnerabilities and assess adequacy of responses.

(1) 4.10 Verify the installed system components are tested to ensure they will perform in accordance with their design bases. (Operations Engineer)

(5) 4.10.1 Alarms associated with the component are tested.

(4,5) 4.10.2 Components are tested under accident-like conditions.

(1,4) 4.11 Review the implementation of the periodic inspection program to detect flow blockage from sanding and biofouling in other systems including the fire protection system. (Operations Engineer, Mechanical Engineer)

(1) 4.12 Review testing on one air-water heat exchanger served by RW to

* Active components are listed in Attachment E.

ensure proper heat transfer. Examine the air side for fouling. (Operations Engineer)

(5) 4.13 Review the ten year ISI RW hydrostatic testing data.

(5) 4.13.1 Evaluate variances and their effect on system reliability.

(7) 4.14 Review the adequacy of monitoring for Zebra mussels and plans to assure safety if discovered.

(7) 4.15 Review the adequacy of the Cathodic Protection System for the underground RW piping including operation and testing.

5.0 <u>Quality Assurance and Corrective Actions</u> (OPPD Co-leader)

(1) 5.1 Review the 1994 minutes of the Plant Review Committee (PRC) and the Safety Audit and Review Committee (SARC) for items pertaining to the CCW and RW Systems.

(1) 5.1.1 Relay information to the operations and design evaluators if any discrepancies or unusual operability determinations are found.

(4,5,6) 5.1.2 Verify the items are tracked and closed in a timely manner.

(1) 5.2 Review the operational history of the system.

(1,4) 5.2.1 LERs.

(1,4) 5.2.2 NPRDS.

(1,4) 5.2.3 10 CFR 50.72 reports.

(1,4) 5.2.4 Enforcement actions.

(1,4) 5.2.5 Nonconformance reports.

(1,4) 5.2.6 Technical specification operability determinations.

(1,4) 5.2.7 Maintenance Work Request (MWR/MWO).

(1,4) 5.2.8 Adverse test results or recurrent test failures.

(1,4) 5.2.9 Adequacy of root cause analysis.

(4,5) 5.2.10 Determine, based on the reviews, if system performance has

* Active components are listed in Attachment E.

improved and/or recommend areas for improvement.

(1) 5.3 Compare the team's results to quality/independent verification activities. Determine if significant issues were identified.

(1,4) 5.3.1 Quality Assurance (QA) Audits.

(1,4) 5.3.2 QA Surveillances.

(1,4) 5.3.3 Nuclear Safety Review Group (NSRG) Assessments. (Contractor Co-Leader)

(1,4) 5.3.4 NSRG Reviews. (Contractor Co-Leader)

(1) 5.4 Review the timeliness and technical adequacy of resolution of findings from its self-assessments.

(1) 5.5 Review the open item tracking system for the CCW and RW Systems for adequate tracking and closure of identified deficiencies.

(5) 5.5.1 Corrective Action Requests (CAR)/Incident Reports (IR).

(5) 5.5.2 NSRG Recommendations. (Contractor Co-Leader)

(5) 5.5.3 Commitment Identifications (CIDs).

(1,2) 5.6 Evaluate the interface between engineering, maintenance, and operations regarding corrective actions to resolve operational problems.

(2) 5.7 Determine if the radiological monitoring provisions meet the intent of SRP 9.2.1, III.3.d.

(5) 5.8 Review the independent review groups methodology of determining significance of an issue.

(5,7) 5.9 Review the history of the operability of the RW interface valves.

* Active components are listed in Attachment E.

LIC-94-0140

ATTACHMENT B

PROPOSED TEAM SCHEDULE

WEEK ONE

MONDAY
- Team Briefing
- Entrance Meeting
- Maintenance/Operations/Testing Observations
- Document Reviews
- Team Debrief

TUESDAY
- Document Reviews
- System Walkdown (Intake, Turbine Building)
- Maintenance/Operations/Testing Observations
- Team Debrief
- Management Debrief

WEDNESDAY
- System Walkdown (RCA)
- Document Reviews
- Maintenance/Operations/Testing Observations
- Team Debrief
- Management Debrief

THURSDAY
- Interviews
- Document Reviews
- Maintenance/Operations/Testing Observations
- Team Debrief
- Management Debrief

FRIDAY
- Procedure Walkdowns (Simulator)
- Procedure Walkdowns (Plant)
- Maintenance/Operations/Testing Observations
- Document Reviews
- Team Debrief
- Management Debrief

PROPOSED TEAM SCHEDULE

WEEK TWO

MONDAY
- Maintenance History Reviews
- NRC Briefing
- Maintenance/Operations/Testing Observations
- Training Program Reviews
- Team Debrief
- Management Debrief

TUESDAY
- Document Reviews
- Maintenance/Operations/Testing Observations
- Team Debrief
- Management Debrief

WEDNESDAY
- Maintenance/Operations/Testing Observations
- Document Reviews
- Team Debrief
- Management Debrief

THURSDAY
- Document Reviews
- Team Debrief
- Maintenance/Operations/Testing Observations
- Management Debrief

FRIDAY
- Document Review
- Team Debrief
- Maintenance/Operations/Testing Observations
- Management Debrief
- NRC Debrief/Exit

PROPOSED TEAM SCHEDULE

WEEK THREE

MONDAY
- Document Reviews
- Team Debrief
- Maintenance/Operations/Testing Observations
- Management Debrief

TUESDAY
- Follow-up Reviews
- Team Debrief
- Maintenance/Operations/Testing Observations
- Management Debrief

WEDNESDAY
- Follow-up Reviews
- Team Debrief
- Maintenance/Operations/Testing Observations
- Management Debrief

THURSDAY
- Follow-up
- Team Conclusions Meeting
- Maintenance/Operations/Testing Observations
- Management Debrief

FRIDAY
- Team Debrief
- Exit With Management
- Initial Report Review

LIC-94-0140

ATTACHMENT C

LIST OF PERSONNEL TO BE INTERVIEWED

Operations:
Plant Manager
Assistant Plant Manager - Operations
Two Operations Engineers
Two Shift Supervisors
Two Licensed Senior Operators
Two Reactor Operators
Two Non-Licensed Operators
Two Staff Senior Reactor Operators

Design Engineering:
Manager - Design Engineering
Two Design Supervisors: Mechanical and Electrical
Two Mechanical Design Engineers
Two Electrical Design Engineers
Two Seismic Design Engineers

Maintenance:
Plant Manager
Supervisor - Maintenance
Supervisor - Maintenance Planning/Scheduling
Two Planners/Schedulers and First Line
Two Machinists and First Line
Two Electricians and First Line
Two I & C Technicians and First Line
Supervisor - Outage Planning
Two Outage Schedulers

Station Engineering:
Manager - Station Engineering
Supervisor - Special Service Engineering
Supervisor - System Engineering
Two System Engineering Leads
Two Station Engineering Leads
Two Primary System Engineers
Two Secondary System Engineers
Two Electrical System Engineers
Two Special Service Engineers

LIC-94-0140

ATTACHMENT D

QUALIFICATIONS OF TEAM MEMBERS

The **OPPD Co-Leader/Operations Inspector** is currently serving as a member of the Fort Calhoun Nuclear Safety Review Group (NSRG). As a member of this group he has been involved in performing assessments of nuclear programs and systems and advising management of weaknesses. He is involved in performing investigations of events affecting nuclear safety as well as performing reviews of safety evaluations for the off-site review committee (Safety Audit & Review Committee). He has 9 years of commercial PWR operating experience as a Senior Licensed Operator, and Non-Licensed operator. He has had 8 years of operations experience with military reactors.

The **Contracted Co-Leader/Operations Engineer** worked for 11 years as a U.S. NRC regional Team Leader, Lead Reactor Inspector, and Senior Project Manager. He worked for the U.S. NRC as a Licensing Project Manager, Lead Project Manager, and Coordinator for Technical Specifications in Washington, D.C. He worked for a commercial utility as a engineer in the nuclear operations area and as a staff engineer at a coal fired utility for 3 years. He was licensed at the General Electric SEFOR reactor as a Reactor Operator for 3 years. He has a Bachelor of Science degree in Electrical Engineering and is a registered Professional Engineer in the State of Texas.

The design reviewer **Contractor Engineer** experience spans over 31 years of engineering design and design review in nuclear power plant systems, mechanical equipment design, industrial mechanical design, design review, and project management. He spent 12 years working for a major nuclear architect engineer firm (United Engineers and Constructors). As a supervising engineer for this architect engineer he was responsible for directing the work of engineers and designers, reviewing and approving drawings, documents, specifications for plant modifications, and, in general, supporting construction and startup efforts at a large commercial PWR (Seabrook). During this period he originated system designs for the safety related service water system and component cooling water systems. He has participated in a number of SWOPI, SSFI and SSOMI inspections as a design reviewer. He has both supported development and directed and coordinated development of design basis documents at a number of commercial nuclear utilities. He has a Bachelor of Science degree and is a registered Professional Engineer in the State of Pennsylvania.

The OPPD **Mechanical Design Engineer** is currently a Senior Nuclear Design Engineer in the nuclear mechanical engineering group. He has 16 years of experience in engineering, design, operation, and project management with 9 years in nuclear power generation. He has a Bachelor of Science degree in Engineering and is a Registered Professional Engineer in the State of Nebraska.

The **Operations Engineer** is a Senior Licensed Operator at the Fort Calhoun Station. He is presently working as an Operations Training Specialist supervising the Operator Generic Fundamentals Examination preparation. He served on military reactors as a Naval Officer for five years.

QUALIFICATIONS OF TEAM MEMBERS

The **Operations Inspector** is also presently working as a Licensed Operator Instructor both in the classroom and simulator for both Senior licenses and Reactor Operator licenses. He is responsible for simulator scenario development for weekly licensed operator simulator examinations, both utility and NRC annual licensed operator simulator examinations, Emergency Plan Annual drill scenarios, and special scenarios for a variety of organizations (INPO plant evaluations, NRC inspections, etc.,). He is also responsible for weekly training scenario's for operator simulator and classroom training. He started at the Fort Calhoun Station in 1970 as a nonlicensed operator (Fort Calhoun began commercial operation in 1973). He became a Licensed Reactor Operator in 1977, and upgraded his license to a Licensed Senior Operator in 1982, which he still maintains. In 1989 he left the control room to move to training of licensed operators.

The **Electrical Design Engineer** is currently working as a Nuclear Design Engineer at the Station. He has worked as a Senior Engineer, Instrument and Control Engineer, and Quality Assurance Engineer at commercial power reactors for the last 9 years. His non-nuclear commercial experience includes Control System Engineer, Instrumentation Engineer, and Quality Electrical Engineer at a coal gassification facility for 3 years. He has a Bachelor of Science degree in Electrical Engineering.

LIC-94-0140

ATTACHMENT E

LIST OF ACTIVE COMPONENTS

- Component Cooling Water/Raw Water Heat Exchangers AC-1A/B/C/D
- Shutdown Cooling Heat Exchangers, AC-4A/B
  (HCV-482A/B, HCV-483A/B)
- Containment Air Cooling and Filtering Units, VA-1A/B
  (HCV-400E/F, HCV-401E/F)
- Containment Air Cooling Units, VA-8A/B
  (HCV-402E/F, HCV-403E/F)
- Control Room Air Conditioners, VA-46A/B
  (HCV-2898C/D, HCV-2899C/D)
- HPSI Pumps Bearing Coolers, SI-2A/B/C
  (HCV-2810C/D, HCV-2811C/D, HCV-2812C/D)
- LPSI Pump Bearing Coolers, SI-1A/B
  (HCV-2808C/D, HCV-2809C/D)
- Containment Spray Pump Bearing Coolers, SI-3A/B/C
  ((HCV-2813C/D, HCV-2814C/D, HCV-2815C/D)
- Raw Water Pumps, AC-10A/B/C/D
- Raw Water Strainers, AC-12A/B
- Screen Wash Pumps, CW-3A/B
- Traveling Screens, CW-2A/B/C/D/E/F
- Screen Wash Strainer, CW-7
- Circulating Water Pumps, CW-1A/B/C
- Electric Fire Pump, FP-1A
- Diesel Driven Fire Pump, FP-1B
- Service Water Pumps, SW-2A/B
- Component Cooling Water Pumps, AC-3A/B/C
- CCW/RW Interface Valves (Annotated in Parenthesis behind Components)

LIST OF ACTIVE COMPONENTS

- CCW/RW Heat Exchanger inlet/outlet valve, HCV-2880A-D, 2881A-D, 2882A-D, 2883A-D
- RW Pump Discharge Valves, HCV-2850, HCV-2851, HCV-2852, HCV-2853
- RW Pump Discharge Check Valves, RW-115, 117, 121, 125
- CCW/RW Heat Exchanger Inlet Header Cross Connects, HCV-2877A/B, 2878A/B, 2879A/B
- RW Pump Discharge Header Cross Connects, HCV-2874A/B, 2875A/B, 2876A/B
- RW Header Isolations, HCV-2893, 2894
- RW to DW Isolation, HCV-2861