

November 8, 1989

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Walter J. Foley, Principal Investigator
Parameter, Inc.
13380 Watertown Plank Road
Elm Grove, Wisconsin 53122

Dear Mr. Foley:

Your letter of August 25, 1989, forwarded the latest draft of NUREG/CR-4661, "Closeout of IE Bulletin 85-03: Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings."

Enclosure 1 provides our written comments pertaining to the draft. Enclosure 2 is the marked-up pages showing our suggested editorial changes to the draft. Once these comments and changes have been incorporated into the NUREG, the final version should be submitted for publication.

Sincerely,

Original Signed By
Carl H. Berlinger

Carl H. Berlinger, Chief
Generic Communications Branch
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Enclosures:

1. Generic Communications Branch Comments on Draft
NUREG/CR-4661 dated August 25, 1989
2. Marked Up Pages From Draft NUREG/CR-4661
dated August 25, 1989

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Generic Communications Branch
Comments on
Draft NUREG/CR-4661 Dated August 25, 1989

1. Abstract, Third Sentence (page iii) - Revise the sentence to read "The report includes documentation and status of the review of Action Item e of the bulletin completed through the issuance of Generic Letter 89-10 on June 28, 1989. Action Item e requested the bulletin addressees to submit a report identifying the maximum differential pressures to be expected and the program to accomplish the goals of the bulletin."
2. Introduction, Fifth Paragraph (page 1) - Revise the paragraph to read "In order to provide a consistent basis for reviewing individual utility responses, NRC reviewed and commented on three owners groups reports. The chronology of these reviews is included in Appendix C."
3. Scope (page 2) - Add a new item 7 to read "Prepare requests for additional information for facilities which have unfavorable reviews (see Page B-27)." Renumber the subsequent item.
4. Summary, Item 3 (page 3) - Hope Creek 1 is indicated as not having satisfactory completion documentation whereas Table B-1 (page B-10) indicates the review status as being "Complete." Please bring the two portions of the report into agreement.
5. Summary, Item 3 (page 3) - Provide a description as to why these facilities are not considered as having satisfactory completion documentation. If the description is contained elsewhere, provide reference to where it can be found.
6. Table B-1, Millstone 3 (page B-13) - Provide a footnote (as was done for the Limerick 1,2 entries on page B-12) indicating why the facility is considered incomplete even though all table entries appear to be complete.
7. Appendix A, Cover Sheet (unnumbered page) Provide a table of contents as was done for Appendix C.
8. Appendix B, Cover Sheet (unnumbered page) Provide a table of contents as was done for Appendix C.
9. Appendix C, BWR Owners Group (page C-1) - Add the August 8, 1988, letter from Charles E. Rossi to Donald N. Grace which accepted the supplement.
10. Appendix C, SNUPPS (page C-3) - Add Inspection Report 87-32 which contained the approval of the program.

November 8, 1989

(SO AS TO ENSURE THE ABSTRACT OF THE EVENTS)

of the bulletin

the during normal operation and

Documentation is provided in this report for the closeout of NRC Bulletin 85-03. The bulletin's purpose was to request licensees to develop and implement programs to ensure that switch settings on certain safety-related motor-operated valves are selected, set, and maintained correctly for reliable valve operation when valves are subjected to maximum differential pressures expected within the design basis. The report includes (1) documentation of the partially completed review of Action Item e of the bulletin, which is concerned with the selection of critical motor-operated valves (MOV) in emergency systems, and the development of the switch setting programs for these valves by the licensees, and (2) the documentation of the complete closeout of the bulletin through the superseding Generic Letter 89-10. Licensee actions for Action Item e were completed satisfactorily for 102 (86%) of the facilities for which actions were required. Satisfactory completion of actions for the remaining 17 facilities is ensured by the requirements of the generic letter. In the report conclusions, the inter-relationship of the generic letter and the bulletin is presented. Background information is supplied in the Introduction and Appendix A.

89-10, a summary of required actions, and a record of changes in due dates are included in Appendix A. Review of utility responses and NRC/Region approval letters or inspection reports is documented in Appendix B, ~~as the basis for evaluating the licensee performance of Bulletin Action Item e.~~ The chronology of review of owners group reports is included in Appendix C, ~~in order to document the basis of the recommended typical responses to Action Item e and their evaluation by the NRC.~~ An example request for additional information (RAI) is presented in Appendix D in general form, ~~in order to describe the final determination of required actions.~~ Abbreviations used in this report and associated documents are presented in Appendix E.

2/15/89
Favorable reviews of utility responses to the bulletin and to requests for additional information are brought to the attention of the NRC regions by means of feeder reports from NRC Headquarters (see Table B-3). Satisfactory completion of Action Item e ~~is documented by means of regional letters or inspection reports to the utilities which are based on the favorable reviews by NRC Headquarters and the regional evaluations~~ (see Table B.1).

