

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8901090095 DOC. DATE: 88/12/21 NOTARIZED: YES DOCKET #
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
 AUTH. NAME AUTHOR AFFILIATION
 SORESENSEN, G.C. Washington Public Power Supply System
 RECIP. NAME RECIPIENT AFFILIATION

Document Control Branch (Document Control Desk)

SUBJECT: Application for amend to License NPF-21, revising Tables
 3.3.3-1, 3.3.3-2 & 4.3.3.1-1.

DISTRIBUTION CODE: A001D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 1073
 TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT		COPIES			RECIPIENT		COPIES		
	ID CODE/NAME		LTTR	ENCL		ID CODE/NAME		LTTR	ENCL	
	PD5 LA		1	0		PD5 PD		2	2	
	SAMWORTH, R		1	1						
INTERNAL:	ACRS		6	6		ARM/DAF/LFMB		1	0	
	NRR/DEST/ADS 7E		1	1		NRR/DEST/CEB 8H		1	1	
	NRR/DEST/ESB 8D		1	1		NRR/DEST/MTB 9H		1	1	
	NRR/DEST/RSB 8E		1	1		NRR/DEST/SICB		1	1	
	NRR/DOEA/TSB 11		1	1		NRR/PMAS/ILRB12		1	1	
	<u>NUDOCS-ABSTRACT</u>		1	1		OGC/HDS2		1	0	
	<u>REG-ELLE</u> 01		1	1		RES/DSIR/EIB		1	1	
EXTERNAL:	LPDR		1	1		NRC PDR		1	1	
	NSIC		1	1						

w/check \$150
 #19234

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 26 ENCL 23

A/A2
 CC

R
I
D
S
/
A
D
D
S

R
I
D
S
/
A
D
D
S



WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352

December, 21, 1988
G02-88-273

Docket No. 50-397

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Gentlemen:

Subject: NUCLEAR PLANT NO. 2
OPERATING LICENSE NPF-21, REQUEST FOR AMENDMENT TO
TECHNICAL SPECIFICATION 3/4.3.3 EMERGENCY CORE
COOLING SYSTEM ACTUATION INSTRUMENTATION
UNDER EMERGENCY CIRCUMSTANCES

Reference: 1) Letter, G02-88-261, GC Sorensen (SS) to NRC,
"4.16KV Emergency Bus Undervoltage Degraded
Voltage (Second Lever Undervoltage) Protection",
dated December 7, 1988

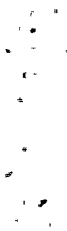
2) Letter, G02-83-928, GC Sorensen (SS) to A Schwencer
(NRR), "Branch Technical Position PSB-1 Commitment
Implementation Status", dated October 14, 1983

3) Letter, CM Powers (SS) to NRC, "Request for Discretionary
Enforcement with Respect to Technical Specification
3/4.3.3 Emergency Core Cooling System Actuation
Instrumentation and Applicability Specification 3.0.3",
dated November 21, 1988

In accordance with the code of Federal Regulations, Title 10, Parts 50.90, 2.101, and 50.91(a)(5), the Supply system hereby submits a request for amendment to the WNP-2 Technical Specifications on an emergency basis as provided for in the regulations. Specifically, the Supply System is requesting that Tables 3.3.3-1, 3.3.3-2 and 4.3.3.1-1 be revised as attached to clarify the testing requirements and capabilities of the Division 1, 2 and 3 LOSS OF POWER trip functions. Recent reviews of the tables have identified discrepancies which imply testing capabilities not inherent in the approved design. Absent

8901090095 881221
PDR ADOCK 05000397
PDC

A001 10
w/check \$150
#19234



TS 3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION
INSTRUMENTATION UNDER EMERGENCY CIRCUMSTANCES

the proposed clarifications, strict interpretation of the tables would impose unnecessary monthly plant shutdowns in order to perform Channel Functional Testing (CFT). This letter also satisfies the commitments made in Reference 1) to submit Technical Specification changes for the emergency bus second level undervoltage protection circuits. Specific discussions of the present design configuration were provided in a meeting with the Staff on December 15, 1988. This meeting discussed design and testing as well as Technical Specification setpoint verification methodology. The Technical Specification changes attached were the conclusions reached by participants of that meeting. Proposed Technical Specification changes for Division 1 and 2 circuits are provided first, followed by proposed changes for Division 3.

