

Mr. Charles H. Cruse
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

October 2, 1997

SUBJECT: ISSUANCE OF AMENDMENTS FOR CALVERT CLIFFS NUCLEAR POWER PLANT
UNIT NO. 1 (TAC NO. M95181) AND UNIT NO. 2 (TAC NO. M95182)

Dear Mr. Cruse:

The Commission has issued the enclosed Amendment No. 222 to Facility Operating License No. DPR-53 and Amendment No. 198 to Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated March 28, 1996, as supplemented November 20, 1996, and July 31, 1997.

The amendments reduce the moderator temperature coefficient (MTC) limit shown on TS Figure 3.1.1-1. This proposed change is necessary to support changes in the safety analyses made to accommodate a larger number of plugged steam generator tubes for future operating cycles. You also provided information to clarify the relationship of MTC to the anticipated transient without scram event in their licensing basis.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

ORIGINAL SIGNED BY:

Alexander W. Dromerick, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-317
and 50-318

Enclosures: 1. Amendment No. 222 to DPR-53
2. Amendment No. 198 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

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OFFICE	PM:PDI-1	E	LA:PDI-1	D:PDI-1	OGC	PD:PDI-1
NAME	ADromerick/rs1	SLittle	ADromerick(A)	ADromerick	SBaiwa	ASB
DATE	09/10/97	09/9/97	09/10/97	09/22/97	10/2/97	

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DATED: October 2, 1997

AMENDMENT NO. 222 TO FACILITY OPERATING LICENSE NO. DPR-53-CALVERT CLIFFS
UNIT 1

AMENDMENT NO. 198 TO FACILITY OPERATING LICENSE NO. DPR-69-CALVERT CLIFFS
UNIT 2

Docket File

PUBLIC

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/



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 2, 1997

Mr. Charles H. Cruse
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
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A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

A handwritten signature in cursive script, reading "Alexander W. Dromerick", is positioned above the typed name.

Alexander W. Dromerick, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-317
and 50-318

Enclosures: 1. Amendment No.222 to DPR-53
2. Amendment No.198 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

Mr. Charles H. Cruse
Baltimore Gas & Electric Company

Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 and 2

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 222
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated March 28, 1996, as supplemented November 20, 1996, and July 31, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2. of Facility Operating License No. DPR-53 is hereby amended to read as follows:

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2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 222, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



S. Singh Bajwa, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 2, 1997



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 198
License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated March 28, 1996, as supplemented November 20, 1996, and July 31, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2. of Facility Operating License No. DPR-69 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.198 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



S. Singh Bajwa, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 2, 1997

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 222 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 198 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Pages

Figure 3.1.1-1-Page 3/4 1-7

Insert Pages

Figure 3.1.1-1-Page 3/4 1-7

*Pages that did not change, but are overleaf.

