



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30303

Report No.: 50-369/84-10

Licensee: Duke Power Company  
422 South Church Street  
Charlotte, NC 28242

Docket No.: 50-369

License No.: NPF-9

Facility Name: McGuire Nuclear Station Unit 1

Inspection at McGuire site near Charlotte, North Carolina

Inspector: A. J. Ignatow

for W. T. Orders

5/25/84

Date Signed

Approved by: Virgil H. Brownlee

V. L. Brownlee, Section Chief  
Division of Reactor Projects

5/29/84

Date Signed

SUMMARY

Inspection on April 16-20, 1984

Areas Inspected

This special, unannounced inspection involved 32 inspector-hours on site in the area of licensee event followup.

Results

One violation was identified - failure to follow independent verification procedure, resulting in an inoperable centrifugal charging pump for seven days.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*G. Cage, Superintendent of Operations, Acting Station Manager
- \*T. McConnell, Superintendent of Technical Services
- \*C. Craig, Operations Assistant
- \*B. Travis, Operating Engineer
- \*D. Mendzoff, Licensing Engineer
- \*W. McDowell, Technical Associate - Licensing

Other licensee employees contacted included technicians and operators.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on April 20, 1984, with those persons indicated in paragraph 1 above. The violations described in paragraph 5, failure to restore the centrifugal charging pump breaker to an operable condition and perform valid independent verification, was discussed in detail. The licensee expressed cognizance of the items of concern relayed during the exit interview.

### 3. Licensee Action on Previous Enforcement Matters

Not inspected.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Mispositioned Circuit Breaker of Centrifugal Charging Pump 1A

#### Event Description

On February 13, 1984, at 10:00 a.m., while McGuire Unit 1 was in Mode 1 operating at 95% power, Centrifugal Charging Pump 1A (NV Pump 1A) breaker (IETA-10) was moved to the 'DISCONNECT' position to facilitate the extraction of an oil sample. After completing the sampling, the circuit breaker was not properly returned to the 'CONNECT' position. On February 20, 1984, at approximately 11:00 a.m., a futile attempt was made to start NV Pump 1A during a normal equipment rotation. Subsequently, the breaker (IETA-10) was discovered to be incorrectly positioned, was moved to the 'CONNECT' position, and the pump started.

The NV Pump 1A breaker is a drawout circuit breaker that can be disconnected from the bus by moving the breaker physically away from the bus. This is done by turning a worm gear (racking screw) which rotates levers attached to the breaker. These levers push against the cubicle to move the breaker toward or away from the bus. To prevent moving a circuit breaker that is closed, or closing a circuit breaker that is being moved, a mechanical interlock is used. This interlock consists of a shaft and levers which must be actuated to move the breaker. When the racking release lever is moved to the left, which releases the racking screw, the breaker is mechanically tripped and prevented from closing. As the breaker is moved to one of the three discrete positions (CONNECT, TEST, DISCONNECT), the racking release lever moves to the right, locking the racking screw and freeing the trip mechanism. The racking release lever must be in the lower or right position for breaker operation.

To perform a valid verification that a 4160V breaker is in the proper position, and operable, four items must be ensured:

- a. Position indications on the floor of the circuit breaker housing correspond to the markings on the circuit breaker;
- b. The racking release lever is in the correct position;
- c. The spring motor disconnect toggle switch is in the 'ON' position and the springs are charged; and
- d. The control power fuse is in place.

On February 13, 1984, the Nuclear Equipment Operator (NEO) did not check the position of the racking release lever after the breaker was apparently placed in the 'CONNECT' position. (If the racking release lever is not in its correct position, the breaker is in a tripped state and the contacts cannot be closed.)

Moreover, the breaker was verified to be in the 'CONNECT' position once per day for the 7 days between February 13 and February 20, 1984, pursuant to the NEO Turnover Checklist (Station Directive 3.1.9, Attachment 3). The NEOs who completed rounds to verify the actual breaker to be in the 'CONNECT' position did not look to ensure the correct position of the racking release lever.

As discussed above, the NV Pump 1A breaker was disconnected to obtain the aforementioned oil sample. An Assistant Shift Supervisor dispatched a NEO to disconnect the breaker.

Station operating procedure OP-O-A-6100-09, Revision 8, Removal and Restoration (R&R) of Station Equipment, documents the removal of station equipment under operations control from service when the removal of that equipment is not covered by an established operating procedure. It also provides a checksheet which gives the step-by-step methods for the removal and restoration of that equipment. In addition, this procedure

provides the operators with a status of all out of normal operating conditions by maintaining in the control room the procedure checklists until the equipment is returned to service and the procedure checklist is completed. Furthermore, the R&R procedure provides required independent verification for the removal and restoration of safety-related equipment. Although required, this R&R procedure was not employed to facilitate the work.

