NMC
Committed to Nuclear Excellence

Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324-9785

*Operated by Nuclear Management Company LLC*

October 16, 2000
NG-00-1717

Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station 0-P1-17
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Technical Specification Change Request (TSCR-038):
"Revised Pressure Temperature Curves"
File: A-117

In accordance with the Code of Federal Regulations, Title 10, Sections 50.59 and 50.90, Nuclear Management Company, LLC (NMC) hereby requests revision to the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC). The proposed change revises the vessel pressure and temperature (P/T) limit curves.

In addition, NMC is requesting an exemption from the requirements of 10 CFR 50, Appendix G, to allow the use of ASME Code Case N-640 as the basis for these revised curves. The proposed P/T curves were developed in accordance with the 1995 Edition with 1996 Addenda, ASME Section XI, Appendix G; 10 CFR 50, Appendix G; and ASME Code Case N-640. The use of this Code Case as the basis for the proposed P/T curves constitutes an alternative to the requirements of 10 CFR 50, Appendix G. 10 CFR 50.60(b) provides that the NRC may grant alternatives to the requirements in Appendix G by using the procedures for exemption specified in 10 CFR 50.12. Exemptions to use Code Case N-640 have been granted for several plants, including Quad Cities, Units 1 and 2 (February 4, 2000); Dresden, Units 2 and 3 (August 25, 2000); Hatch Units 1 and 2 (August 29, 2000); and Limerick, Unit 1 (September 7, 2000).

The attachments provide the evaluation of No Significant Hazards Consideration, the revised Technical Specifications page, the Safety Assessment and Environmental Consideration. Also included is the request for exemption from the requirements of 10 CFR 50, Appendix G. General Electric Report GE-NE-A22-00100-08-01, "Pressure-Temperature Curves for Duane Arnold Energy Center," Revision 0, dated September 2000 is also provided. This report contains information which GE considers to be proprietary. GE requests that the proprietary information in the report be withheld from public disclosure, in accordance with 10 CFR 9.17(a)(4), 2.790(a)(4) and 2.790(d)(1). An affidavit supporting this request is provided in the preface to the report.

AP01

This application has been reviewed by the DAEC Operations Committee and the Safety Committee. A copy of this submittal, along with the 10CFR50.92 evaluation of "No Significant Hazards Consideration," is being forwarded to our appointed state official pursuant to 10 CFR Section 50.91.

To support refueling outage (RFO) 17, currently scheduled to begin in April of 2001, NMC requests the NRC review and approve the requests by March 31, 2001.

This letter is true and accurate to the best of my knowledge and belief.

Nuclear Management Company, LLC

By Gary Van Middlesworth
Gary Van Middlesworth
DAEC Site General Manager

State of Iowa
(County) of Linn

Signed and sworn to before me on this 16th day of October, 2000,
by Gary Van Middlesworth.

Nancy S. Franck
Notary Public in and for the State of Iowa

NANCY S. FRANCK

9-28-01
Commission Expires

Attachments:
1. Evaluation of Change Pursuant to 10 CFR Section 50.92
2. Proposed Change TSCR-038 to the Duane Arnold Energy Center Technical Specifications
3. Safety Assessment
4. Environmental Consideration
5. Request for Exemption
6. General Electric Report GE-NE-A22-00100-08-01, Revision 0, dated September 2000

cc: C. Rushworth (w/a)
M. Wadley (w/o)
B. Mozafari (NRC-NRR) (w/a)
J. Dyer (Region III) (w/a)
D. McGhee (State of Iowa) (w/a)
NRC Resident Office (w/a)
Docu (w/a)

# EVALUATION OF CHANGE PURSUANT TO 10 CFR SECTION 50.92

## Background:

This proposed amendment request incorporates new pressure and temperature (P/T) curves into the Duane Arnold Energy Center (DAEC) Technical Specifications (TS). The proposed amendment updates the reactor pressure vessel (RPV) P/T limit curves for inservice leakage and hydrostatic testing, non-nuclear heatup and cooldown, and criticality. The proposed P/T curves were developed in accordance with the 1995 Edition with 1996 Addenda, ASME Section XI, Appendix G; 10 CFR 50, Appendix G; and ASME Code Case N-640.

Nuclear Management Company, LLC, Docket No. 50-331,
Duane Arnold Energy Center, Linn County, Iowa
Date of Amendment Request: October 16, 2000

## Description of Amendment Request:

The proposed amendment updates Figure 3.4.9-1, "Pressure Versus Minimum Temperature Valid to Thirty-Two Full Power Years, per Appendix G of 10 CFR 50."