Table 4.3.3.1-1 item D.2, Loss of Power, 4.16 kV Emergency bus Undervoltage (Degraded Voltage) presently requires a CFT monthly. This requirement and the notation on Table 3.3.3-2, Emergency Core Cooling System Actuation Instrumentation Setpoints, that the associated time delay relay (TDR) is 8 ± 0.04 second implies that the monthly CFT is done on circuitry encompassing an 8 second time delay. As submitted in References 1) and 2) and explained to the Staff in a meeting on December 15, 1988, this circuitry is comprised of two sequential time delays. One of which is in the circuitry sensing the degraded voltage condition and the other provides circuit trips and logic to obtain the next reliable source of power for the Emergency Core Cooling System (ECCS) equipment. Consequently, the monthly CFT has been performed on the sensor relay with the inherent five second time delay while the second TDR is verified in a channel calibration and Logic System Functional Test annually. As stated in the reference and in the discussions with the Staff the design of the secondary TDR precludes testing at power. Hence, strict interpretation as described above would impose a monthly CFT on the three second time delay relay and require shutdown to implement this testing. Absent approval of the requested changes the next CFT for Divisions 1 and 2 requiring shutdown will be January 8, 1989. As requested Table 4.3.3.1-1 would be revised to note that the secondary TDR is tested during Logic System Functional Testing and exempted from the monthly CFT. Attachment 1 provides justification and significant hazards consideration for this change.

Table 3.3.3-2 item D, Loss of Power, lists relay tolerances for the trip setpoint TDR for the degraded voltage setpoint as ± 0.04 . This is thought to be a transcription or typing error such that the setpoint tolerance should be ± 0.4 seconds instead of the listed 0.04. The 0.4 value was derived using the recently approved WNP-2 setpoint methodology. Additionally the 0.4 value is consistent with standard Technical Specification notation showing $\pm 5\%$ for setpoint tolerances and $\pm 10\%$ allowable value tolerances. Absent approval of this change the accuracy of trip setpoint settings required by the Technical Specifications cannot be attained. Attachment 2 provides a significant hazards consideration for the proposed change.

TS 3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION
INSTRUMENTATION UNDER EMERGENCY CIRCUMSTANCES

Tables 3.3.3-1 and 4.3.3.1-1 presently do not differentiate between Division 1 and 2 and Division 3 (HPCS) requirements. Given the lack of specificity the requirements presently listed would appear to apply to all divisions. As discussed in Reference 1) and in discussions with the Staff on December 15, 1988 the HPCS (Division 3) design is not described accurately by the Table 3.3.1-1 channel descriptions nor are testing capabilities reflected accurately in Table 4.3.3.1-1. Absent the clarification provided in the requested changes the monthly CFT implied to be required by Table 4.3.3.1-1 for Division 3 would require plant shutdown for testing by January 9, 1989. As requested the proposed changes would accurately describe the HPCS Degraded Voltage design and testing capabilities. Attachment 3 provides justification and significant hazards consideration for these changes.

It should be noted that these changes are being made to clarify Technical Specification descriptions for designs previously reviewed and approved for WNP-2. Prior to licensing, degraded voltage protection was the subject of site visits by NRR reviewers and numerous correspondence. Reference 2) was the culmination of correspondence with the Staff in implementing commitments with the Staff for degraded voltage protection and submitted design documents reflecting the present design. The Safety Evaluation Report (NUREG 0892, March 1982) recognized this as an outstanding issue and reported it resolved in a later supplement. Although not formally documented the Staff has acknowledged receipt and review of design documents reflecting the present designs of Division 1, 2 and 3 degraded voltage protection prior to licensing of WNP-2. This request merely clarifies the Technical Specification descriptions, for previously approved designs, such that interpretations are not necessary.

