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ACCESSION NBR:8310110145 DOC.DATE: 83/10/05 NOTARIZED: NO DOCKET #
FACIL:50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Ligh 05000261
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CUTTER,A.B. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
VARGA,S.A. Operating Reactors Branch 1

SUBJECT: Forwards supplemental info to 830607 ltr re reactor coolant pump lube oil collection App R exemption request,per 830909 & 13 telcons,reflecting commitment to automatically actuate closed-head sys in lieu.

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Carolina Power & Light Company

SERIAL: LAP-83-422

October 5, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
SUPPLEMENTAL INFORMATION CONCERNING PENDING
EXEMPTION REQUESTS - APPENDIX R

Dear Mr. Varga:

On June 7, 1983 Carolina Power & Light Company provided clarifying information and proposed modifications and procedures to support our reactor coolant pump lube oil collection exemption request.

Through telephone conversations with the Staff on September 9, 1983 and September 13, 1983, we agreed to submit additional information to support our pending exemption request. This information is attached and reflects our commitment to an automatically actuated closed-head system in lieu of a manually actuated open-head system.

We trust this information is satisfactory for your purposes.

Yours very truly,

A. B. Cutter
Vice President
Nuclear Engineering & Licensing

MSG/pgp (7875MSG)
Attachment

cc: Mr. J. P. O'Reilly (NRC-RII)
Mr. G. Requa (NRC)
Mr. J. Stang (NRC)
Mr. Steve Weise (NRC-HBR)

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

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Attachment
Carolina Power & Light Company
H. B. Robinson Steam Electric Plant, Unit No. 2

Question: Please provide a description of reactor coolant pump suppression system operation.

CP&L Response:

Each of the three reactor coolant pump bays are protected by an automatically actuated pre-action sprinkler system. The sprinkler system utilizes a normally closed Viking Model G-2 Flow Control Valve (FCV) with Viking Model C 220°F sidewall sprinklers. The existing sprinkler system is characterized as an automatic, closed head system.

The piping downstream of the FCV is dry and pressurized with supervisory air. A pressure switch is provided so that a loss of supervisory air, due to a broken pipe or open sprinkler head opened by heat or breakage, will give a low air alarm annunciated in the control room. However, loss of air pressure will not actuate the FCV.

The FCV is automatically actuated by the fire detection system when a two out of two train logic is satisfied. The FCV may also be locally activated by a manual operator located near the FCV, by manual operation from the control room, or from the Fire Detection Alarm Panels A2 and B2 located in the E1-E2 room. The circuitry for manual operation from the control room and the fire detection alarm panels is the same as actuation by the fire detection system. Manual actuation at the FCV consists of opening a valve which bleeds pressure away from and actuates the FCV.

The existing detection system consists of one 325°F fixed-temperature heat detector (Fenwal Model 27121 Heat Detector) on the "A" train and one infrared flame detector (Pyrotronics Flame Detector Model DF-1S) on the "B" train. When the two out of two logic is satisfied, a solenoid valve is actuated, which in turn, actuates the FCV. (The circuits between each detector and the Fire Detection Alarm Panels are supervised circuits which meet NFPA-72D. Trouble on a detector circuit will be alarmed in the control room so that appropriate corrective action can be initiated.) The solenoid valve on each FCV has a coil monitor light located in the control room to indicate confirmation of solenoid actuation. Also, a pressure switch located downstream of each FCV detects flow to the sprinklers. Pressurization of the line to greater than 25 psig will operate this switch. Operation of the switch is annunciated and alarmed in the control room.

Question: Please provide a description concerning the acceptability of existing nozzles.

CP&L Response:

Viking Model C, 220°F, closed-head sidewall sprinklers were selected for the lube oil fire hazard of the area.

