LICENSEE EVENT REPORT

CONTROL BLOCK: (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

(2) TNSNP2 | 00-00000-00 | (3) 4 | (4) 1111 | (5)
LICENSEE CODE | LICENSE NUMBER | LICENSE TYPE | CAT

REPORT SOURCE: (6) L | DOCKET NUMBER: (7) 05000328 | EVENT DATE: (8) 082681 | REPORT DATE: (9) 090881

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

On 8-26-81 at 1525 (C) with unit 2 in mode 3 (400°F and 900 PSIG, before initial criticality) the NRC resident inspector reported to control room personnel that the test return line isolation valves (2-72-502, 2-72-503, 2-72-504) were open. Both trains of containment spray were declared inoperable and the unit entered the Action Statement for LCO's 3.0.3 and 3.6.2.1. There was no effect upon public health or safety. Previous occurrences - none.

SYSTEM CODE: (11) SJ | CAUSE CODE: (12) A | CAUSE SUBCODE: (13) A | COMPONENT CODE: (14) VALVEX | COMP. SUBCODE: (15) E | VALVE SUBCODE: (16) D

(17) LER/RO REPORT NUMBER: EVENT YEAR 81 | SEQUENTIAL REPORT NO. 104 | OCCURRENCE CODE 01 | REPORT TYPE T | REVISION NO 0

ACTION TAKEN: (18) X | FUTURE ACTION: (19) H | EFFECT ON PLANT: (20) C | SHUTDOWN METHOD: (21) Z | HOURS: (22) 0000 | ATTACHMENT SUBMITTED: (23) Y | NPRD-4 FORM SUB.: (24) N | PRIME COMP. SUPPLIER: (25) N | COMPONENT MANUFACTURER: (26) W030

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

The cause for the valves being left open was that control room personnel did not follow a procedure requiring they log off normal system alignments in the configuration log. The valves were closed and SI-37 was performed to demonstrate operability. The Director of Nuclear Power appointed an investigation team and management overview team to investigate and recommend corrective actions. Attached is additional information including the investigation reports and recommended corrective action.

FACILITY STATUS: (28) B | % POWER: (29) 000 | OTHER STATUS (30): NA | METHOD OF DISCOVERY: (31) D | DISCOVERY DESCRIPTION: (32) NRC Inspector Observation

ACTIVITY RELEASED: (33) Z | CONTENT OF RELEASE: (34) Z | AMOUNT OF ACTIVITY: (35) NA | LOCATION OF RELEASE: (36) NA

PERSONNEL EXPOSURES — NUMBER: (37) 000 | TYPE: (38) Z | DESCRIPTION: (39) NA

PERSONNEL INJURIES — NUMBER: (40) 000 | DESCRIPTION: (41) NA

LOSS OF OR DAMAGE TO FACILITY — TYPE: (42) Z | DESCRIPTION: NA

PUBLICITY — ISSUED: (44) N | DESCRIPTION: (45) NA

8109150583 810908
PDR ADOCK 05000328
S PDR

NRC USE ONLY

Name of Preparer: M. P. Harding

SEQUOYAH NUCLEAR PLANT

Report of the Investigation
of the Misalignment of Unit 2
Containment Spray System Valves
Discovered on August 26, 1981

R. C. Parker 9-8-81

D. O. McCloud Date
for Chief, Field Quality Assurance Staff

SEQUENCE OF EVENTS

June 12, 1981	Valve check list SOI 72.1A-1 was completed. This verified all containment spray valves were in the normal operating position., Power was removed from the spray header isolation valves and tagged with a hold order. The test return line valves were in the closed position.
Period of June 12, 1981 to July 30, 1981	The AUO and UO logs indicate that the containment spray pumps were used to recirculate the RWST on several different occasions. No entries were made in the status file and configuration log regarding this operation.
July 30, 1981	SI-37 "Containment Spray Pump Test" was performed. This SI places the test return line isolation valves in the closed position. At 2215, these valves were closed and locked.
Period of July 30, 1981 to August 22, 1981	The Containment Spray System was used on numerous occasions to recirculate RWST water. The test return line isolation valves were therefore opened during this time period. No entries were made in the status file and configuration log regarding this operation.
August 22, 1981	SI-34 "Containment Spray System Valve Position Verification" was performed. All valves on the SI check list were verified in their required position and operable. SI-34 did not contain the return valves since the associated surveillance requirement excludes manual locked valves.
August 23, 1981	The unit entered Mode 4 at 0100 (C). At this time both trains of CSS were inoperable and the plant was in violation of the technical specifications.
August 25, 1981	The unit entered Mode 3 at 0400 (C).
August 26, 1981	The 1525 (C), the NRC resident inspector reported all three test return line isolation valves were in the open position. The Shift Engineer declared both trains of the containment spray system inoperable. The UO dispatched an AUO to close valve 2-72-503 to make train A operable. Valves 2-72-504 were left open as SI-37 was in progress at this time. Valves 502 and 504 were closed upon completion of SI-37.