3/4.1 REACTIVITY CONTROL SYSTEMS

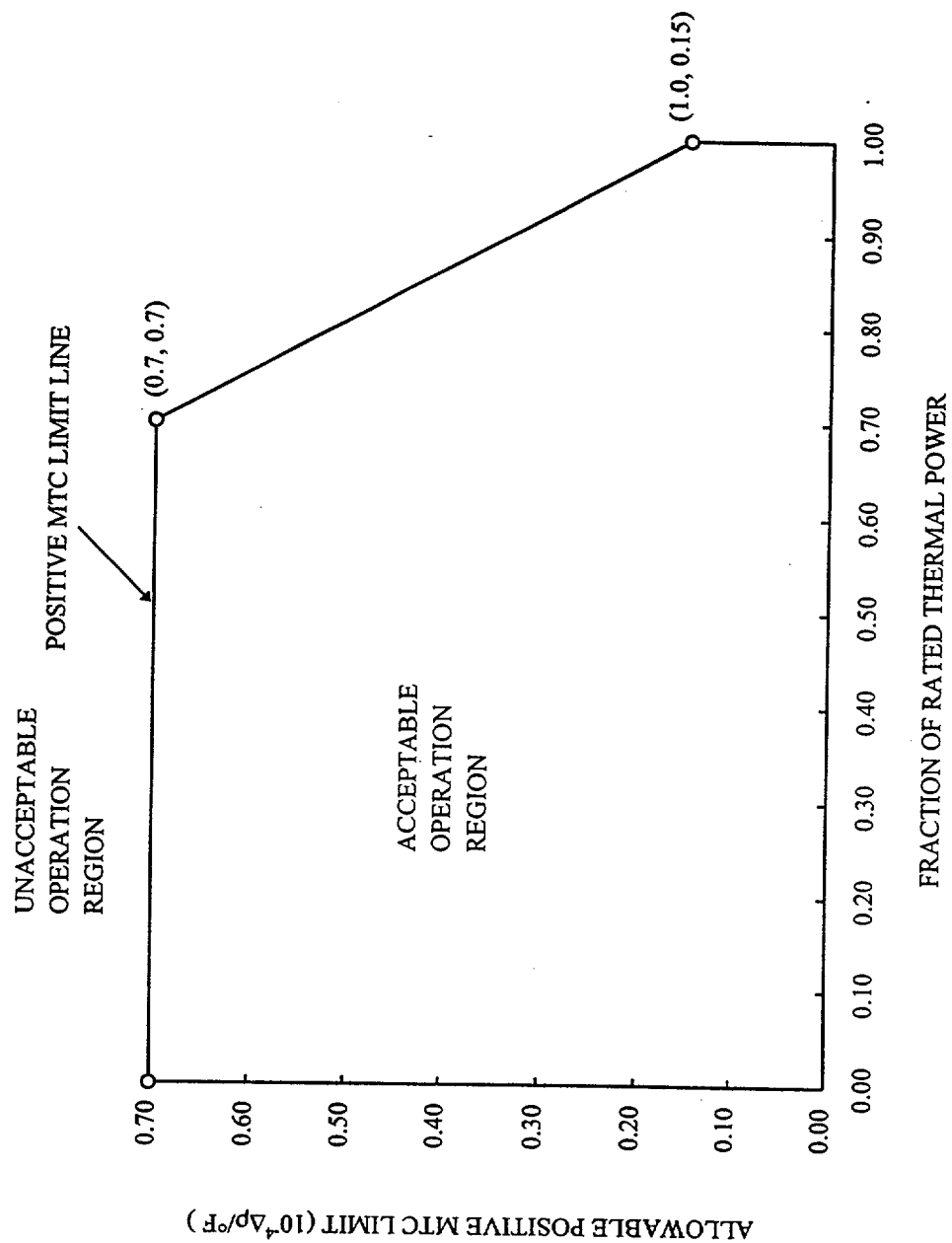


FIGURE 3.1.1-1
FRACTION OF RATED THERMAL POWER
VS. ALLOWABLE POSITIVE MTC LIMIT ($10^{-4} \Delta \rho / F^{\circ}$)