SCOPE

- that it was superseded by*
1. Close IE Bulletin 85-03 and Supplement 1 completely on the basis of Generic Letter 89-10 (see Page A-33).
 2. Document the review of Action Item e of the bulletin and the supplement prior to issuance of the generic letter.
 3. Exclude ~~complete~~ review of ^{the} final results of the bulletin (action items b, c, d and f) ~~except~~ ^{for the} program items related to Action Item e.
 4. Include the following items:
 - a) study of piping and instrumentation drawings (P&IDs) or FSAR flow diagrams by reducing them to manageable sketches, including only the subject MOVs (similar to those in the owners group reports)
 - b) selection of affected valves
 - c) comparison of differential pressures, and
 - d) evaluation of programs and schedules.
 5. Evaluate the following typical characteristics:
 - a) conformity to owners group reports
 - b) similarity of comparable systems, and
 - c) agreement with bulletin requirements.
 6. Take ^{additional} valves ~~other than the MOVs~~ into consideration in evaluating the systems (when necessary).
 7. Prepare feeder reports for facilities which have favorable reviews (see Page B-31) ~~to be brought to the attention of NRC/Region inspectors for final resolution.~~

SUMMARY

that it was superseded by

1. IE Bulletin 85-03 and Supplement 1 are closed for all 119 nuclear power facilities on the basis of Generic Letter 89-10 (see Page A-33).
2. Satisfactory completion of Bulletin Action Item e has been documented for the following 102 facilities for which NRC/Region letters or inspection reports sent to the utilities indicated compliance with required actions:

Beaver Valley 1,2	Fort Calhoun 1	Robinson 2
Bellefonte 1,2	Fort St. Vrain	Salem 1,2
Big Rock Point 1	Ginna	San Onofre 1,2,3
Braidwood 1,2	Grand Gulf 1	Seabrook 1
Browns Ferry 1,2,3	Harris 1	Sequoyah 1,2
Brunswick 1,2	Hatch 1,2	Shoreham
Byron 1,2	Indian Point 2,3	South Texas 1,2
Callaway 1	Kewaunee	St. Lucie 1,2
Calvert Cliffs 1,2	Maine Yankee	Summer 1
Catauba 1,2	McGuire 1,2	Sunny 1,2
Clinton 1	Millstone 1,2	Susquehanna 1,2
Comanche Peak 1,2	Monticello	TMI 1
Cock 1,2	Nine Mile Point 1,2	Trojan
Cooper Station	North Anna 1,2	Turkey Point 3,4
Crystal River 3	Oconee 1,2,3	Vermont Yankee 1
Davis-Besse 1	Palisades	Vogtle 1,2
Diablo Canyon 1,2	Palo Verde 1,2,3	WNP 2
Dresden 2,3	Peach Bottom 2,3	Wolf Creek 1
Duane Arnold	Perry 1	Yankee-Rowe 1
Farley 1,2	Point Beach 1,2	Zion 1,2
Fermi 2	Prairie Island 1,2	
FitzPatrick	Rancho Seco 1	

3. Satisfactory completion of Bulletin Action Item e has not been documented ~~satisfactorily~~ for the following 17 facilities:

Arkansas 1,2	Limerick 1,2	*Quad Cities 1,2
Haddam Neck	Millstone 3	*River Bend 1
Hope Creek 1	*Oyster Creek 1	Waterford 3
*LaSalle 1,2	Pilgrim 1	*Watts Bar 1,2

* Issuance of feeder reports has not been approved.

4. Because responses to the bulletin or responses to RAIs are satisfactory, issuance of feeder reports (see Page B-31) has been approved for the following 111 (93%) of the 119 facilities affected: *affected*

