UNITED STATES
ATOMIC ENERGY COMMISSION
XXXXXXXXXXXXXXXXXXXX
REGION II - SUITE 818
230 PEACHTREE STREET, NORTHWEST
ATLANTA, GEORGIA 30303
TELEPHONE: (404) 526-4503
DIRECTORATE OF REGULATORY OPERATIONS

November 16, 1972

J. G. Keppler, Chief, Reactor Testing and Operations Branch (2)
Directorate of Regulatory Operations, Headquarters

RO INQUIRY REPORT NO. 50-261/72-15Q
CAROLINA POWER AND LIGHT COMPANY (H. B. ROBINSON NO. 2), LICENSE NO. DPR-23, DOCKET NO. 50-261, MALFUNCTION OF A POWER OPERATED RELIEF VALVE FOLLOWED BY SAFETY INJECTION

The attached Inquiry Report is forwarded for information.

Information regarding this event was provided by B. J. Furr, Plant Superintendent. Mr. Furr also informed our inspector that the Inquiry Report did not contain proprietary information. The licensee will formally report the matter to Licensing within ten days of the event.

Mr. R. L. Cubitt, Reactor Inspector, was dispatched to the site on November 8 to obtain additional details regarding the event. Particular attention was given to safety injection.

W. C. Seidle, Chief
Facilities Operations Branch

RO:II:WCS

Enclosure:
RO Inquiry Rpt. No.
50-261/72-15Q (Cubitt)

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RO:HQ (5)
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U. S. ATOMIC ENERGY COMMISSION
REGION II
DIRECTORATE OF REGULATORY OPERATIONS

RO Inquiry Report No.: 50-261/72-15Q

Carolina Power and Light Company
336 Fayetteville Street
Raleigh, North Carolina 27602

License No.: DPR-23

Facility: H. B. Robinson No. 2

Descriptive Title: Malfunction of a Power Operated Relief Valve Followed by Safety Injection

Prepared By: R. L. Cubitt
R. L. Cubitt, Reactor Inspector
Reactor Operations Branch

11/15/72
Date

A. Date and Manner AEC Was Informed:

A licensee representative contacted Region II by telephone on November 5, 1972, to provide preliminary information concerning circumstances that led the licensee to bring the reactor to cold shutdown. Additional information was obtained from the site by telephone on November 6 and 7, 1972.

A copy of the licensee's telegram informing Region II of the event is attached to this report.

B. Description of Particular Event or Circumstance:

On November 5, 1972, the reactor power had been reduced to 70% and the weekly test of the turbine valves was being performed. The turbine left stop valve and left control valves were tested satisfactorily; however, while testing the turbine right stop valve and right control valves, the lower left turbine control valve cycled closed due to a malfunction in its electric/hydraulic control pilot valve. This decreased the turbine load with a corresponding reduction in power from about 500 Mwe to about 150 Mwe and the reactor was manually tripped which tripped the turbine. Steam dump commenced after the trip and when the no - load T_{avg} was reached, power operated relief valve (RV-1) in loop A

stayed open for five minutes reducing primary coolant temperature to 509°F. During this event, emergency boration was started but within two minutes was stopped because conditions had stablized. Later, while controlling the reactor coolant temperature at 546°F in an approach to reactor criticality, the power operated relief valve in loop B (RV-2) was opened and could not be closed, thus initiating cooldown of the primary system. The shutdown and control rod banks were manually inserted and emergency boration was begun. A few minutes later, safety injection occurred because of coincident pressurizer low pressure and level signals. The licensee elected to bring the unit to cold shutdown which was achieved at about 3:30 p.m.

A maximum differential pressure of 1376 psig across the steam generators occurred with the pressurizer pressure at 1760 psig and the secondary pressure at 384 psig. The cooldown rate of the primary system was within the Technical Specification of 100°F/hour.

The amount of water delivered to the primary system via emergency boration was approximately 4600 gallons. The boric acid tank temperature during the boration was between 165°F and 170°F. The amount of water injected into the primary system by safety injection was calculated to be 690 gallons. The temperature of the refueling water storage tank during the injection period was 70°F.

C. Action by Licensee:

The following actions were subsequently taken by the licensee:

1. Power operated relief valve (RV-2) was disassembled and the valve's inner valve and inner valve guide bushing were found to be galled. The surfaces of the inner valve and its guide bushing were polished. The other two power operated relief valves were disassembled and some evidence of galling was noted, thus they were repaired in a similar manner. Each of the valves was subsequently tested at secondary pressures of 85 psig and 700 psig. The manufacturer has been contacted to evaluate possible modifications to the valves to present future galling.

2. The licensee conferred with Westinghouse concerning the consequences of the emergency boration and the safety injection. Westinghouse concluded that no degradation of the primary system occurred based on previous analyses performed on similar plants.

3. The electric/hydraulic control pilot valve for the left lower turbine control valve was replaced.

4. Prior to startup, the primary coolant system was given a thorough visual inspection particularly where the safety injection lines enter the primary system. Also a primary system leak rate test was conducted.

5. Both the Company and Plant Nuclear Safety Committees reviewed the event prior to startup.

The licensee intends to formally report the above set of events to Licensing.

A licensee representative said that the above information contained no proprietary information.

Attachment:
Telegram dtd 11/6/72

western union

Telegram

946A EST NOV 6 72 AA030 AAA071(0920)(1-002754C311)PD
11/06/72 0920
ICS IPMCMAA CLB
ZCZC 023 NL COLUMBIA SOCAR 117 11-05 854P EST
PMS JOHN DAVIS DIRECTOR REGION 2
AEC DIVISION OF REGULATORY SERVICES
230 PEACHTREE ST
ATLA
AT 0333, 11/5/72 WITH THE PLANT AT HOT SHUT DOWN CONDITION,
POWER OPERATED RELEASE VALVE (UR-2) WAS OPENED BY THE OPERATOR AND
FAILED TO CLOSE. WITH RU-2 IN A FAILED OPEN POSITION,
THE PLANT WAS BORATED VIA EMERGENCY BORATION AND SAFETY INJECTION
1722 PPM BORON. THE PLANT WAS COOLED TO A COLD SHUTDOWN CONDITION
VIA NORMAL PROCEDURES EXCEPT FOR RU2 BLOWING CONTINUOUSLY. NO SAFETY
LIMITS OR COOL DOWN RATES WERE EXCEEDED DURING THE COOLDOWN. MR DICK
CUBETT, AEC, REACTOR INSPECTOR, WAS CALLED AT 1930 ON 11/5/72 AND

SF-1201 (R5-69)

INFORMED OF THE INCIDENT. A LETTER WILL BE FORWARDED TO AEC-DRL WITHI

N
10 DAYS. THIS ABNORMAL OCCURANCE IS REPORTED IN ACCORDANCE WITH
6.6.1.C OF THE TECHNICAL SPECIFICATIONS
B J FURR, PLANT MANAGER

SF-1201 (R5-69)