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MICHIGAN'S PROGRESS

Big Rock Point Nuclear Plant, 10269 US-31 North, Charlevoix, MI 49720

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Plant Manager

July 9, 1993

NUCLEAR REGULATORY COMMISSION
DOCUMENT CONTROL DESK
WASHINGTON, DC 20555

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT - TECHNICAL SPECIFICATION
CHANGE REQUEST - REPLACEMENT OF REACTOR PROTECTION SYSTEM CB-RE11 UNDERVOLTAGE
BREAKERS AND REVISION OF THE RELEASE DEVICE TRIP RANGE - REVISION 1

During the 1993 Refueling Outage, a modification to replace the original type "TE" General Electric CB-RE11 breakers with General Electric recommended type "TED" will proceed ("TE" type are no longer available). Surveillance testing has demonstrated that the breakers are showing evidence of aging, and replacement before failure is prudent. The replacement will enhance the mechanical and electrical properties, and the seismic and quality features will exceed the original breaker qualifications.

A Technical Specification Change is requested because the replacement breaker trip range is based on 35 to 70% of nominal 120 Vac on the undervoltage release device coil. This results in a trip voltage of 42 - 84 Vac or a design scram setting and tolerance of 63 plus or minus 21 Vac. This differs from the existing scram setting and tolerance of 52 plus or minus 20 volts.

On May 24, 1993, a Technical Specification Change Request was submitted for the replacement of Reactor Protection System CB-RE11 undervoltage breakers and revision of the release device trip range. After several conversations with the Office of Nuclear Reactor Regulation (NRR) Project Manager for Big Rock Point, a clarification of a note added to Section 6.1.2 was determined to be necessary. The revisions are marked by a slash(s) in the margin. The original analysis of No Significant Hazards remains unchanged.

Attachment 1 contains proposed new Technical Specification pages. Attachment 2 contains existing Technical Specification pages marked up to show the proposed changes.

Patrick M Donnelly
Plant Manager

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

Attachments

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CONSUMERS POWER COMPANY
DOCKET 50-155
REQUEST FOR CHANGE TO THE TECHNICAL SPECIFICATIONS
LICENSE DPR-6

For the reasons hereinafter set forth, it is requested that the Technical Specifications contained in the Facility Operating License DPR-6, Docket 50-155, issued to Consumers Power Company on May 1, 1964, for the Big Rock Point Plant be changed as described in Section I below:

I. CHANGES

NOTE: Revised Technical Specification pages are attached.
Proposed changes are shown by a vertical line or slash in the right-hand margin.

A. Section 6.1.2

Sensor and Trip device: add the following description below "Loss of auxiliary power supply":

(CB-RE11A and CB-RE11B undervoltage Release Device)

The proposed change identifies the sensor and trip device utilizing the actual equipment identification of "CB-RE11A and CB-RE11B" and the term "undervoltage release device" to more accurately describe the equipment involved.

B. Section 6.1.2

Scram Setting and Tolerance: delete "52 plus or minus 20 volts".

Insert: greater than or equal to 32 Vac Limiting Setpoint.

The proposed change requests that the scram setting and tolerance utilize the current Technical Specification limiting value of "greater than or equal to 32 Vac" and identify this value as the "limiting setpoint".

This limiting value on undervoltage (52 minus 20 = 32) has been in place since issuance of the July 5, 1962, Technical Specification. No basis was provided for the selection and establishment of this limiting value by General Electric Company (GE) in the design of the RPS. The value of 52 plus or minus 20 was selected by GE for both the Big Rock and Humboldt Bay Plant in 1962.

C. Section 6.1.2

Special Features: add NOTE after "isolation valves" /

Addition of this note is needed to clarify that the tripping of CB-RE11 via the undervoltage release device results in only a single channel scram. A full RPS scram on both channels is required to initiate enclosure isolation. /

II. DISCUSSION

1. CB-RE11 GENERAL DESCRIPTION

Circuit Breakers CB-RE11A and CB-RE11B are located in the Reactor Protection System (RPS) Channels 1 and 2. These breakers provide 15 ampere thermal magnetic overload and short circuit protection. In addition, each breaker contains an undervoltage release device which serves three functions:

- (1) To rapidly deenergize the scram solenoid buses in the event of a manual scram (although a trip signal is also initiated in the RPS logic from the manual scram pushbutton).
- (2) To rapidly deenergize the scram solenoid buses when the reactor mode switch is placed in the "shutdown" position;
- (3) To deenergize the scram solenoid buses if low voltage is sensed on the RPS bus.

The first two functions, 1 and 2 above, occur on removal of voltage through the undervoltage release device coil. The third function occurs when the coil voltage is reduced to a predetermined design value.

2. CURRENT CB-RE11 UNDERVOLTAGE RELEASE DEVICE TRIP RANGE

This circuit breaker and undervoltage release device is of original plant design and the trip range was based upon 30 - 60% of nominal 120 Vac on the undervoltage release device coil. This resulted in a trip voltage of 36 - 72 Vac of a design scram setting and tolerance of 54 plus or minus 18 Volts. Thus, based upon design, the device would automatically trip CB-RE11 when line voltage drops below the 36 to 72 volt level.