## Basis for proposed No Significant Hazards Consideration:

The Commission has provided standards (10 CFR Section 50.92(c)) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

After reviewing this proposed amendment, NMC has concluded:

1) The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated. The P/T limits are not derived from Design Basis Accident (DBA) analyses. They are prescribed by the ASME Code and 10 CFR 50 Appendix G and H as restrictions on operation to avoid encountering pressure, temperature, and temperature rate of change conditions that might cause undetected flaws to propagate and cause non-ductile failure of the reactor coolant pressure boundary.

The changes to the calculational methodology for the P/T limits based upon Code Case N-640 continue to provide adequate margin in the prevention of a non-ductile type fracture of the reactor pressure vessel (RPV). The Code Case was developed based upon the knowledge gained through years of industry experience. P/T curves developed using the allowances of Code Case N-640 indeed yield more operating margin. However, the experience gained in the areas of fracture toughness of materials and pre-existing undetected defects shows that some of the existing assumptions used for the calculation of P/T limits are unnecessarily conservative and

unrealistic. Therefore, providing the allowances of the Code Case in developing the P/T limit curves will continue to provide adequate protection against non-ductile type fractures of the RPV.

The proposed change will not affect any other system or piece of equipment designed for the prevention or mitigation of previously analyzed events. The change does not adversely affect the integrity of the reactor coolant system such that its function in control of radiological consequences is affected.

2) The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated. The amendment will revise the P/T curves which are established to the requirements of 10 CFR 50, Appendix G to assure that non-ductile fracture of the reactor vessel is prevented.

The proposed change provides more operating margin in the P/T limit curves for inservice leakage and hydrostatic pressure testing, non-nuclear heatup and cooldown, and criticality, with benefits being primarily realized during the pressure tests. The proposed change does not result in any new or unanalyzed operation of any system or piece of equipment important to safety, and as a result, the possibility of a new type event is not created.

3) The proposed amendment will not involve a significant reduction in a margin of safety. 10 CFR 50, Appendix G specifies fracture toughness requirements to provide adequate margins of safety during operation over the service lifetime. The values of adjusted reference temperature and upper shelf energy are expected to remain within the limits of Regulatory Guide 1.99, Revision 2 and Appendix G of 10 CFR 50 (less than 200°F and greater than 50 ft-lbs respectively) for at least 32 effective full power years (EFPY) of operation.

The proposed change reflects an update of P/T curves based on the latest ASME guidance. The revised P/T curves provide more operating margin and thus, more operational flexibility than the current P/T curves. With the increased operational margin, a reduction in the safety margin results with respect to the existing curves. However, industry experience since the inception of the P/T limits in 1974 confirms that some of the existing methodologies used to develop P/T curves are unrealistic and unnecessarily conservative. Accordingly, ASME Code Case N-640 takes into account the acquired knowledge and establishes more realistic methodologies for the development of P/T curves. Therefore, operational flexibility is gained and an acceptable margin of safety to RPV non-ductile type fracture is maintained.

Based upon the above, NMC has determined that the proposed amendment will not involve a significant hazards consideration.

Local Public Document Room Location: Cedar Rapids Public Library, 500 First Street SE, Cedar Rapids, Iowa 52401

Attorney for Licensee: Al Gutterman; Morgan, Lewis & Bockius, 1800 M Street NW, Washington, D.C. 20036-5869

Proposed Change TSCR-038 to the Duane Arnold Energy Center
Technical Specifications

The holders of license DPR-49 for the Duane Arnold Energy Center propose to amend the Technical Specifications by deleting the referenced page and replacing it with the enclosed new page.

| Page | Description of Changes |
|---|---|
| 3.4-24 | Figure 3.4.9-1 "Pressure Versus Minimum Temperature Valid to Thirty-two Full Power Years, per Appendix G of 10CFR50" is revised to incorporate new curves. |
| B 3.4-58 | The Bases are revised to reflect the TS change. |

Replace with new page 3.4-24.