The piping and sprinkler heads are arranged around the reactor coolant pumps to provide directional flows of water in the horizontal and vertical planes to cover the pumps, adjacent reactor coolant piping, and pump bay floor area. There are five (5) risers on the pipe loop with three (3) sprinkler heads on each riser. The suppression system protecting each reactor coolant pump (RCP) is designed for response to a potential RCP lubricating oil fire as a closed-head water spray system to meet the minimum residual pressure and water flow requirements of NFPA-STD-15 at the most hydraulically remote sprinkler head. The original hydraulic calculations from the fire pump to the most hydraulically remote sprinkler head were reviewed to ensure that the minimum code requirements were met. The following information was obtained during the review of the hydraulic calculations:

- The minimum required flow, based on the characteristics of the sprinkler head (K=5.65, 1/2-in. orifice, minimum pressure at most remote nozzle of 20 psig) and assuming all heads flowing water simultaneously, is 379 gpm which does not exceed the capacity of the fire pump;

- The minimum required flow based on the surface area of a reactor coolant pump at a design density 0.30 gpm/ft^2 is 128.9 gpm which is less than that required based on sprinkler head characteristics;

- The minimum pressure available at the hydraulically most remote sprinkler head based on pressure drops through the suppression system piping from the fire pump is 57.9 psig which is in excess of the minimum required residual pressure of 20 psig.

- The actual applied density based on all heads simultaneously flowing water and the surface area of a reactor coolant pump is 0.88 gpm/ft^2 which is in excess of that required by NFPA-STD-15 of 0.30 gpm/ft^2 of surface area.

Question: Provide a discussion concerning the flow path of a postulated oil spill and your means to prevent an uncontrolled flow (i.e. where would an oil spill go and how would we prevent it).

CP&L Response:

While each bay contains three distinct elevations, the effects of a reactor coolant pump oil spill would vary due to the progression of elevation changes within each bay. For example, a major oil spill from the reactor coolant pump in Bay A would be isolated to the pump area as access to the pump elevation is from higher elevations.

A major oil spill in either Bay B or C would flow down to an area at the 228-ft elevation as access is provided from the pump area at the 231-ft elevation to the 228-ft elevation in both bays.

In Bay B, the pump elevation is above both the clearance area for the steam generator leg and the thimble guide area under the pressurizer. Diking will be added at the 231-ft elevation to prevent oil and suppression water spillage from flowing into the room under the pressurizer. In Bay C, the pump elevation is above an area at the 228-ft elevation which extends to the refueling channel.

Question: Describe reactor coolant pump operation (i.e. does the lube system cease when the pump is shut off, and can the pump be shut off from the control room)?

CP&L Response:

The reactor coolant pump (RCP) startup procedure requires the oil lift pump to be run for at least two minutes prior to energizing the RCP itself to ensure adequate lubrication is available. At this time, the RCP is started and operation of the lift pump is continued for at least 50 seconds to allow the thrust runner to achieve design speed. With the normal system load provided by the thrust runner, the oil lift pump is shutdown. Reactor coolant pump shutdown does not require oil lift pump operation. A shaft driven oil pump provides for lubrication when the RCP is running. There is a minimum of two minutes coast down on the RCP before the shaft driven oil pump would stop. The RCP can be shut off from the control room.

DISTRIBUTION
Docket file
ORB#1 reading
CParrish
GRequa

SEP 29 1983

DOCKET NO(S): 50-261

Mr. E. E. Utley, Executive Vice President
Power Supply & Engineering and Construction
Carolina Power and Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

SUBJECT: H. B. ROBINSON STEAM ELECTRIC PLANT 2

The following documents concerning our review of the subject facility are transmitted for your information.

- ☐ Notice of Receipt of Application.
- ☐ Draft/Final Environmental Statement, dated _____.
- ☐ Notice of Availability of Draft/Final Environmental Statement, dated _____.
- ☐ Safety Evaluation Report, or Supplement No. _____, dated _____.
- ☐ Notice of Hearing on Application for Construction Permit.
- ☐ Notice of Consideration of Issuance of Facility Operating License.
- ☐ Application and Safety Analysis Report, Volume _____.
- ☐ Amendment No. _____ to Application/SAR dated _____.
- ☐ Construction Permit No. CPPR- _____, Amendment No. _____, dated _____.
- ☐ Facility Operating License No. _____, Amendment No. _____, dated _____.
- ☐ Order Extending Construction Completion Date, dated _____.
- ☒ Other *(Specify)* Transmits monthly FR Notice for period ending August 15, 1983.

Division of Licensing, ORB#1
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc:

OFFICE	ORB#1:DL						
SURNAME	CParrish/dn						
DATE	9/29/83						

NRC FORM 318 (10/80) NRCM 0240

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Mr. E. E. Utley
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