



**Consumers
Power
Company**

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September 30, 1982

Dennis M Crutchfield, Chief
Operating Reactors Branch No 5
Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 -
BIG ROCK POINT PLANT - SEP TOPIC
V-5, REACTOR COOLANT PRESSURE
BOUNDARY LEAKAGE DETECTION

By letter dated March 19, 1982, the NRC requested Consumers Power Company to provide comments regarding the staff's draft Safety Evaluation Report (SER) on SEP Topic V-5, "Reactor Coolant Pressure Boundary Leakage Detection", for the Big Rock Point Plant. The staff also requested that the missing information in Tables 1, 2 and 3 of the March 19, 1982 submittal be provided. The enclosure to this letter provides the missing information to Tables 1 ("RCPB to Containment") and 2 ("Intersystem Leakage"). However, with regards to Table 3 ("RCS Inventory Balance"), this type of system calculation is not performed at Big Rock Point due to extensive secondary side losses inherent with the BWR design. This type of leak detection is applicable to PWR's where differences in make-up and let-down flow rates can be used to quantify Primary System losses.

Consumers Power Company has reviewed the NRC's SER and the following comments are made in response to the staff's request:

1. Although Big Rock Point leak detection systems do not meet the seismic requirements of Regulatory Guide 1.45, Consumers Power Company feels that the systems used at Big Rock Point have sufficient sensitivity, provide indications and alarms, and are maintained adequately to provide the necessary information to plant operators to insure appropriate actions are taken.
2. The referenced standard Technical Specification is incorrect. It should read 3/4.4.3 not 3/4.4.6.

Big Rock Point Technical Specification 4.1.2.C provides LCO's on "identified" and "unidentified" leakage from the RCPB. A surveillance

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Big Rock Point Plant
SEP Topic V-5
September 30, 1982

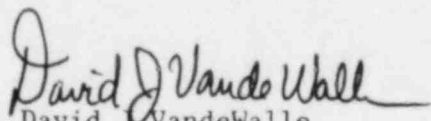
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test is performed daily to insure that the plant operation is within these limits. These requirements adequately meet the basis for standard Technical Specification 3/4.4.3 which is to maintain the integrity of the RCPB. Consumers Power Company does not feel that any changes to the Big Rock Point Technical Specifications are warranted.

Sensitivity Data

Experiments to determine sensitivity values of these detection systems have never been performed. The feasibility of controlled releases at various locations is not deemed practical due to the lack of atmospheric release facilities and the attendant radiation hazards.

Based on the foregoing comments, Consumers Power Company believes that the Big Rock Point RCPB leakage detection meets the intent of current licensing criteria.



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CC Administrator, Region III, USNRC
NRC Resident Inspector-Big Rock Point

Enclosure

ENCLOSURE

Consumers Power Company
Big Rock Point Plant
Docket 50-155

SEP TOPIC V-5,
REACTOR COOLANT PRESSURE
BOUNDARY LEAKAGE DETECTION

September 30, 1982

6 pages

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REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION SYSTEMS
Regulatory Guide 1.45 Requirements

Table 1:

Plant: BIG ROCK POINT

RCPB to Containment System	Incorporated	Leak Rate Sensitivity	Time Req'd to Achieve Sensitivity	Earthquake For Which Function Is Assured	Control Room Indication For Alarms & Indicators	Documentation Reference	Testable During Normal Operation
1) Sump Level Monitoring (Inventory)	YES	See Attachment	See Attachment	None	Alarm	-	Yes
2) Sump Pump Actuations Monitoring (Time Meters)	YES	5 gpm	6 seconds	None	Indication	-	Yes
3) Airborne Particulate Radioactivity Monitoring	YES	See Attachment	See Attachment	None	Alarm	-	Yes
4) Airborne Gaseous Radioactivity Monitoring	YES	See Attachment	See Attachment	None	Alarm	-	Yes
5) Condensated Flow Rate from Air Coolers	YES See Attach.	-	-	-	-	-	-
6) Containment Atmosphere Pressure Monitoring	YES	Large Leak rates Only	Instantaneous Response	IEEE-344 Qualified	Alarm and Indication	EEQ Submittal	No
7) Containment Atmosphere Humidity Monitoring	YES	118 gpm	90 seconds	None	Alarm and Indication	See Attachment	Yes
8) Containment Atmosphere Temperature Monitoring	YES	See Attachment	See Attachment	None	Alarm and Indication	-	Yes
9) Accoustic Emissions	Steam Drum Safety Valves	Valve Position	Instantaneous Response	Qualification in Progress	Alarm and Indication	NUREG 0578	Channel Check
10) Moisture Sensitive Tape	NO						
11) Reactor Vessel Head Leak Detection	YES	See Attachment	See Attachment	None	Alarm	-	Yes
12)							

TABLE I - ATTACHMENT

1. Sump Level Monitoring

Sump level monitoring at Big Rock Point is via manometers installed to determine "identified" and "unidentified" leak rates. Based upon the dimensions of the sumps, a level sensitivity of ~ 15 gallons per inch is achieved. Assuming the manometers can be read to the nearest quarter inch, a 1 gpm leak rate could be determined in a four minute sample time. Lower leak rates would require additional sample times.