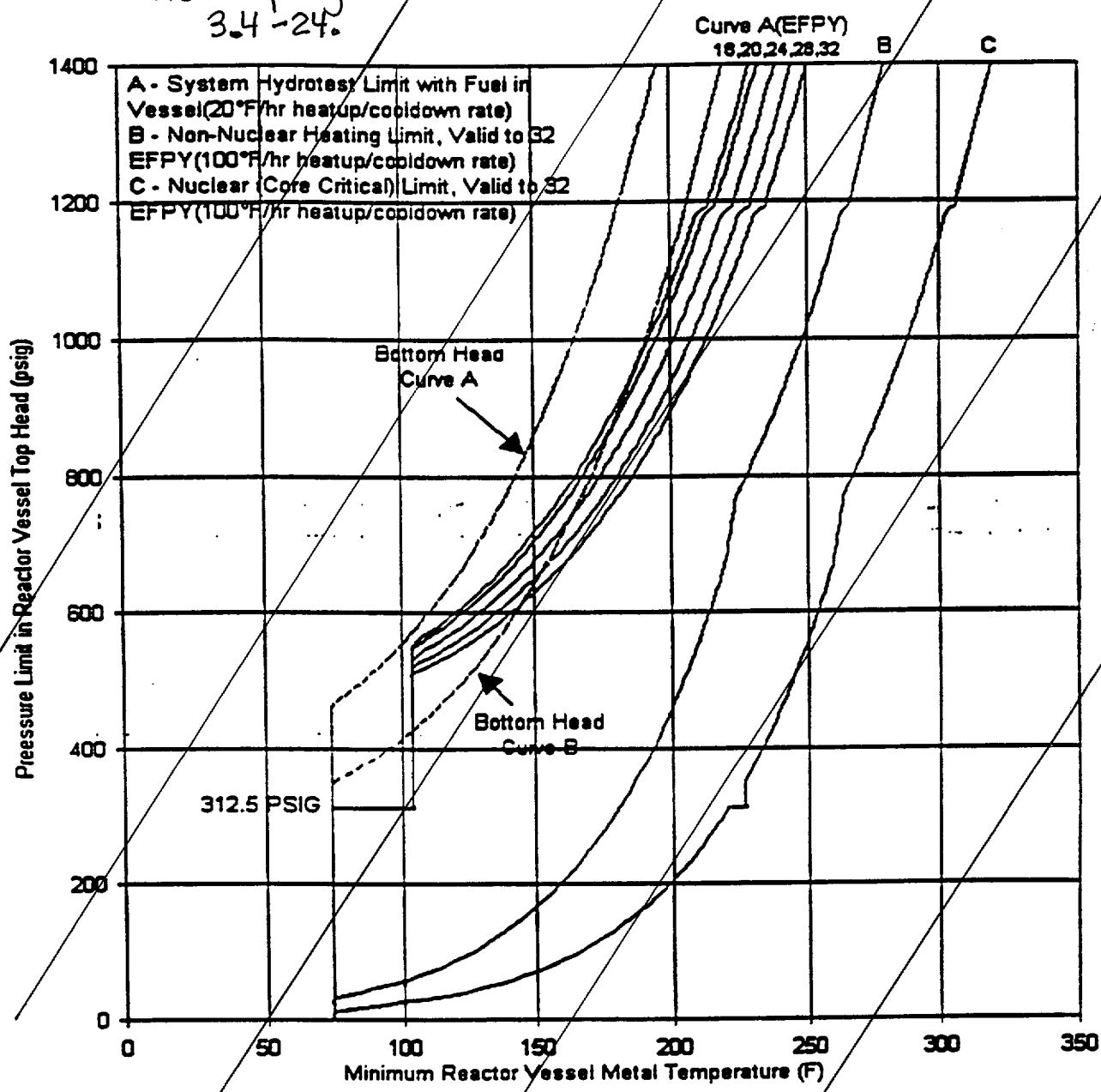


Figure 3.4.9-1 (page 1 of 1)

Pressure Versus Minimum Temperature Valid to Thirty-two Full Power Years, per Appendix G of 10CFR50