The need for these changes has only recently been identified. Reference 3) identified the problems in the Division 1 and 2 descriptions which lead in turn to questioning Division 3 requirements and identifying the need to clarify the description of HPCS capabilities. With the current strict interpretation requiring plant shutdown no later than January 8 for Divisions 1 and 2 and January 9, 1989 for Division 3, time to anticipate these needs and submit the changes in a more timely manner was unavailable. Based on the attached safety evaluations and justification the Supply System requests that the attached amendment be granted no later than January 8, 1989. Absent this action the Supply System will be required to unnecessarily shutdown at that time to perform the presently prescribed channel functional tests.

As discussed in the attachments, the Supply System considers that this proposed amendment does not involve a significant hazards consideration, nor is there a potential for significant change in the types or significant increase in the amount of any effluents that may be released offsite, nor does it involve a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10CFR51.22(c)(9) and therefore, per 10CFR51.22(b), an environmental assessment of the change is not required.

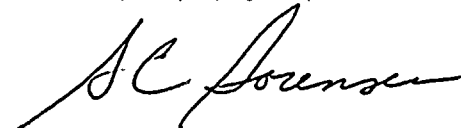
Page Four;
TS 3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION
INSTRUMENTATION UNDER EMERGENCY CIRCUMSTANCES

This amendment request has been reviewed and approved by the WNP-2 Plant Operations Committee (POC) and the Supply System Corporate Nuclear Safety Review Board (CNSRB).

In accordance with 10CFR170.21, an application fee of one hundred fifty dollars (\$150.00) accompanies this request. In accordance with 10CFR50.91, the State of Washington has been provided a copy of this letter.

In summary, based on the assertion that no significant hazard is created by the proposed amendment and that the proposed testing schedules and Technical Specification channel requirements provide reliable confirmation of system operability, approval of the proposed amendment does not represent an undue risk to the health and safety of the public. Additionally, absent this amendment, the WNP-2 Plant will be required to shutdown no later than January 8, 1989 and monthly thereafter.

Very truly yours,



G. C. Sorensen, Manager,
Regulatory Programs

PLP/bk
Attachments

cc: JB Martin - NRC RV
NS Reynolds - BCP&R
RB Samworth - NRC
DL Williams - BPA/399
NRC Site Inspector - 901A



100

100

100

100

100

100

100

100

100

100

100

100

100

ATTACHMENT 1

This attachment addresses the safety and hazards considerations required to support the enclosed Technical Specification change. This change increases the testing period of the three second time delay relays from monthly to annual. It should be noted that there has not been monthly testing performed and thus this discussion supports the existing testing performed.

The required analysis specifically must address the three questions identified below:

- 1) Does it involve a significant increase in the probability or the consequences of an accident previously evaluated?
- 2) Does it create the possibility of a new or different kind of accident from any accident previously evaluated?
- 3) Does the change involve a significant reduction in a margin of safety?

The original design of this protection considers the allowable drift, setting tolerances and repeatability to select the appropriate device to perform the function. The selection of the voltage setpoint and the time delay are documented in the analysis and calculations which are the basis for the protection. The Supply System has recently performed calculations to confirm this degraded voltage protection and the refinement of the details associated with the selection of the setpoints is a continuing action. These calculations were provided to NRR for their review.

The proposed Technical Specification changes address the Channel Functional Testing of the hardware selected for this protection. The original testing requirements considered the testability of the design when the requirements for the testing were established. The Technical Specifications unfortunately did not adequately reflect the original design. Thus this Attachment will consider hazards associated with this change, the change of specified testing frequency.

Time delay relays in general are utilized throughout WNP-2 in various safety related applications. These devices are relied upon to perform many important functions in order to use these devices in safety related applications an equipment qualification record must be retained. This document is based upon a qualification test performed by control products division of Amerace Corp. This qualification test includes nonoperating test modes as well i.e. the application utilized for the second level undervoltage protection is such that actual challenges to this hardware are not anticipated and the relay will essentially sit without being energized. Thus failure modes associated with long term energization need not be considered.