3. Airborne Particulate Radioactive Monitor

4. Airborne Gaseous Radioactive Monitor

Both parameters are monitored via a continuous air monitor (CAM) installed in the exhaust plenum from containment. Since the sensitivity of these detection systems is based upon coolant activity, background levels, and ventilation system transport times, values cannot be easily determined and are unavailable. This monitor is used mainly for confirmation of small steam leaks.

5. Condensated Flow Rate from Air Coolers

Condensate flow from the containment air coolers at Big Rock Point is routed to the enclosure dirty sump where it is monitored as unidentified leakage with the instrumentation discussed in Item 1.

7. Containment Atmosphere Humidity monitoring (reference IOM from DEDeMoor to JSRang dated June 26, 1972).

Evaluation of the dewpoint instrumentation installed to monitor the exhaust air from the reactor recirculation pump room/steam drum room (also called the "pipeway") has revealed two problems. The exhaust air temperature during summer operation with both reactor recirculation pumps in service goes above the 120°F level and this is out of range for accurate interpretation. Also, the reference dewcell system installed is difficult to interpret because of the lag in response when outside air moisture content changes. Many times we observe downscale readings (below zero) on this reference-type system when outside air increases in moisture content. Although the dewcell is very sensitive to changes, the interpretation is difficult due to the above limitations.

8. Containment Atmosphere Temperature Monitoring

Containment temperature is monitored at five locations:

1. Personnel lock inside the sphere
2. New fuel storage area
3. Emergency condenser area
4. Pipeway return to cooler
5. Pipeway exhaust

Although sensitivity values have not been determined for the system, its detection capability exhibited during minor leakage occurrences is extremely

good. Through experience this system has been of considerable confirmation value in detection and location of small steam leaks in the containment.

11. Reactor Vessel Head Leak Detection

A sensing line is connected to the space between the two O-rings for the detection of leakage through the seal. Connected to this line are a pressure switch and a float type level switch. A large leak will cause pressure to build up in the line and activate the high pressure alarm. A small leak will cause the water level to rise in the line and at a preset level activate an alarm.

Sensitivity of this float arrangement is very high. However, time to reach actuation varies with the leak rate. At a 1 gpm leak rate, the alarm is actuated in approximately 10 seconds. Lower leak rates would lengthen the actuation time.

REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION SYSTEMS
Regulatory Guide 1.45 Requirements

Plant: BIG ROCK POINT

Table 2:

<u>Inter-system Leakage</u> <u>Systems Which Interface w/ RCPB</u>	<u>Methods to Measure RCPB In-Leakage</u>	<u>Leak Rate Sensitivity</u>	<u>Time Req'd to Achieve Sensitivity</u>	<u>Earthquake For Which Function Is Assured</u>	<u>Control Room Indication For Alarms & Indicators</u>	<u>Documentation Reference</u>	<u>Testable During Normal Operation</u>
1) Reactor Enclosure Cooling Water	Radiation Monitor	See Attachment	See Attachment	None	YES	FHSR Sec. 7.12.4 and Tech. Spec. 6.4.1(d)	Yes
2) Reactor Cooling Water (Same as above)	Radiation Monitor					NRC Ltr. to CP&O 10-9-79 SCP Topic V-10.A	
3)							
4)							
5)							
6)							
7)							
8)							
9)							
10)							
11)							
12)							4

TABLE 2 - ATTACHMENT

1. The reactor cooling water system monitor will indicate any gradual build-up of radioactivity in the closed loop system. It is primarily used as a trending instrument and serves to warn the operator of high radioactivity concentrations in the system. Sensitivity to primary system leakage has not been determined and alarm setpoints have been based on past operating experience.

REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION SYSTEMS

Plant: BIG ROCK POINT

Table 3:

RCS Inventory Balance

- 1) Leak Rate Sensitivity:
- 2) Time Required to Achieve Sensitivity:
- 3) Instrumentation Required:
- 4) Seismic Qualification:
- 5) Testable During Normal Operation:
- 6) Documentation Reference:
- 7) Description of Inventory Balance Procedure: