

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8512110003 DDC DATE: 85/12/06 NOTARIZED: NO DOCKET #  
 FACIL: 50-275 Diablo Canyon Nuclear Power Plant, Unit 1, Pacific Ga 05000275  
 50-323 Diablo Canyon Nuclear Power Plant, Unit 2, Pacific Ga 05000323  
 AUTH. NAME AUTHOR AFFILIATION  
 SHIFFER, J. D. Pacific Gas & Electric Co.  
 RECIP. NAME RECIPIENT AFFILIATION  
 THOMPSON, H. L. Division of Pressurized Water Reactor Licensing - A (post 8

SUBJECT: Responds to Generic Ltr 85-09 requesting proposed Tech Specs on reactor trip breakers. Based on Westinghouse Owners Group review, proposed requirement to test bypass breakers before main breakers should be deleted.

DISTRIBUTION CODE: A055D COPIES RECEIVED: LTR 1 ENCL 0 SIZE: 4  
 TITLE: OR/Licensing Submittal: Salem ATWS Events GL-83-28

NOTES:

05000275

OL: 09/22/81

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PWR-A PD3 PD 01	3 3		
INTERNAL:	ACRS	6 6	ADM/LFMB	1 0
	ELD/HDS2	1 0	IE/DI	1 1
	IE/DQAVT	1 1	NRR BWR ADTS	1 1
	NRR PWR-A ADTS	1 1	NRR PWR-B ADTS	1 1
	NRR/DSRO DIR	1 1	NRR/ORAS	1 1
	NRR/TAMB	1 1	<del>REG FILE</del> 04	1 1
	RGN5	1 1		
EXTERNAL:	24X	1 1	LPDR 03	2 2
	NRC PDR 02	1 1	NSIC 05	1 1

TOTAL NUMBER OF COPIES REQUIRED: LTTR 26 ENCL

1. The purpose of this document is to provide information regarding the activities of the [redacted] organization. This information is being provided for your information and is not to be distributed outside of your organization.

2. The [redacted] organization has been active in the [redacted] area. It has been found that the organization is engaged in a variety of activities, including [redacted] and [redacted].

3. It is recommended that you remain vigilant and continue to monitor the activities of the [redacted] organization. If you have any information regarding the organization, please contact the [redacted] office.

4. The [redacted] organization has been found to be involved in a variety of activities, including [redacted] and [redacted]. It is recommended that you remain vigilant and continue to monitor the activities of the [redacted] organization.

5. If you have any information regarding the [redacted] organization, please contact the [redacted] office.



6. The [redacted] organization has been found to be involved in a variety of activities, including [redacted] and [redacted]. It is recommended that you remain vigilant and continue to monitor the activities of the [redacted] organization.

7. If you have any information regarding the [redacted] organization, please contact the [redacted] office.

8. The [redacted] organization has been found to be involved in a variety of activities, including [redacted] and [redacted]. It is recommended that you remain vigilant and continue to monitor the activities of the [redacted] organization.

9. If you have any information regarding the [redacted] organization, please contact the [redacted] office.

10. The [redacted] organization has been found to be involved in a variety of activities, including [redacted] and [redacted]. It is recommended that you remain vigilant and continue to monitor the activities of the [redacted] organization.

11. If you have any information regarding the [redacted] organization, please contact the [redacted] office.

12. The [redacted] organization has been found to be involved in a variety of activities, including [redacted] and [redacted]. It is recommended that you remain vigilant and continue to monitor the activities of the [redacted] organization.

13. If you have any information regarding the [redacted] organization, please contact the [redacted] office.

14. The [redacted] organization has been found to be involved in a variety of activities, including [redacted] and [redacted]. It is recommended that you remain vigilant and continue to monitor the activities of the [redacted] organization.

15. If you have any information regarding the [redacted] organization, please contact the [redacted] office.

# PACIFIC GAS AND ELECTRIC COMPANY

PG&E + 77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

JAMES D. SHIFFER  
VICE PRESIDENT  
NUCLEAR POWER GENERATION

December 6, 1985

PGandE Letter No.: DCL-85-360

Mr. Hugh L. Thompson, Jr., Director  
Division of PWR Licensing-A  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80  
Docket No. 50-323, OL-DPR-82  
Diablo Canyon Units 1 and 2  
Response to Generic Letter 85-09 (Technical Specifications  
for Generic Letter No. 83-28, Item 4.3)

Dear Mr. Thompson:

Generic Letter 85-09 requested licensees to submit proposed technical specifications on reactor trip breakers in accordance with the guidance provided in the enclosure to the Generic Letter on a schedule developed through discussions with their individual NRC Project Manager.