It should be noted that the lower limiting setpoint in the Technical Specification remained at 32 Vac independent of the coil design lower level of 36 Vac.

3. REPLACEMENT CB-RE11 UNDERVOLTAGE RELEASE DEVICE TRIP RANGE

The original type "TE" General Electric breakers are no longer available. General Electric recommended replacement using type "TED". The undervoltage release device for the replacement breaker trip range is based on 35 - 70% of nominal 120 Vac on the undervoltage release device coil. This results in a trip voltage of 42 - 84 Vac or a design scram setting and tolerance of 63 plus or minus 21 Vac.

Replacing CB-RE11 breakers having a higher undervoltage release device design trip voltage of 42 - 84 Vac versus the original design trip voltage of 36 - 72 Vac is judicious because:

II. DISCUSSION (Continued)

- A higher trip voltage results in an increase in sensitivity toward undervoltage conditions which is considered to be in the conservative direction for reactor safety; and
- This higher trip voltage will not lead to an increase in spurious undervoltage tripping of the RPS system because the replacement breaker design trip voltages are still well below the operating voltage settings of RPS bus components and the undervoltage protection devices associated with the MG sets and Station Power System.

4. UNDERVOLTAGE PROTECTION FEATURES

Two undervoltage protection devices exist within the RPS power supplies to guard against undervoltage conditions.

- A. Undervoltage protection is provided by an under-voltage relay in the 480 Vac control circuitry of the motor generator (MG) sets that:

- functions as a loss-of-voltage sensor to annunciate that a loss of power to the MG sets has occurred; and
- trips the MG sets' output after a 10 second time delay.

The MG set undervoltage relay will not protect against degraded conditions on the 480 Vac MG set supply buses. This protection is provided by the Station Power System (SPS) relaying schemes, that trip the supply breaker to the 2400 Vac bus breakers. The trip occurs after a sustained degraded voltage level of about 89% rated voltage (about 107 Vac on the 120 Vac potential transformers). This degraded level must be experienced on all three phases of the 2400 Vac bus that feed the 480 Vac system in order for the trip to occur.

- B. The other device associated with the RPS bus supply is the undervoltage release device associated with CB-RE11 described in the previous sections of this request.

In general, it is doubtful that the RPS bus 120 Vac supply through the contacts and undervoltage release device of the CB-RE11 breakers will experience undervoltage conditions that would deenergize the breaker. The MG set outputs are essentially constant down to 70% of rated 480 Vac input with full load on the generator; and the capability of the 2400 Volt bus undervoltage relaying at about 89% rated voltage lends support to this generalization.

III. ANALYSIS OF NO SIGNIFICANT HAZARDS CONSIDERATION

Consumers Power Company finds, in compliance with 10 CFR 50.92(c), that activities associated with this change request involve no significant hazards. The following evaluation supports that finding.

1. Will the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The Final Hazards Summary Report (FHSR) Accident and Transient analyses do not take credit for CB-REll operation during any of the previously evaluated accidents. Therefore, the proposed change will have no significant effect on the probability or consequences of accidents that have been previously evaluated at the facility.

2. Will the proposed change(s) create the possibility of a new or different kind of accident from any accident previously evaluated?

The replacement breakers contain an additional test mechanism designed with linkages to mechanically simulate over-current trips. This device provides a means of exercising the breaker. In the event that the mechanism were to fail the breaker in the open or closed position, the overall common mode failures, as previously evaluated, remain the same.

3. Will the proposed change involve a significant reduction in the margin of safety?

There is no basis provided in the Technical Specifications for the setting and tolerance of the CB-RElls. The Current Licensing Basis and Facility Design Basis Documents have been researched, and do not define a basis for the 52 plus or minus 20 setting and tolerance. The setting appears to be based on the undervoltage release device coil and mechanism designed with a lower limiting setpoint established at "greater than or equal to 32 Vac".

IV. CONCLUSION

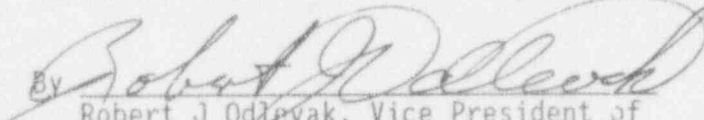
The Big Rock Point Plant Review Committee (PRC) has reviewed this Technical Specification Change Request and has determined this change does not involve an unreviewed safety question and, therefore, involves no significant hazards consideration. This change has been reviewed by the Nuclear Performance Assessment Department. A copy of this Technical Specification Change Request has been submitted to the State of Michigan official designated to receive such Amendments to the Operating License.

BIG ROCK POINT PLANT
TECHNICAL SPECIFICATION CHANGE REQUEST
REPLACEMENT OF RPS UNDERVOLTAGE BREAKERS

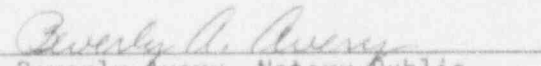
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CONSUMERS POWER COMPANY

To the best of my knowledge, information and belief, the contents of this
submittal are truthful and complete.

By 
Robert J Odlevak, Vice President of
Gas Supply & Transmission

Sworn and subscribed to before me this 9th day of July 1993.


Beverly Avery, Notary Public
Jackson County, Michigan

My commission expires December 3, 1996.