Operation Management Procedure (OMP) 1-6, Independent Verification, Section 6.1, Item F, requires "The position of breakers and fuses to any safety-related component be independently verified." Section 8.2, Item B of that procedure requires that the "Verification of the availability of power to components powered from a 6900V, 4160V, or 600V breaker will be done by checking the breaker and fuse positions locally." Section 7.2 requires that "When independent verification is required for equipment that is removed from service, the two persons performing the task shall work together." Thus, when the NEO disconnected the breaker and did so alone, the requirements of OMP 1-6, Sections 6.1 and 7.2 were violated.

After the oil sample was taken, the Shift Supervisor directed the NEO to return the breaker to the 'CONNECT' position. The NEO racked the breaker into what was thought to be the 'CONNECT' position and replaced the control power fuse. When the fuse was replaced, control room indication was provided. An Assistant Shift Supervisor and a control room operator (NCO) then independently verified the breaker to be in the 'CONNECT' position by indication of status lights on the control board.

As aforementioned OMP 1-6, Section 6.1, Item F requires that the position of breakers to any safety-related component be independently verified; Section 8.2, Item B of that procedure requires that the verification of the availability of power to components powered from a 4160V breaker be done by checking the breaker and fuse positions locally. Thus, when the Assistant Shift Supervisor and the NCO verified the breaker position employing the control room indication, the requirements of OMP 1-6, Section 8.2, Item B were not met. Moreover, the control room indication is an invalid verification, in that, the indication is present in both the 'TEST' and 'CONNECT' position, derived from a set of sliding contact strips. Thus, when it was verified from the control room that the breaker was in the 'CONNECT' position, it was impossible to discern actual position.

Subsequent to the event, the breaker was erroneously verified to be in the "CONNECT" position once per day for seven days by NEO's performing the NEO turnover checklist pursuant to Station Directive 3.1.9, Attachment 3. The checklist requires the NEO to verify that the breakers for miscellaneous safety-related equipment, including NV pump 1-A are racked in and that control power is available. In order to make this determination, the NEO's observe that the position indication on the breaker and on the housing are

aligned and that a local breaker position indication lamp is illuminated, in turn indicating that control power is available. In order to observe the position indications on the breaker, the NEO must look behind and below the racking release lever. Thus, the opportunity presented itself on at least seven occasions to detect the breaker misalignment.

An enforcement conference was held in the Region II Office on October 19, 1983, concerning the degradation of the containment spray systems on Units 1 and 2. In the matter of the latter, a valve was misaligned and inappropriately independently verified to be in the correct position. In the enforcement conference, DPC's management committed to implement an improved program for independent verification at McGuire on January 1, 1984. That program entailed the implementation of OMP 1-6 and training of the operations staff concerning the implementation of that procedure and the revised independent verification program in general.

As detailed herein, the program, in this case, appeared to be ineffective, in that, there were two instances concerning this one event of program failure.

As a result of the mispositioned breaker, the Action Statements of Technical Specifications (TS) 3.1.2.2, 3.1.2.4, and 3.5.2 were exceeded as described below.

- a. While in modes 1-4, TS 3.1.2.2 requires "At least two of the following three boron injection flow paths be OPERABLE:
  1. The flow path from a boric acid tank via a boric acid transfer pump and a charging pump to the Reactor Coolant System, and
  2. Two flow path from the refueling water storage tank via charging pumps to the Reactor Coolant System.

The Action Statement of 3.1.2.2 requires that with only one of the above required boron injection flow paths to the Reactor Coolant System OPERABLE, restore at least two boron injection flow paths to the Reactor Coolant System to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1% delta k/k at 200°F within the next 6 hours.

- b. While in modes 1-4, TS 3.1.2.4 requires operability of at least two charging pumps.

The Action Statement of the TS requires that with only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1% delta k/k at 200°F within the next 6 hours.

- c. While in modes 1-3, TS 3.5.2 requires two independent Emergency Core Cooling System (ECCS) subsystems be OPERABLE with each subsystem comprised of:
1. One OPERABLE centrifugal charging pump,
  2. One OPERABLE Safety Injection pump,
  3. One OPERABLE RHR heat exchanger
  4. One OPERABLE RHR pump, and
  5. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a Safety Injection signal and automatically transferring suction to the containment sump during the recirculation phase of operation.

The Action Statement of the TS requires that with one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

#### Conclusion

Due to (1) improper restoration of the Centrifugal Charging Pump 1A circuit breaker; (2) failure to implement the removal and restoration procedure for the subject pump circuit breaker; and (3) failure to perform local independent verification of the circuit breaker position during its removal and restoration of service as required by procedure, the Centrifugal Charging Pump 1A became and remained inoperable for a period of 7 days. Moreover, the circuit breaker was verified by procedure on a daily basis as being in the correct position when it was not. As a result, the Action Statements of McGuire Technical Specifications 3.1.2.2, 3.1.2.4 and 3.5.2 were exceeded. This is a violation (50-369/84-10-01).