The technical specification changes identified include:

1. Adding surveillance tests on the bypass breakers;
2. Testing both undervoltage trip attachment (UVTA) and shunt trip attachment (STA) trip functions in the periodic trip breaker tests,
3. Allowing a 48-hour allowed outage time when a UVTA or STA device is inoperable; and
4. Testing the UVTA and STA circuits when actuated by the remote manual trip switches.

As a member of the Westinghouse Owners Group (WOG), PGandE has been involved in an effort to evaluate the impact of the NRC requested changes. As a result of this evaluation, the WOG has calculated the impact of the bypass breaker failure probability on the reactor trip system failure probability and concluded that the bypass breaker contribution is insignificant. These calculations are based on the trip breaker fault tree model presented in Supplement 1 to WCAP-10271.

8512110003 851206  
PDR ADOCK 05000275  
P PDR

A055  
10



12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

12

In WOG Letter No. OG-106, which transmitted the WOG response to NRC questions on WCAP-10271, a typical Westinghouse PWR reactor trip unavailability is estimated to be  $1.5 \times 10^{-5}$ . No credit was taken for operation of the bypass breaker in the evaluation from which these calculations were derived. The impact on the reactor trip system unavailability, including the reactor trip bypass breakers, was calculated with the following results:

1. The bypass breakers are placed in service only when one train of the reactor protection system (RPS) is in test. The only circumstances in which the bypass breaker could affect RPS unavailability is the cutset when one train is in test, a signal is generated in the operable redundant train and the main breaker fails to open.
2. The unavailability of the RPS attributable to failure of a main trip breaker with the opposite train in test is  $3.7 \times 10^{-7}$  or 2.5% of total RPS unavailability. This cutset constitutes the only configuration in which the bypass breaker can affect RPS unavailability.
3. Taking credit for the bypass breaker would reduce the probability value of this cutset to

$$(3.7 \times 10^{-7})(3.5 \times 10^{-4}) = 1.3 \times 10^{-10}$$

where  $3.5 \times 10^{-4}$  is the unavailability of the bypass breaker assuming bimonthly testing,

or

$$(3.7 \times 10^{-7})(3.5 \times 10^{-3}) = 1.3 \times 10^{-9}$$

where  $3.5 \times 10^{-3}$  is the unavailability of the bypass breaker assuming testing on an 18-month interval.

Based on the above, it is recommended that testing of bypass breakers not be included in the Diablo Canyon Power Plant (DCPP) Technical Specifications for periodic testing of the main reactor trip breakers. As shown above, testing the bypass breakers on a 2-month or 18-month test interval will result in a  $10^{-9}$  or  $10^{-10}$  level contribution to the RPS unavailability of approximately  $10^{-5}$ . Alternately, the RPS unavailability increase that occurs by increasing the bypass breaker failure probability from 0% to 100% is only 2.5% at the RPS level.

Given the minimal impact of bypass breaker testing, PGandE proposes to administratively control bypass breaker testing outside of the technical specifications.



Generic Letter 85-09 also requires that both the UVTA and the STA function be tested during the periodic trip breaker surveillance test. Again, using the reactor trip breaker fault tree model discussed above, the WOG recalculated the impact of UVTA and STA testing on breaker unavailability. The results of this evaluation showed that trip breaker unavailability increased by a factor of 2 when the surveillance test interval on either of the two diverse trip functions (UVTA or STA) is increased from 2 to 18 months.

The impact of this increase in breaker unavailability on the overall reactor trip system unavailability was also evaluated. The result of this evaluation showed that the increase in RPS unavailability resulting from a doubling of trip breaker unavailability is approximately 10%. This increase in RPS unavailability will proportionately increase the ATWS core melt probability. Therefore, no relaxation in the surveillance test frequency of the UVTA or STA functions is proposed at this time. These surveillance test intervals will be reexamined by the WOG with a more sophisticated reliability model of the trip breaker when it becomes available.