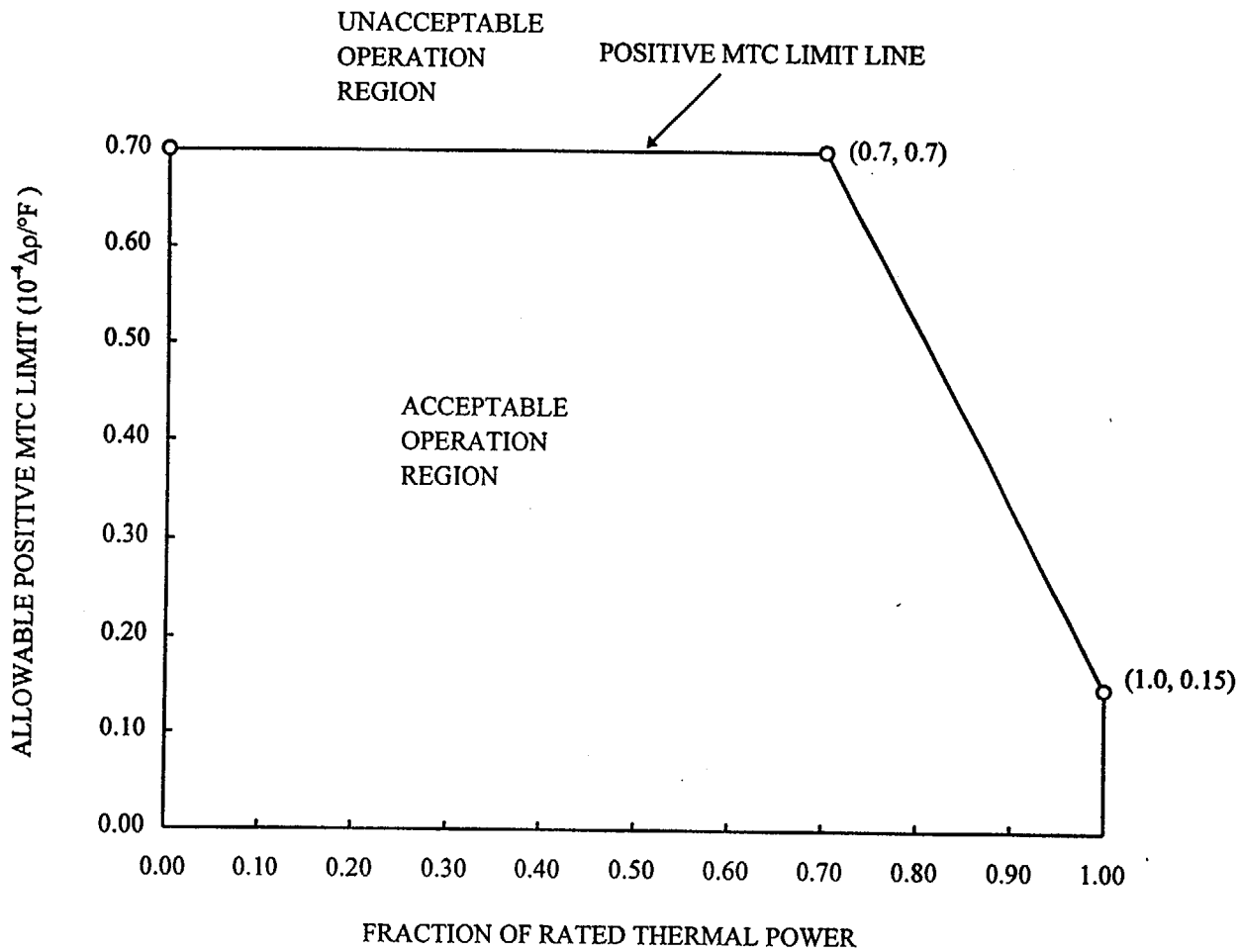


FIGURE 3.1.1-1

FRACTION OF RATED THERMAL POWER
VS. ALLOWABLE POSITIVE MTC LIMIT ($10^{-4} \Delta \rho / F^\circ$)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 222 TO FACILITY OPERATING LICENSE NO. DPR-53
AND AMENDMENT NO. 198 TO FACILITY OPERATING LICENSE NO. DPR-69
BALTIMORE GAS AND ELECTRIC COMPANY
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By letter dated March 28, 1996, as supplemented November 20, 1996, and July 31, 1997, Baltimore Gas and Electric Company (BGE) has requested Technical Specification (TS) changes to the moderator temperature coefficient (MTC) limit as shown on TS Figure 3.1.1-1 for Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 (Calvert Cliffs). This change is necessary to support changes in the safety analyses made to accommodate a larger number of plugged steam generator (SG) tubes anticipated for future operating cycles. To ensure that the safety analyses for Calvert Cliffs Units 1 & 2 remain bounding, BGE assumed that the number of tubes plugged are greater than the number expected to be plugged during the operating cycle. BGE also provided information to clarify the relationship of MTC to the Anticipated Transient Without Scram (ATWS) event in their licensing basis.

The licensee provided an analysis to justify the reduction of the MTC limit, and the staff's review of this analysis follows. The November 20, 1996, and July 31, 1997, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

The possibility of increasing the number of plugged SG tubes at Calvert Cliffs has necessitated the change to the TS Figure 3.1.1-1. The safety analysis for the Calvert Cliffs current cycle assumes 500 tubes per SG are plugged and the maximum beginning-of-cycle MTC is assumed to follow Figure 3.1.1-1.

Increasing the number of tubes plugged will reduce the calculated heat transfer heat area from the reactor coolant system (RCS) to the secondary side of the SG. This reduction in heat transfer will result in an increased RCS temperature and pressure during plant heat up events such as loss of feedwater, feed line break, etc. In order to mitigate the RCS pressure and temperature increase for these events with increased number of plugged SG tubes, the licensee found it necessary to request a TS change to Figure 3.1.1-1, reflecting a more restrictive (less positive) limit on the maximum

positive MTC when analyzing the heat up events. From a safety point of view, a less positive MTC will result in a reduced core reactivity during plant heatup events, and the reduced core reactivity will mitigate the increased RCS temperature and pressure during these events. Also, the proposed change will make the limit on the maximum positive MTC less positive. From an operational standpoint, a more restrictive MTC limit will help mitigate the effects of plant transients on control of plant parameters (e.g., reactor power, pressurizer pressure, pressurizer level, etc.)