10

It is important to note that the allowable values associated with the time delays include a allowance for potential drift which may occur during the calibration period. Thus the calculation addresses potential changes to the time delay. Further margin in the time delay associated with this application is provided.

These three second time delay relays do not have a high accuracy requirement imposed on them in the present degraded voltage transfer scheme at WNP-2. $\pm 10\%$ can be allowed on this time delay to cover both accuracy and drift and still have a large margin to the protective limit assigned to reenergizing the Division 1 and 2 busses from the onsite power sources in the overall ECCS actuation timing as described in Table 6.3-1 of the WNP-2 FSAR. The total time assigned to energizing these busses from the onsite power source is 19 seconds. The total nominal time to complete the transfer for the present scheme if degraded voltage is sensed is 10 (5+3+2) seconds to complete the transfer to the backup offsite power source and 13 (5+3+5) seconds to energize the bus from the diesel generator source. Hence this scheme provides 9 seconds gross margin for the transfer to the backup source and 6 seconds margin for the transfer to the diesel generator source without impinging on the other margins in the ECCS actuation assumptions. The allowance of $\pm 20\%$ to cover settability, drift, and accuracy for these three second relays is conservative and only reduces the overall margin by 0.6 seconds. The drift on these relays on the long side could be 100% for transfer to the backup power supply and 200% for transfer to the diesel generator source and still not prevent the system from meeting the ECCS actuation assumption for a design basis assumption of a LOCA and concurrent degraded network voltage.

The allowance of -20% in the short time direction allows the scheme to ride through a combination of a worst case motor start (HPCS) and a degraded network source that produces a voltage of 80% on the Division 1 and 2 busses. If the network is degraded more, the system will initiate a transfer of the Division 1 and 2 busses to the next available source. If the three second relay drifts beyond our allowance in the short time direction it only means that the scheme will not ride through as much degradation (both voltage level and time) before it initiates a transfer. There will be no loss of the transfer function.

There are hazards which can accompany the determination, testing and retermination of these devices when considering the ability to perform testing on these devices with the present design. These hazards include the personnel errors which could result in the disabling of the intended function as well as initiation of segregation of the onsite emergency bus from the offsite power source with an unnecessary diesel generator start. It has been noted that this protection must be disabled in order to perform the functional testing. These discussions were addressed in the meeting with NRR on this subject, December 15, 1988 and in Reference 1) of this submittal.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

A failure of these time delay relays to function is considered to fall within the single failure criteria which is an analyzed event. There is no single failure associated with the time delay relays in this application which falls outside the existing accident analysis provided in the WNP-2 FSAR.

In summary, the Supply System has evaluated this change with respect to 10CFR50.59 and 50.92 and determined that this change does not represent an unreviewed safety question or a significant hazard because:

- 1) The testing frequency requirement change proposed does not involve an increase in the probability or consequence of an accident previously evaluated. Significant margins for the timing of this protection were discussed above. The anticipated incremental drift, short of gross relay failure, is accounted for in the above discussion of margin. The reduction in the required frequency of testing does not change the probability of a complete relay failure to occur. The complete failure of the degraded voltage protection is bounded by the accident analysis provided in the WNP-2 FSAR. This change does not involve a change to hardware configuration.
- 2) This change does not create the possibility of a new or different kind of accident not previously evaluated. The reduction in the required frequency of testing does not change the affect of a failure. The failure of these time delay relays is bounded by the WNP-2 accident analysis.
- 3) This change does not involve a significant reduction in a margin of safety. Margins in the overall timing of the buss transfer function were provided in the original design to cover the accuracy and drift of the relays associated with the degraded bus voltage transfer scheme. Allocating a part of the existing margin to this three second time delay relay does not produce a significant change in the overall margin. The worst case failure conservatively resulting in the loss of a bus is an analyzed event. The testing of other time delay relays associated with safety systems is consistent with the proposed testing frequency of the time delay relays associated with the degraded voltage protection. Independent degraded voltage protection for each of the emergency busses is provided.



