Consumers Power Company

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

March 27, 1974

Mr. D. J. Skovholt
Asst Director for Operating Reactors
Directorate of Licensing
US Atomic Energy Commission
Washington, DC 20545

Re: Docket 50-155
License DPR-6
Big Rock Point

Dear Mr. Skovholt:

By letter dated October 31, 1972 a Technical Specifications change was approved which established allowable identified and unidentified primary system leakage rates at the Big Rock Point Plant. That letter requested that further information be submitted by March 1974 describing efforts that have been made to improve the leak detection system. This letter provides the requested information.

Early in the design phase of the leak detection system modifications, it was recognized that the process flows could normally be handled with the "identified" leakage flows without causing the "identified" leakage flow limit to be exceeded. Provisions were made to facilitate measurement of these process flows, if required, through installation of leakage trace tees.

A modification was made to the enclosure clean sump to limit its usage to "identified" leakage to insure that no "unidentified" leakage could drain to the clean sump. This modification included construction of a cofferdam around the clean sump. This dam prevents any water that drains on the recirculation pump room floor from entering the clean sump so long as the level does not exceed three inches and the dirty sump level remains below floor level. This dam height is more than adequate to insure that all water accumulating on the recirculation pump room floor will drain to the dirty sump. The dam was successfully leak tested using water at 7/8 inch above floor level.

If water levels in the control rod drive room rise to about one to one and one-half inches above floor level, the overflow drainage from the control rod drive room sump would first drain to an adjacent floor drain and thence to the dirty sump. Level monitoring equipment on all sumps was installed and would warn of this type of problem

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should it ever exist. Use of the audio pickup in this room, as suggested in our proposed Technical Specifications change dated June 30, 1972, did not prove practical. The sump and level instrument provide very sensitive detection and measurement.

With the decision to drain all "identified" leakage and process flows to the clean sump, modifications to the control rod drive pump drains were made collecting leakages from their respective relief valves and piston housing and routing these flows to the clean sump. Drainage from the pump base remains connected to the dirty sump. In addition, a permanent drain line was installed for the recirculation pump controlled seal leak off collection sink. This line drains to the clean sump.

While all floor drains and equipment drains that might represent "unidentified" leakage drain to the enclosure dirty sump, numerous equipment drains, etc, which represent "identified" leakage still remain connected to the dirty sump's drain collection system. Where practical, these equipment drains were fitted with leak trace sampling tees which will permit quantitative analysis of these leakages. This leakage is treated as "unidentified" until identified as to source.

The pipeway coolers act as a condenser under certain atmospheric and/or operating conditions. To facilitate measurement of the condensate from these coolers, a loop seal was installed in the drain along with a leak trace tee. This arrangement facilitates determination of the source of the condensate.

No floor drain exists in the clean-up demin room. Drainage to the dirty sump was provided by overflow of a two-inch pipe stub. To facilitiate early detection of "unidentified" leakage, two one-quarter inch holes were drilled in the two-inch pipe stub at approximately one-quarter inch from the floor level and a screen was placed around the pipe stub. This arrangement limits the total leakage to approximately 18 gallons before drainage to the dirty sump begins.

To enable more precise identification of leakage sources as well as accurate collection measurements, the dirty sump and the control rod drive room sump, which were interconnected, were separated. This was accomplished by inserting an expanding rubber plug into the two-inch control rod drive room drain line at the point where it entered the dirty sump. This plug was leak tested with a pressure of about 24 inches of water and no leakage was observed.

With separation of the control rod drive room sump from the dirty sump, a sump pump was added to the control rod drive room sump. The discharge of this pump is routed via a collection basin in the control rod drive pump room to the dirty sump. This arrangement permits both qualitative and quantitative analysis of leakages from within the control rod drive room.

Remotely located control and level instrumentation were installed for the three existing sumps (enclosure clean, enclosure dirty and control rod drive room). This change permits control of all the sumps from outside the recirculating pump room and control rod drive room. Bubbler tube type level instrumentation was also added to each of the sumps and sump level manometers (for each sump) are located by their respective remote control boxes. Recorders for the enclosure dirty sump level and the enclosure clean sump level will be installed in the Control Room in the near future.

The following sump pumps have running time meters installed to provide surveillance of water collection rates: The enclosure clean sump, the enclosure dirty sump, the turbine sump and the radwaste sump. These times are presently logged and reviewed daily to aid in determining water leakage/usage.

A temperature and dew point sampling system has been installed on both the containment supply and the exhaust air ducts. This system is also equipped with a heat exchanger which uses the supply air to cool the exhaust air which eliminates the temperature limitation of the reference dew point index system used in the pipeway. Data obtained from this system is recorded in the Control Room and has proven to be very sensitive to steam leaks inside containment. The pipeway dew point reference system has proven its sensitivity to steam leaks occurring in the pipeway on several occasions even though it has quantitative limitations as described in our proposed Technical Specifications change dated June 30, 1972. The most recent example was the steam drum level instrument root valve steam leak (December 8, 1973) when a leak of .53 gpm (.12 gpm in vapor and .41 gpm as condensate) was detected. This leakage rate was enough to bring the reference dew point system nearly to its alarm point.

A test procedure (T1-02, Rev 1) was designed to determine the "unidentified" and "identified" leakage rates using a four-hour measurement time. It is intended for use once a day, preferably during the nighttime when water usage is minimized.

Yours very truly,

Ralph B. Sewell
Nuclear Licensing Administrator

RBS/mel

CC: JGKeppler, USAEC

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CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
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DESCRIPTION:
Ltr re our 10-31-74, furn requested info concerning allowable identified and unidentified primary system leakage rates.....

ENCLOSURES:

ACKNOWLEDGED

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PLANT NAME: Big Rock Point

FOR ACTION/INFORMATION 3-29-74 JB

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