At 1721 (C), the SE notified the NRC by telephone of this situation.

August 27, 1981 — Completed valve check list SOI 72.1A-1 verifying all containment spray valves were in the correct position for normal operation.

CONTRIBUTING FACTORS AND CAUSES

A review of all instructions involved indicated that a defense in depth program existed which plant management considered adequate to prevent an occurrence of this type. These instructions are identifed below:

SI-37 is used to verify pump operability and at its completion requires correct valve alignment. If SI-37 had been performed prior to entering Mode 4, it would have prevented this occurrence. This SI had been performed within the frequency required by Tech Spec. It is not normal practice to rerun SI's prior to changing modes.

SI-34 checks the Containment Spray System (CSS) valve alignment per the Technical Specification surveillance requirements and was performed prior to entering Mode 4. This SI does not contain the return valves since the associated surveillance requirement excludes manual locked valves.

SI-186 requires all ASME catagory "E" valves be verified, locked, or sealed whenever the valves are operated. This is a conditional SI that was not flagged in the system operating instruction for the containment spray system and was therefore, overlooked.

Operations section instruction letter OSLA 58 contains requirements for deviating system alignment and then returning the system to normal status.

AI-5 contains certain essential valves for the operation of the CSS. The valves in question were not included. AI-5 requires a review by all shifts of the status file and system deviation sheets (Configuration Log) to check for any off normal system alignments and to determine system operability. AI-5 requires off normal or unusual conditions be entered on the shift turnover sheets.

GOI-1 requires a verification of the system operability using valve check list SOI 72.1A-1 prior to entering Mode 4.

AI-30 requires a once per shift inspection of normally accessible equipment and plant spaces which includes abnormal system configuration.

The method for circulating RWST water with the CSS pumps has been used on Unit 1 and was considered acceptable as a method for more complete mixing of the RWST in Modes 5 and 6. This operation was known by management and was considered acceptable without a

specific instruction because of the above numerated instructions being already in place.

The investigating committee has determined that the causes of this event were management's failure to enforce requirements that safety related operations or activities be performed in accordance with established procedures. First line management (ASE) knew that procedures were not being followed, but took no corrective action; upper management was not aware that procedures were not being followed; and licensed operators failed to follow established procedures.

The control room personnel felt that based on all the ongoing activities and the plant being in Mode 5, the procedures listed below were not necessary and not using them would not adversely affect plant operations.

1. OSAL-58

   The abnormal position of these valves was not entered in the configuration log or status file by any of the shift personnel.

   NOTE: The plant QA staff identified a similar problem on Survey 8-81-3 dated 5/13/81. CAR 8-81-48 was issued and OSAL-58 was revised on 07-28-81.

2. AI-5

   The required AI-5 review of the status files and system deviation sheets (configuration log) was not adequate in that CSS off normal configuration was never identified. The transfer of authority and responsiblities sheets failed to identify the off normal alignment.

CONCLUSIONS

The investigating team has concluded that:

1. There was no equipment or system deficiences.

2. There was no sabotage.

3. Management controls were in effect in the form of numerous instructions previously mentioned in this report. However, there was a breakdown in the management controls in that it was not adequately conveyed to personnel that a high priority in any task is to follow instructions and management was not aware that procedures were not being followed.

4. There was a procedural deficiency in that SI-186 was not referenced by SOI 72.1 or GOI-1 or required to be performed on a periodic basis.

5. There were personnel negligence and error involved. The control room personnel did not follow established instructions as previously identified in this report.

6. The investigation interviews did not indicate that there was a wide spread problem at Sequoyah of not following procedures. However, a review of NRC I&E inspections, QA&A audits, and plant QA staff survey and observations conducted over the past several months indicate that a problem exists in complying with procedures.

CORRECTIVE ACTIONS AND RECOMMENDATIONS

The following actions have been taken:

1. Both trains were made operable.

2. SOI 72.1A-1 was performed for Unit 2 confirming the valve alignment for the containment spray system.

3. A check of the valve alignment of the accessable valves was performed on the main flow paths for the RHR and Auxiliary Feedwater Systems for Units 1 and 2. No discrepancies were noted.

4. The status file and configuration log on Unit 1 were reviewed. No discrepancies were noted.

5. Discussions of AI-30 and OSLA-58 requirements with all operating groups were started.

6. Operations continued to repeat the valve check lists on all ESF systems for Unit 2 to update as needed the status file and configuration log. Experience during Unit 1 startup indicated that rerunning the SOI checklists was prudent because of the level of activity during the initial startup.

The following actions are recommended:

1. Revise SI-186 to require its performance on a periodic basis for accessible valves.

2. Revise GOI-1 to include the performance of SI-186 prior to entering Mode 4.

3. Revise SOI-72 to include reference to SI-186.

4. Review and revise appropriate SOI's to incorporate a reference to SI-186 as needed.

5. Tag all category "E" valves to indicate that SI-186 should be performed if the valve is operated.

6. The plant compliance staff should implement a policy where LER's caused by the failure to follow procedures will be investigated and reported to the plant superintendent.

7. The plant QA staff should increase surveys of plant activites to verify compliance with instructions. Reports should be submitted to upper management describing violations and generic trends.

8. Management should spend more time observing personnel activities in the plant.

9. Judicious and fair disciplinary action should be taken for future violations according to the existing procedures.

10. Management should conduct training and/or meetings to clearly convey the requirement that adherence to procedures is a high priority in any task.

Corrective Actions to be Completed
Prior to Initial Critical of SNP-2

Action Description	Action Completed		QA Verification	
	Date	Initials	Date	Initials
1. Assistant Plant Superintendent (Operations) discuss AI-2, "Authorities and Kesponsibilities for Safe Operation and Shutdown," AI-4, "Plant Instructions - Document Control," AI-30, "Nuclear Plant Method of Operation," and OSLA-58, "Maintaining Cognizance of Operational Status," requirements with all operating groups to emphasize tne importance of following procedures and meticulous attention to detail.				
2. Complete valve checklists on all Essential Safety Feature (ESF) systems using Systems Operating Instruction (SOI) checklists for unit 2.				
3. Update the status and configuration logs for unit 2.				
4. Revise SI-186, "Category "E" Valve Position Verification," to require its performance on a weekly basis for accessible valves.				

Action Description	Action Completed		QA Verification	
	Date	Initials	Date	Initials
5. Revise GOI-1, "Plant Startup from Cold Shutdown to Hot Standby," to include the performance of SI-186 prior to entering mode 4.				
6. Review and revise, where needed, the appropriate SOI's to include performance of SI-186.				
7. Review and revise all ESF system operability surveillance instructions to include appropriate category "E" valves.				
8. Review and revise AI-30, AI-4, and AI-2 to clarify requirements on use of procedures for safety systems.				
9. H. J. Green to issue a memorandum directive to all NUC PR employees emphasizing management commitment to procedure adherence.				
10. H. J. Green to meet with key division managers and visit Sequoyah Nuclear Plant personally meeting with selected plant supervisors and operations personnel to emphasize and demonstrate commitment to procedure adherence and the importance of				

Action Description	Action Completed	QA Verification

10. (Continued)

meticulous attention of detail. In addition, he will emphasize the need for managers to meet with their subordinates to get this message down to the working level.

11. Develop a plan for increased quality assurance surveillance of operational activities to verify that administrative controls and procedures are being followed.

Action Completed		QA Verification	
Date	Initials	Date	Initials

Sequoyah Nuclear Plant

Management Assessment
of the
Misalignment of Unit 2
Containment Spray System Valves
Discovered on August 25, 1981

R. C. Parker
for C. C. Mason, Power Plant Superintendent, NUC PR, Watts Bar Nuclear Plant

9-8-81
Date

R. C. Parker
R. C. Parker, Chief, Quality Assurance and Compliance Branch, NUC PR

9-8-81
Date

SCOPE

A management overview and analysis of the investigation into the misalignment of the Sequoyah unit 2 containment spray system valves discovered on August 25, 1981, was performed as directed by H. J. Green's memorandum of August 28, 1981. It is our opinion that the investigation team performed a thorough and deliberate review of the incident and their findings are accurate. However, we believe this incident is a symptom of a broader problem rather than an isolated incident.

FINDINGS

This incident is indicative of a failure of management at all plants and the central office to effectively communicate by example and through action that strict compliance to procedures is expected. All too often when failure to follow established procedures creates an operational problem management looks for and accepts a band-aid fix to get around the problem rather than find out why the procedure violation occurred. We also believe that management generally does not get involved in activities at the working level to the extent necessary to know whether procedures are being used as required at the work site, whether procedures are practical to implement, whether procedures create an unnecessary administrative burden, or in general to appreciate the problems that poor procedures cause. When management demonstrates through action and interest that procedures and strict compliance with procedures is important their subordinates will do likewise.

RECOMMENDATIONS

To resolve these problems we recommend that the following actions be established to promote an attitude that personnel at all levels are committed to working in accordance with instructions.

1. Managers at all levels will ensure that their subordinates comply with applicable procedures by frequently visiting the work site to verify that procedures and administrative programs are being used and are workable.

2. Managers will continually evaluate the effectiveness and efficiency of existing procedures and programs through work observations and discussions with employees that use the procedures. Correcting, upgrading, or streamlining procedures to make them more meaningful and useful must be a high priority. Poor procedures must be corrected, not ignored.

3. Any failure to follow procedures must be taken very seriously. The root cause of the failure must be determined. Was the procedure clear and easily understood? Was the employee properly trained? Was the employee negligent? Disciplinary action must be taken in cases of willful or recurring violations of procedures.

4. Managers must be as concerned about getting the job done in accordance with established procedures and requirements as they are with getting the job done on schedule. Often management unknowingly gives the impression that schedule is top priority and the paperwork can be completed after the work is done. While this may be acceptable in an emergency, it is not acceptable as a rule of practice.

5. Plant activities required by technical specifications or which demonstrate compliance with technical specifications, namely plant operations and surveillance testing, have the highest potential for impacting plant safety or causing violations of NRC requirements. Consequently, these activities require the highest level of management attention to ensure compliance with procedures.

6. Surveys performed by quality assurance personnel should primarily consist of direct work observations to verify that appropriate work procedures are available at the work site and that they are being followed. These surveys would also verify that related work activities such as measuring and test equipment calibration control, material control, use of work permits, and so forth are being performed in accordance with established procedures. Incidents of failure to follow procedure would be promptly brought to the immediate supervisor's attention for disposition. Failure of supervisor to take appropriate corrective action would be brought to management's attention for disposition.

SCOPE OF INVESTIGATION

An investigation team was established by H. J. Green on August 28, 1981 to determine the root cause for the misalignment of Unit 2 containment spray system valves which was discovered on August 26, 1981. The team consisted of the following members:

D. O. McCloud, Chief, Field QA Staff
J. M. Anthony, Assistant Operations Supervisor
M. R. Harding, Compliance Section (ISEG) Supervisor

The investigating team researched operating logs, turnover sheets, plant instructions, and other documents pertaining to the incident and interviewed personnel from plant sections to determine the cause(s) of the incident and the extent to which these causes may be prevalent in other Sequoyah activities. Eighteen employees from Operations, Results, Outage, Maintenance, and QA were interviewed. A management committee was also established by H. J. Green to provide an independent management overview and analysis of this investigation. Their findings are documented in a separate report.

REFERENCES

H. J. Green's memorandum (Attached)
Drawing No. 47W812-1
SI-37, Containment Spray Pump Test
SOI-72.1, Containment Spray System
OSLA 58, Maintaining Cognizance of Operational Status
SI-186, Category "E" Valve Position Verification
AI-5, Shift and Relief Turnover
SI-34, Containment Spray System Valve Position Verification
AI-30, Nuclear Plant Method of Operation
Operating Logs
System Status Folders
QA Survey 8-81-3

DESCRIPTION OF EVENT

On August 26, 1981, the Unit 2 reactor was in Mode 3 with RCS temperature at 440°F and pressure at 900 PSIG (the reactor had never been critical). The unit entered Mode 4 on August 23, 1981 at 0100 (C) and Mode 3 on August 25, 1981 at 0440 (C). At 1525 (C) on August 26, 1981 both trains of the containment spray system were declared inoperable due to the test line return isolation valves (2-72-502, 2-72-503, and 2-72-504, being in the open position. These valves are manually operated locked valves. With these valves in the open position, the containment spray system could not have delivered the flow rates assumed in the accident analysis.