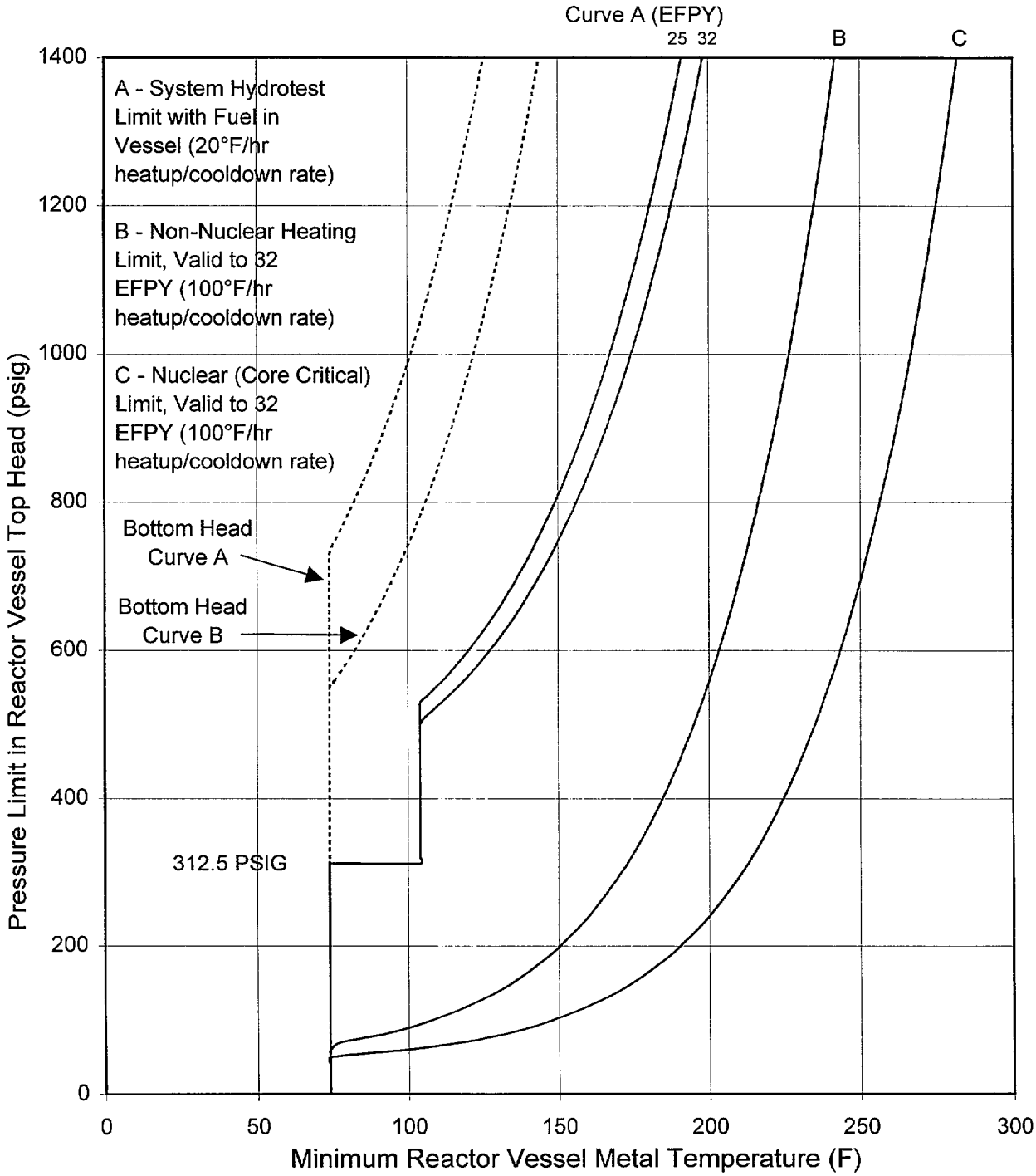


Figure 3.4.9-1 (page 1 of 1)

Pressure Versus Minimum Temperature Valid to Thirty-two Full Power Years, per Appendix G of 10CFR50



TSCR-038

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix G, December 1995

2. ASME, Boiler and Pressure Vessel Code, Section III, Appendix G.

3. ASTM E 185-82, July 1982.

4. 10 CFR 50, Appendix H.

5. Regulatory Guide 1.99, Revision 2, May 1988.

6. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix E.

7. ~~C. Shiraki (NRC) to L. Liu (IELP), TS Amendment No. 172 to Facility Operating License No. DPR-49, dated August 12, 1991~~. Amendment reference to be provided by NRC.

8. UFSAR, Section 15.4.5.

# SAFETY ASSESSMENT

## Background

By letter dated October 16, 2000, Nuclear Management Company, LLC (NMC) submitted a request for revision of the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC). The proposed amendment would revise the reactor pressure vessel pressure and temperature (P/T) limit curves.

## Basis for Change

NMC proposed to revise the DAEC TS requirements for reactor pressure vessel (RPV) P/T limits. Changes are proposed to Figure 3.4.9-1 which shows the P/T limit curves for inservice leakage and hydrostatic testing, non-nuclear heatup and cooldown, and criticality. No changes to the Limiting Conditions for Operation or any Surveillance Requirements of Technical Specification 3.4.9 are proposed.