ATTACHMENT 2

The Supply System has evaluated the change in degraded voltage setpoint tolerance from 0.04 to 0.4 per 10CFR50.59 and 50.92 and determined that it does not represent an unreviewed safety question or a significant hazard because it does not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated because the tolerance in the proposed change is that originally utilized for accident evaluation and this change is only to maintain consistency between the Technical Specifications and plant design.
- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated because it does not introduce any physical changes to the plant. The value provided is the value that originally supported the WNP-2 accident analyses so correcting the Technical Specification value does not create a possibility of a new or different kind of accident.
- 3) Involve a significant reduction in a margin of safety because the value provided is the value that contributed to establishing the original margin of safety. Utilizing it cannot create a reduction in safety margin.



11/11/11

11/11/11

11/11/11

11/11/11

11/11/11

11/11/11

11/11/11

ATTACHMENT 3

The testing frequency for the degraded voltage sensing relays of the Division 3 emergency bus is being clarified to require annual testing in the Logic System Functional Testing versus the implied monthly Channel Functional Testing currently required by strict interpretation of the existing Technical Specifications.

The design of the Division 3 degraded voltage protection is unique in that two relays monitor the offsite source and initiate a transfer to the emergency diesel generator upon sensing a degraded voltage condition for an extended time. There is no backup offsite source available to the Division 3 bus. The Division 3 bus is dedicated solely to the High Pressure Core Spray (HPCS) system. The worst case failure of the degraded voltage protection would be conservatively considered to be the failure to function. The loss of the HPCS is an analyzed event in the WNP-2 FSAR accident analysis with safe shutdown assured.

The degraded voltage protection relays are ITE 27N (the same as that utilized for the sensor relays in Division 1 and 2) and are high precision relays with excellent repeatability. Vendor information provided indicates long term stability (drift) is expected to be ± 0.2 volt per year. It is not anticipated that the time delay drift associated with these devices will be significant. Short term drift of these devices on the Division 1 and 2 busses will be monitored during the monthly Channel Functional Tests. Any significant drift noted on the Division 1 and 2 relays will initiate appropriate action to assure Division 3 operability.

The allowable margins addressed in Attachment 1 can readily be met with these devices.

In summary, The Supply System has evaluated this change with respect to 10CFR50.59 and 50.92 and determined that this change does not represent an unreviewed safety question or a significant hazard because:

- 1) The testing frequency requirement clarification proposed does not involve an increase in the probability or consequence of an accident previously evaluated. Significant margins for the timing of this protection were discussed in Attachment 1. Short term drift of the ITE relays for the Division 1 and 2 emergency busses will provide data to be used to apply to these relays. The anticipated incremental drift, is expected to be insignificant. The reduction in the required frequency of testing does not change the probability of a complete relay failure to occur. The complete failure of the degraded voltage protection is bounded by the accident analysis provided in the WNP-2 FSAR. This change does not involve a change to hardware configuration.
- 2) This change does not create the possibility of a new or different kind of accident not previously evaluated. The reduction in the required frequency of testing does not change the effect of a failure. The failure of ITE sensor relays is bounded by the WNP-2 accident analysis.
- 3) This change does not involve a significant reduction in a margin of safety. Margins in the overall timing of the bus transfer function were provided in the original design to cover the accuracy and drift of the relays associated with the degraded bus voltage transfer scheme. The worst case failure conservatively resulting in the loss of HPCS bus is an analyzed event.

STATE OF WASHINGTON)
COUNTY OF BENTON)

Subject: T.S. CHANGE

I, G. C. Sorensen, being duly sworn, subscribe to and say that I am the Manager, Regulatory Programs for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that I have full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information and belief the statements made in it are true.

DATE 21 Dec, 1988

G. C. Sorensen
G. C. Sorensen, Manager
Regulatory Programs

On this day personally appeared before me G. C. Sorensen to me known to be the individual who executed the foregoing instrument and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 21 day of December 1988.

Audrey Ann Jenkins
Notary Public in and for the STATE
OF WASHINGTON
Residing at Richland



