

June 4, 1981

Docket No. 50-155
LS05-81- C6-015

Mr. David P. Hoffman
Nuclear Licensing Administrator
Consumers Power Company
1945 W Parnall Road
Jackson, Michigan 49201



Dear Mr. Hoffman:

SUBJECT: SEP TOPIC VI-7.B, ESF SWITCHOVER
BIG ROCK POINT

The enclosed draft safety evaluation report is based on the information provided by your May 11, 1981 letter responses to previous staff questions. Our report recommends no change in plant instrumentation.

You are requested to review the enclosed report and to provide us with your comments, if any, within 30 days of receipt of this letter. This topic assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this topic are modified before the integrated assessment is completed.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
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CLERK:	<i>[Signature]</i>	RHermann	WRussell	WPaulson	DCrutchfield	GLKinas
DATE:	5/27/81	5/27/81	5/27/81	5/27/81	5/27/81	5/3/81



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
June 4, 1981

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LS05-81- 06-015

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Nuclear Licensing Administrator
Consumers Power Company
1945 W Parnall Road
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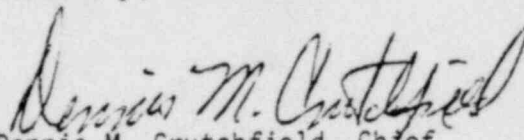
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As stated

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See next page

Mr. David P. Hoffman

cc

Mr. Paul A. Perry, Secretary
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Judd L. Bacon, Esquire
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Joseph Gallo, Esquire
Isham, Lincoln & Beale
1120 Connecticut Avenue
Room 325
Washington, D. C. 20036

Peter W. Steketee, Esquire
505 Peoples Building
Grand Rapids, Michigan 49503

Alan S. Rosenthal, Esq., Chairman
Atomic Safety & Licensing Appeal Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. John O'Neill, II
Route 2, Box 44
Maple City, Michigan 49664

Charlevoix Public Library
107 Clinton Street
Charlevoix, Michigan

Chairman
County Board of Supervisors
Charlevoix County
Charlevoix, Michigan 49720

Office of the Governor (2)
Room 1 - Capitol Building
Lansing, Michigan 48913

Director, Criteria and Standards
Division
Office of Radiation Programs
(ANR-460)
U. S. Environmental Protection
Agency
Washington, D. C. 20460

U. S. Environmental Protection
Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

Herbert Grossman, Esq., Chairman
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dr. Oscar H. Paris
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. Frederick J. Shon
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Big Rock Point Nuclear Power Plant
ATTN: Mr. C. J. Hartman
Plant Superintendent
Charlevoix, Michigan 49720

Christa-Maria
Route 2, Box 108C
Charlevoix, Michigan 49720

William J. Scanlon, Esquire
2034 Pauline Boulevard
Ann Arbor, Michigan 48103

Resident Inspector
Big Rock Point Plant
c/o U.S. NRC
RR #3, Box 600
Charlevoix, Michigan 49720

Mr. Jim E. Mills
Route 2, Box 103C
Charlevoix, Michigan 49720

Thomas S. Moore
Atomic Safety & Licensing Appeal Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

BIG ROCK POINT PLANT
SEP TOPIC VI-7.B., ESF SWITCHOVER

TOPIC VI-7.B: ESF (ENGINEERED SAFETY FEATURES) SWITCHOVER FROM INJECTION TO RECIRCULATION MODE, AUTOMATIC ECCS REALIGNMENT - BIG ROCK POINT

I. Introduction

Most Pressurized Water Reactors (PWRs) require operator action to realign the ECCS for the recirculation mode following a LOCA. The NRC staff has been requiring, on a case-by-case basis, some automatic features to assist in the realignment of the ECCS from the injection to the recirculation mode of operation. The safety objective of this requirement is to increase the reliability of long-term cooling by reducing the number of operator actions required to change system realignment to the recirculation mode.

Although Big Rock Point is a Boiling Water Reactor (BWR), this topic is applicable to this plant because ECCS water is initially supplied by the fire protection system. Failure to terminate the introduction of fire water in a timely manner will result in containment flooding. Such flooding could cause the loss of safety instrumentation and, ultimately, containment itself.

The scope of this topic requires a review of the ECCS control system and the operator action required to realign the ECCS from injection to recirculation mode following a LOCA. The sequence of events from initiation of the injection mode to completion of the recirculation mode, the systems/components and instrumentation/controls utilized in the injection to recirculation process, and the automatic and/or manual process required to complete the switch-over process are to be reviewed. The objective of this review is to determine if automatic switchover is necessary to protect public health and safety.

II. Review Criteria

The current licensing criteria which govern the safety issue are identified in Table 7-1 of the Standard Review Plan. The most significant of these criteria are:

1. Branch Technical Position ICSB 20,
2. IEEE Std 279-1971, and
3. Regulatory Guide 1.62.

III. Related Safety Topics and Interfaces

The scope of review for this topic was limited to avoid duplication of effort since some aspects of the review were performed under related topics. The related topics and the subject matter are identified below. Each of the related topic report contains the acceptance criteria and review guidance for its subject matter.

- III-6 - Seismic Design Considerations
- III-10.A - Thermal-Overload Protection for Motor Operated Valves
- III-11 - Component Integrity
- III-12 - Environmental Qualification
- IV-1.A - Operation with Less Than All Reactor Coolant Loops in Service
- V-10.B - RHR Reliability
- V-11 - High Pressure/Low Pressure Interface
- VI-7.A.3 - ECCS Actuation System
- VI-7.C.1 - Independence of Onsite Power
- VI-10.A - Testing of ESF Systems
- VI-10.B - Shared Systems
- VIII-2 - Onsite Emergency Power Systems
- VIII-3 - Emergency dc Systems
- VIII-4 - Containment Penetrations

The following topics are dependent on the present topic information for completion:

- VI-4 - Containment Isolation System
- VI-7.C.2 - ECCS Single Failure Criterion

IV. Review Guidelines

ICSB 20 states that automatic transfer to the recirculation mode is preferable to manual transfer and should be provided for standard plant designs submitted for review on a generic basis under the Commission's standardization policy.

ICSB 20 also states that a design that provides manual initiation at the system level of the transfer to the recirculation mode, while not ideal, is sufficient and satisfies the intent of IEEE Std 279 provided that adequate instrumentation and information display are available to the operator so that he can make the correct decision at the correct time. Furthermore, it should be shown that, in case of operator error, there are sufficient time and information available so that the operator can correct the error, and the consequences of such an error are acceptable.

V. Evaluation

Big Rock Point does not have an automatic transfer and it is not a standard plant submitted for review on a generic basis.

Accordingly, the staff limited its review to the instrumentation and controls that are used to terminate the injection phase of Emergency Core Cooling (ECCS).

The staff's review of ECCS single failure (Topic VI-7.C.2) shows that there are no single failures beyond the failures considered in this topic that could result in the failure of more than one train of ECCS or result in unacceptable offsite doses.

Questions were sent to the licensee in order to obtain sufficient information upon which to conduct an independent review. As a result of the licensee responses the staff determined that the ECCS injection mode is terminated by operator action upon receipt of a high containment level signal. This signal is derived from a single level transmitter and a redundant system of level switches that are powered from Class 1E buses. These instruments are not subject to freezing.

VI. Conclusions

The switchover from injection to recirculation in Big Rock Point is accomplished manually from the control room. The primary instruments for determining when to make the switchover satisfy the single failure criterion and are acceptable.