The proposed P/T curves were developed in accordance with the 1995 Edition with 1996 Addenda, ASME Section XI, Appendix G; 10 CFR 50, Appendix G; and ASME Code Case N-640. Code Case N-640 permits the use of an alternate reference fracture toughness for reactor vessel materials in determining the P/T limits. Specifically, Code Case N-640 allows use of the $K_{ic}$ fracture toughness curve shown on ASME Code, Section XI, Appendix A, Figure A-4200-1, in lieu of the $K_{ia}$ fracture toughness curve of ASME Code, Section XI, Appendix G, Figure G-2210-1, as the lower bound for fracture toughness in the development of the P/T limit curves. The use of this alternate provides greater allowable fracture toughness than the corresponding ASME Section XI, Appendix G, fracture toughness curve.

Use of Code Case N-640 is justified based upon the knowledge gained in the industry since the fracture toughness curve was created in 1974. Since that time, additional knowledge of the fracture toughness of materials and their response to applied loads has been acquired. This additional knowledge demonstrates the lower bound fracture toughness provided by the $K_{ia}$ curve is well beyond the margin of safety required to protect against potential RPV failure. Use of the $K_{ic}$ fracture toughness curve in developing P/T limits provides additional operating margin for the P/T curves, thus realizing significant benefits primarily for the pressure test. Use of the revised curves would result in a reduction in the challenges to operators in maintaining a high temperature in a limited operating window and would eliminate steam vapor hazards by allowing inspections in primary containment to be conducted at lower coolant temperature.

The changes to the calculational methodology for the P/T limits based upon Code Case N-640 continue to provide adequate margin in the prevention of a non-ductile type fracture of the reactor pressure vessel (RPV). However, the experience gained in the areas of fracture toughness of materials and pre-existing undetected defects show that some of the existing assumptions used for the calculation of P/T limits are unnecessarily conservative and unrealistic.

The values of adjusted reference temperature and upper shelf energy are expected to remain within the limits of Regulatory Guide 1.99, Revision 2 and Appendix G of 10 CFR 50 (less than 200°F and greater than 50 ft-lbs respectively) for at least 32 EFPY of operation.

Therefore, based on the above, NMC has concluded that the proposed revision to the DAEC TS is acceptable.

## ENVIRONMENTAL CONSIDERATION

10 CFR Section 51.22(c)(9) identifies certain licensing and regulatory actions which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; and (3) result in a significant increase in individual or cumulative occupational radiation exposure. Nuclear Management Company, LLC has reviewed this request and determined that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR Section 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment. The basis for this determination follows:

### Basis

The change meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9) for the following reasons:

1. As demonstrated in Attachment 1 to this letter, the proposed amendment does not involve a significant hazards consideration.

2. The proposed change involves the reactor vessel pressure and temperature (P/T) limits. These limits are prescribed by the ASME Code and 10 CFR 50 Appendix G and H as restrictions on normal operation to avoid encountering pressure, temperature, and temperature rate of change conditions that might cause undetected flaws to propagate and cause non-ductile failure of the reactor coolant pressure boundary.

   The proposed change does not involve modifications to the radioactive waste processing systems or to radioactive waste effluent monitors. Accordingly, the changes do not require the radioactive waste processing systems to perform any different function than they are designed to perform nor do they change the operation or testing of any such system.

   Therefore, this change will not result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

3. The proposed change will not appreciably change the way the plant or its systems are operated. There will be no significant increase in either individual or cumulative occupational radiation exposure. Inspections of primary containment during pressure tests will continue to be done in accordance with as low as reasonably achievable (ALARA) principles. The change will result in lower temperatures in the primary containment during these inspections, but will not result in additional time for the inspections and will therefore not increase exposure.

   Therefore, this change will not result in a significant increase in individual or cumulative occupational radiation exposure.

# REQUEST FOR EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50, SECTION 50.60(a) AND APPENDIX G

In accordance with 10 CFR 50.12, the Nuclear Management Company, LLC (NMC) requests approval of an exemption request from specific requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Section 50.60 "Acceptance criteria for fracture prevention measures for lightwater nuclear power reactors for normal operation" and Appendix G. The requested exemption will permit the use of ASME Section XI Code Case N-640, "Alternative Reference Fracture Toughness for Development of P-T Limit Curves for Section XI, Division 1," in lieu of 10 CFR 50, Appendix G, paragraph IV.A.2.b.

## Justification for the Use of Code Case N-640

10 CFR 50.12 states that the Commission may grant exemptions from the requirements of 10 CFR Part 50, when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present.