Generic Letter 85-09 further recommends a 48-hour allowed outage time if either trip function is declared inoperable. Using the same breaker fault tree model, the breaker availability sensitivity to the 48-hour allowed outage time was calculated. The results showed unequal sensitivities for the STA and UVTA. Because this result does not support a significant increase in the 48-hour allowed outage time in Generic Letter 85-09, no relaxation in this parameter is recommended at this time. As in the above case of the surveillance test interval, the allowed outage time will be reexamined by the WOG when its more sophisticated model of the trip breaker is available.

The final recommendation in Generic Letter 85-09 involves testing the manual reactor trip switch for UVTA and STA circuits. Although a clear RPS unavailability improvement has not been shown for testing both UVTA and STA circuits, no change to this test at this time is proposed. The basis for this position is that the test interval is infrequent (18-months) and procedures to do the test have already been developed.

In summary, based on the WOG's review of the proposed reactor trip breakers technical specifications described in NRC Generic Letter 85-09, and as a member of the WOG and subscriber to the WOG program to develop a reactor trip breaker reliability model, PGandE has reached the following conclusions:

1. Based on the WOG's current calculations of the reactor trip system unavailability, there is an insignificant reliability improvement from including periodic surveillance tests of the bypass breakers in the technical specifications. Thus, the proposed requirement in Generic Letter 85-09 to test the bypass breakers prior to the main breaker periodic surveillance test should be deleted.



10-10-68

1. The first part of the report discusses the general situation of the project and the progress made during the last period. It also mentions the results of the various experiments conducted.

2. The second part of the report describes the results of the experiments in more detail. It includes a table showing the data obtained from the experiments and a discussion of the results.

3. The third part of the report discusses the conclusions drawn from the experiments and the recommendations for further work. It also mentions the progress made during the last period.

4. The fourth part of the report discusses the progress made during the last period and the results of the various experiments conducted. It also mentions the conclusions drawn from the experiments and the recommendations for further work.

5. The fifth part of the report discusses the progress made during the last period and the results of the various experiments conducted. It also mentions the conclusions drawn from the experiments and the recommendations for further work.

6. The sixth part of the report discusses the progress made during the last period and the results of the various experiments conducted. It also mentions the conclusions drawn from the experiments and the recommendations for further work.

7. The seventh part of the report discusses the progress made during the last period and the results of the various experiments conducted. It also mentions the conclusions drawn from the experiments and the recommendations for further work.

8. The eighth part of the report discusses the progress made during the last period and the results of the various experiments conducted. It also mentions the conclusions drawn from the experiments and the recommendations for further work.

9. The ninth part of the report discusses the progress made during the last period and the results of the various experiments conducted. It also mentions the conclusions drawn from the experiments and the recommendations for further work.

10. The tenth part of the report discusses the progress made during the last period and the results of the various experiments conducted. It also mentions the conclusions drawn from the experiments and the recommendations for further work.

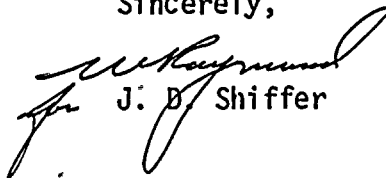


Mr. H. L. Thompson, Jr., Director  
December 6, 1985  
Page 4

2. The remaining surveillance test requirements and allowable outage times proposed in Generic Letter 85-09 should be adopted as interim test requirements. However, these interim requirements should be administratively controlled without technical specification changes until the requirements can be optimally determined by the trip breaker reliability model which the WOG is now developing.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

  
J. D. Shiffer

cc: L. J. Chandler  
R. T. Dodds  
J. B. Martin  
B. Norton  
H. E. Schierling  
S. A. Varga  
CPUC  
Diablo Distribution

0613S/0038K/JHA/2115

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research. It also provides a brief overview of the methodology used in the study.

2. The second part of the report is a detailed description of the study area. It includes information about the location of the study area, the population of the study area, and the characteristics of the study area. It also discusses the data sources used in the study.

3. The third part of the report is a detailed description of the study results. It includes information about the findings of the study, the conclusions drawn from the study, and the implications of the study. It also discusses the limitations of the study and the need for further research.

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research. It also provides a brief overview of the methodology used in the study.

2. The second part of the report is a detailed description of the study area. It includes information about the location of the study area, the population of the study area, and the characteristics of the study area. It also discusses the data sources used in the study.

3. The third part of the report is a detailed description of the study results. It includes information about the findings of the study, the conclusions drawn from the study, and the implications of the study. It also discusses the limitations of the study and the need for further research.