- | | | |
|--------------------|---------------------|------------------|
| Arkansas 1,2 | Fort St. Vrain | Rancho Seco 1 |
| Beaver Valley 1,2 | Ginna | Robinson 2 |
| Bellefonte 1,2 | Grand Gulf 1 | Salem 1,2 |
| Big Rock Point 1 | Haddam Neck | San Onofre 1,2,3 |
| Braidwood 1,2 | Harris 1 | Seabrook 1 |
| Browns Ferry 1,2,3 | Hatch 1,2 | Sequoyah 1,2 |
| Brunswick 1,2 | Hope Creek 1 | Shoreham |
| Byron 1,2 | Indian Point 2,3 | South Texas 1,2 |
| Callaway 1 | Kewaunee | St. Lucie 1,2 |
| Calvert Cliffs 1,2 | Limerick 1,2 | Summer 1 |
| Catawba 1,2 | Maine Yankee | Surry 1,2 |
| Clinton 1 | McGuire 1,2 | Susquehanna 1,2 |
| Comanche Peak 1,2 | Millstone 1,2,3 | TMI 1 |
| Cook 1,2 | Monticello | Trojan |
| Cooper Station | Nine Mile Point 1,2 | Turkey Point 3,4 |
| Crystal River 3 | North Anna 1,2 | Vermont Yankee 1 |
| Davis-Besse 1 | Oconee 1,2,3 | Vogtle 1,2 |
| Diablo Canyon 1,2 | Palisades | WNP 2 |
| Dresden 2,3 | Palo Verde 1,2,3 | Waterford 3 |
| Duane Arnold | Peach Bottom 2,3 | Wolf Creek 1 |
| Farley 1,2 | Perry 1 | Yankee-Rowe 1 |
| Fermi 2 | Pilgrim 1 | Zion 1,2 |
| FitzPatrick | Point Beach 1,2 | |
| Fort Calhoun 1 | Prairie Island 1,2 | |

5. Issuance of feeder reports has not been approved for the following eight (8) facilities: *as explained below*

- | | | |
|----------------|-----------------|---------------|
| LaSalle 1,2 | Quad Cities 1,2 | Watts Bar 1,2 |
| Oyster Creek 1 | River Bend 1 | |

LaSalle 1,2 (GE): The responses of 05-02-88 and 05-18-88 to the RAI and the response of 06-03-88 to Supplement 1 of the bulletin do not reflect the BWROG position expressed in NEDC-31322 Supplement 1 dated July 1988. A later response predating issuance of the GL on 06-20-89 has not been found. LaSalle is listed as a BWROG member on Page A-1 of NEDC-31322 dated September 1986.

Oyster Creek 1 (GE): A response to the RAI of 12-08-88 predating issuance of the GL on 06-28-89 has not been received. The response of 01-13-89 is a request for extension.

Quad Cities 1,2 (GE): The responses of 05-02-88 and 05-18-88 to the RAI and the response of 06-03-88 to Supplement 1 of the bulletin do not reflect the BWROG position expressed in NEDC-31322 Supplement 1 of July 1988. A later response predating issuance of the GL on 06-28-89 has not been found. Quad Cities is listed as a BWROG member on Page A-1 of NEDC-31322 dated September 1986.

has not been found.
River Bend 1 (GE): The response of 08-18-88 to the RAI and to Supplement 1 of the bulletin is not complete. A later response predating issuance of the GL on 06-28-89 ~~is needed~~. River Bend is listed as a BWROG member on Page A-1 of NEDC-31322 dated September 1986.

Watts Bar 1,2 (W): A response to the RAI of 02-02-88 predating issuance of the GL on 06-28-89 has not been found.

6. The following facilities which have been shut down indefinitely or permanently (SDI) or have had construction halted indefinitely (CHI) are not included in ~~Table B.1~~ for the review status *of Table B.1.*

Dresden 1	SDI	Perry 2	CHI
Humboldt Bay 3	SDI	Seabrook 2	CHI
Indian Point 1	SDI	TMI 2	SDI
LaCrosse	SDI	WNP 1,3	CHI

CONCLUSIONS

1. The extended scope of GL 89-10 *supersedes* ~~obviates~~ the need for further reporting on IE Bulletin 85-03 and Supplement 1.
2. The information gathered from IE Bulletin 85-03 formed *part of* the basis ~~of~~ *for issuance of* Generic Letter 89-10.
3. Satisfactory completion of Bulletin 85-03 Action Item e for the 17 facilities listed in Summary Item 3 (see Page 3) is ensured by the issuance of GL 89-10.

CRITERION FOR REVIEW OF BULLETIN ACTION ITEM e

Bulletin Action Item e is complete for facilities to which the following criterion applies:

An NRC/Region inspection report or letter to the facility indicates that the utility response to the bulletin and (in most cases) the response to an NRC request for additional information (RAI) comply with actions required by Action Item e.

Notes:

1. Refer to Page A-41 for a "Summary of Bulletin Actions per Item e", to pages A-4 through A-6 for the complete actions and to pages A-11 and A-12 for the clarified actions required for BWRs.
2. RAIs were not required for four (4) facilities, namely, Grand Gulf 1, Millstone 1, Wolf Creek 1 and Yankee-Rowe 1.
3. A second RAI was required for eight (8) facilities, namely, Callaway 1, Kewaunee, San Onofre 1, Seabrook 1, South Texas 1,2 and Susquehanna 1,2.
4. For a list of the nine (9) MOVs to be considered for inadvertent operations at BWR facilities, see Table B.4 on Page B-36.

