

Mr. Harold Denton, Director Office of Nuclear Reactor Regulation U. S. NUCLEAR REGULATORY COMMISSION Washington, D. C. 20555

Attention: Mr. Robert A. Clark, Chief Operating Reactor Branch #3

Gentlemen:



ADEQUACY OF STATION DISTRIBUTION SYSTEM VOLTAGES POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Your letter of March 26, 1981 requested additional information relating to the adequacy of the electrical distribution systems at Point Beach Nuclear Plants Units 1 and 2 (PBNP). This response provides clarification to our previous submittals and the results of additional analyses performed as a result of your request.

- 1. Paragraph Six of your March 26, 1981 letter correctly states that there is no Technical Specification which limits the operation of either or both Units when a single high voltage station auxiliary transformer is out of service. As a result we have completed additional analyses to determine the voltage levels of safety-related equipment assuming the following conditions:
 - Heavy Summer Load Conditions
 - The Unit 2 high voltage station auxiliary transformer is out of service. The Unit 2 low voltage station auxiliary transformer supply is transferred to the Unit 1 high voltage station auxiliary transformer.
 - Unit 2 trips while at 100% power due to a accident situation.
 - All automatically applied accident loads are placed on the safety related busses.
 - The entire Unit 2 auxiliary load transfers to the Unit 2 low voltage station auxiliary transformer.

- Unit 1 is shut down from 100% power simultaneously with an accident in Unit 2.
- The entire Unit 1 auxiliary load transfers to the Unit 1 low voltage station auxiliary transformer.

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Mr. Harold Denton, Director

1B04

Sec.

The load path which was, therefore, assumed is as follows:

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345 KV Bus Section 1 Unit 1 High Voltage Station Auxiliary Transformer Unit 1 and 2 Low Voltage Station Auxiliary Transformers 4160 Volt Busses 1A03, 1A04, 2A03, 2A04 Safety-Related 4160 Volt Busses 1A05, 1A06, 2A05, 2A06 4160/480 Volt Transformers 1X13, 1X14, 2X13, 2X14 480 Volt Safeguards Busses 1B03, 1B04, 2B03, 2B04

No other sources of offsite power were assumed for this case nor was any manual load shedding assumed. This analysis resulted in the following voltage levels at points on the load path.

345 KV Bus Section 1	345 KV	100.0%
UNIT 1		
High Voltage Station Au	xiliary Transform	er
(High Side)	345 KV	100.0%
(Low Side)	12.56 KV	91.0%
13.8 KV Bus	12.56 KV	91.0%
UNIT 1 and 2		
Low Voltage Station Aux	iliary Transforme	rs
(High Side)	12.56 KV	91.0%
(Low Side)	3.84 KV	92.3%
4160 Volt Busses 1A05,	1A06, 2A05, 2A06	
성장 가슴이 다	3.84 KV	92.3%
4160/480 Volt Transform	ers 1X13, 1X14, 2	X13, 2X14
(High Side)	3.84 KV	92.3%
(Low Side)	424.0 Volts	88.4%
480 Volt Busses		
1B03	424.0 Volts	88.4%
1B04	424.0 Volts	88.4%
2B03	424.0 Volts	88.4%
2B04	424.0 Volts	88.4%
This would result in a m	minimum voltage at	t any safety-related
load supplied from the	safety-related bus	sses as follows:
1A05 92.2%	2A05	92.2%
1A06 92.2%	2A06	92.2%
1803 84.2%	2B03	84.2%

These voltages are lower than those which were calculated for the case submitted previously, and for which the voltages levels were given in our January 21, 1981 submittal on the same subject. Reference to Paragraphs 9 and 10 of our January 21, 1981 letter will show that the voltages given above are:

2B04

84.2%

84.2%

As can be seen from the above, the values of transformer regulation as measured are well below the calculated values.

Contac	tor	Pick up ' (Voltage)	Drop out (Voltage)
Size 1		72.5%	51.7%
Size 1	R	72.5%	51.7%
Size 2		70.8%	50.0%
Size 4		70.8%	52.5%

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These values of pick-up and drop-out of safety-related magnetic contactors are well below the minimum voltage expected as a result of degraded grid voltage conditions.

6. The adequacy of the electrical distribution system at Point Beach Nuclear Plant is addressed in Section 8.0 of the FFDSAR including a restatement of the General besign Criteria which provide the licensing basis for Point Beach Nuclear Plant.

We trust that this information will allow you to complete your review, with the exception of items for which we have committed to provide additional information. We would also like to stress the fact that while it is desirable to supply safety-related loads from the preferred offsite source, and degraded grid voltage may be a legitimate concern, a safety-related redundant relay scheme is being implemented on each 4160 volt safeguard bus as part of License Amendment Nos. 47 and 52 for Units 1 and 2 respectively. The function of this relay scheme is to switch all safety-related loads to an emergency onsite power source if the offsite power supply voltage falls to levels which would prevent operation of, or cause damage to, safety-related equipment.

Very truly yours,

Exect ive Vice President

Sol Burstein

Copy to NRC Resident Inspector Point Beach Nuclear Plant