2.1 Technical Specification (TS) Changes

A less positive MTC will ensure that the assumptions used in the accident analyses affected by the change remain valid for each fuel cycle. Those accidents affected by the change are Loss of Load, Loss of Feedwater, Feed Line Break, and Control Element Assemble Withdrawal events. These analyses were reanalyzed using approved methodologies to determine the effect of the change in the number of plugged SG tubes. The results of the reanalyzed events remain within the previously approved limits. Also the decrease (more negative) in the MTC limit more than offsets the effects of the increased number of plugged SG tubes. The proposed change to the allowable MTC limits as indicated on TS Figure 3.1.1-1 will be more restrictive to reflect the assumptions used in the events listed above.

2.2 Clarification of the Licensing Basis

The licensee provided information to clarify the relationship of MTC to ATWS event at the Calvert Cliffs generating plants.

Technical Specification 3.1.1.4 allows full power operation with a positive MTC; however, the licensee had an outstanding commitment related to ATWS compliance to design reactor cores with negative full power MTC at equilibrium xenon conditions. The licensee committed to the NRC (References 1 and 2) to design cores with negative full power MTC to ensure that if there were an ATWS event, the acceptable margin of safety would not be compromised. This commitment (Reference 3) was made in lieu of an evaluation conducted by the licensee of a positive MTC on the safety margin for an ATWS event. However, an alternative to conducting an evaluation of the effects of an ATWS event on the reactor core, is to install the mitigating features required by the ATWS rule (10 CFR 50.62). At the time, References 1 and 2 were issued, the licensee had not completed the installation of the ATWS mitigation hardware. Therefore, since that time, BGE has committed to designing cores with negative full power MTC, and indeed, the predicted and measured full power MTC at equilibrium xenon conditions has been negative on both units since 1987.

Since this commitment was made, BGE has implemented the long-term ATWS resolution by installing the Diverse Scram System (DSS) on Units 1 and 2. This system has been reviewed and accepted by the NRC (Reference 4) as meeting the requirements of 10 CFR 50.62). Since BGE installed the DSS as the long-term resolution to ATWS, it contends that it is no longer necessary for BGE to design cores such that the full power MTC is negative. Consequently, BGE considers this proposed TS limit on the maximum positive MTC to be the

sole MTC limitation for core design and operation. The licensee pointed out that although this consideration has little effect on how BGE will design their future cores, the proposed TS limit on the maximum positive MTC as the sole requirement for core design and operation, with respect to a limit on positive MTC, helps to clarify Calvert Cliffs' licensing basis. The staff finds the statement of the licensing basis to be acceptable.

2.3 Staff Conclusion

The staff has reviewed the licensee's proposed TS changes for Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. Based on the staff's evaluation of the submittal of March 28, 1996, and the responses to request for additional information, dated November 20, 1996, and July 31, 1997, the staff approves the TS change to Figure 3.1.1-1 for Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. The proposed change makes the limit on the maximum positive MTC more restrictive. From an operational standpoint, a more restrictive limit on MTC will help mitigate the effect of plant transients of control of plant parameters (e.g., reactor power, pressurizer pressure, pressurizer level, etc.) Therefore, the previously analyzed accident will be significantly increased and the staff finds this change acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Maryland State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (61 FR 20843). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

6.0 REFERENCES

1. Letter from Mr. S. A. McNeil (NRC) to Mr. J. A. Tierman (BGE), dated May 4, 1987, Issuance of Amendment 108 for Calvert Cliffs Unit 2.
2. Letter from Mr. S. A. McNeil (NRC) to Mr. J. A. Tierman (BGE), dated May 6, 1988, Unit 1 Cycle 10 Technical Specification Amendment (Tac No. 67143).
3. Letter from Mr. S. A. McNeil (NRC) to Mr. J. A. Tierman (BGE), dated March 11, 1988, Request for Additional Information Unit 1 Cycle 10 Reload (Tac No. 67143).
4. Letter from Mr. S. A. McNeil (NRC) to Mr. J. A. Tierman (BGE), dated November 2, 1988, Safety Evaluation Concerning Conformance to the ATWS Rule (Tac Nos. 59079 and 59080).

Principal Contributor: A. Attard

Date: October 2, 1997