SUMMARY OF BULLETIN ACTIONS PER ITEM e

- a. Review and document the design basis and the maximum differential pressure for opening and closing each MOV in high pressure coolant injection/core spray and emergency feedwater systems (or reactor core isolation cooling systems for BWRs).

For facilities without the above systems, review the emergency systems with the highest pressures. Refer to Table B.4 (see Page B-36) for the list of affected valves for BWR facilities.

- b. Prepare a program for selecting and establishing switch settings ^{which includes} ~~including~~ the results of Item a and considering factors such as friction, margin of safety, degradation and wear.

- c. Prepare a program for changing ^{the} settings of individual valves to those established in Item b (as appropriate), and for demonstrating operability by at least stroke testing each valve.

- d. Prepare a program for preparing or revising procedures to ensure that correct switch settings are determined and maintained throughout the life of the plant ^{which considers} ~~including~~ industry recommendations and ~~including~~ monitoring of valve performance. ^{includes}

- e. Submit a written report to the NRC ^{which includes} ~~including~~ the results of Item a and the program and schedule for completing items b through d.

Notes: 1. The purpose of the program ^{by} ~~per~~ Action ^{Items b, c, and d} ~~Item e~~ is to ensure proper selection, setting, and maintenance of switches for MOVs in certain high pressure emergency cooling systems.

2. Only ^{review} ~~preparation~~ of programs is included in this partial review of action items b, c and d, ^{the} ~~per Item e,~~ ~~as summarized above.~~

3. Review of the responses to Action Item f is not included in the scope of ^{was} this report; however, partial evaluation of this item ^{when necessary} ~~is performed as explained in the third sentence under Scope~~ (see Page 2).

4. For ^{the} complete ~~bulletin~~ actions, see pages A-4 through A-6; for revised actions required for BWRs ~~per by~~ Supplement 1, see pages A-11 and A-12.

REVISION OF REQUIRED DATES OF PROGRAM COMPLETION AND REPORTING

Action Item e (Reporting Results of Item a and Programs and Schedule for Items b, c and d)

Initially, the due date for reporting results of Action Item a, describing the program, and providing a schedule was May 15, 1986. For plants with an OL, action items b through d were to be completed by November 15, 1987. For plants with a CP, these action items were to be completed by the later of November 15, 1987 or the ~~scheduled~~ date for OL issuance.

~~Per~~ the letter of June 3, 1986 to J. M. Fulton (Chairman of the BWR Owners' Group) from J. M. Taylor (Director, IE), the due date for initial responses ~~was to be extended conditionally~~ from May 15, 1986 to October 1, 1986 upon the written request of individual utilities within the owners' group. Further, the end date of November 15, 1987 for completion of action items b through d ~~should~~ be extended only if requested and thoroughly justified in the response due by October 1, 1986.

Conditionally extended

BWR

Action Item f (Final Response)

Initially, the final response was due by January 15, 1988 for plants with OLs and by the later of January 15, 1988 or the ~~scheduled~~ date of OL issuance for plants with CPs.

~~Per~~ the letter identified above, ^{*extended*} the due date of January 15, 1988 for the final written reports ~~was to be extended~~ only if requested and thoroughly justified in the initial response due by October 1, 1986. Note that review of these final responses ~~is~~ not included in the scope of this report, except ~~for the condition stated in Note 3 above of the Summary of Bulletin Actions per Item e~~ *when partial review was necessary (see Page 2).*

was

Note: A revised date for submittal of written reports for BWR facilities is specified in Supplement 1 of the bulletin (see Page A-12)

BWR OWNERS' GROUP (BWROG)

1. September 2, 1986 (BWROG-8645)
Letter to J. M. Taylor (NRC/IE) from T. A. Pickens (BWROG), transmittal of BWROG Report NEDC-31322 dated September 1986.
2. October 10, 1986 *preliminary*
Letter to T. A. Pickens (BWROG) from E. L. Jordan (NRC/IE), ~~initial~~ request for additional information about BWROG Report NEDC-31322.
3. January 20, 1987 (BWROG-8707)
Letter to E. L. Jordan (NRC/IE) from T. A. Pickens (BWROG), response to Item 2 above.
4. January 30, 1987
Letter (with enclosed review comments), to T. A. Pickens (BWROG) from E. L. Jordan (NRC/IE), formal request for additional information about BWROG Report NEDC-31322.
5. March 13, 1987
Letter to T. A. Pickens (BWROG) from E. L. Jordan (NRC/IE), review of Item 3 above.
6. August 5, 1987 (BWROG-8742)
Letter to C. E. Rossi (NRC) from R. F. Janecek (BWROG), response to Item 4 above.
7. July ²⁰25, 1988
Letter to C.E. Rossi (NRC) from D.N. Grace (BWROG), transmittal of BWROG Report NEDC-31322 Supplement 1, July, 1988.