The requested exemption to allow use of ASME Code Case N-640 in conjunction with ASME Code, Section XI, Appendix G, to determine the pressure and temperature (P/T) limits for the reactor pressure vessel meets the criteria of 10 CFR 50.12 as discussed below.

*The requested exemption is authorized by law:*

No law exists which precludes the activities covered by this exemption request. 10 CFR 50.60(b) allows the use of alternatives to 10 CFR 50, Appendices G and H when an exemption is granted by the Commission under 10 CFR 50.12.

*The requested exemption does not present an undue risk to the public health and safety:*

New pressure-temperature (P/T) limits were developed for the Duane Arnold Energy Center (DAEC) using the methodologies in Code Case N-640, in lieu of 10 CFR Part 50, Appendix G, paragraph IV.A.2.b. This exemption is needed to allow the use of these new P/T curves in the DAEC Technical Specifications (TS).

Code Case N-640 permits the use of an alternate reference fracture toughness ($K_{ic}$ fracture toughness curve instead of $K_{ia}$ fracture toughness curve) for reactor vessel materials in determining the P/T limits. The $K_{ic}$ fracture toughness curve shown in ASME Section XI, Appendix A, Figure A-4200-1 (the $K_{ic}$ fracture toughness curve) provides greater allowable fracture toughness than the corresponding $K_{ia}$ fracture toughness curve of ASME Section XI, Appendix G, Figure G-2210-1 (the $K_{ia}$ fracture toughness curve). The other margins involved with the ASME XI, Appendix G process of determining P/T limit curves remain unchanged.

Use of the $K_{ic}$ curve in determining the lower bound fracture toughness in the development of the P/T operating limits curve is more technically correct than the $K_{ia}$ curve. The $K_{ic}$ curve models the slow heatup and cooldown process of a reactor vessel. The $K_{ic}$ curve appropriately implements the use of static initiation fracture toughness behavior to evaluate the controlled heatup and cooldown process of a reactor vessel.

Use of this approach is justified by the initial conservatism of the $K_{ia}$ curve when the curve was codified in 1974. This initial conservatism was necessary due to limited knowledge of reactor pressure vessel (RPV) material fracture toughness. Since 1974, additional knowledge about the fracture toughness of vessel materials and their fracture response to applied loads has been gained. The additional knowledge demonstrates the lower bound fracture toughness provided by the $K_{ia}$ curve is well beyond the margin of safety required to protect against potential RPV failure. The lower bound $K_{ic}$ fracture toughness provides an adequate margin of safety to protect against potential RPV failure and does not present an undue risk to public health and safety.

P/T curves based on the $K_{ic}$ fracture toughness limits will enhance overall plant safety by opening the pressure-temperature operating window. Since the reactor coolant system (RCS) P/T operating window is defined by the P/T operating and test limit curves developed in accordance with the ASME Section XI, Appendix G procedure, continued operation of the DAEC with these P/T curves without the relief provided by ASME Code Case N-640 would unnecessarily require the RPV to maintain a temperature exceeding 212 degrees Fahrenheit in a limited operating window during the pressure test. Consequently, steam vapor hazards would continue to be one of the safety concerns for personnel conducting inspections in primary containment.

Use of the revised curves would result in a reduction in the challenges to operators in maintaining a high temperature in a limited operating window and would eliminate steam vapor hazards by allowing inspections in primary containment to be conducted at lower coolant temperature, while continuing to provide an adequate margin of safety.

*The requested exemption will not endanger the common defense and security:*

The common defense and security are not endangered by this exemption request.

*Special circumstances are present which necessitate the request for an exemption to the regulations of 10 CFR 50.60:*

In accordance with 10 CFR 50. 12(a)(2), the NRC will consider granting an exemption to the regulations if special circumstances are present. This requested exemption meets the special circumstances of the following paragraphs of 10 CFR 50.12:

(a)(2)(ii) - demonstrates the underlying purpose of the regulation will continue to be achieved,

(a)(2)(iii) - will result in undue hardship or other cost that are significant if the regulation is enforced, and

(a)(2)(v) - will provide only temporary relief from the applicable regulation and the licensee has made good faith efforts to comply with the regulations.

10CFR50.12(a)(2)(ii): ASME XI, Appendix G, provides procedures for determining allowable loading on the RPV and is approved for that purpose by 10 CFR 50, Appendix G. Application of these procedures in the determination of P/T operating and test curves satisfies the underlying requirement that:

1. The reactor coolant pressure boundary be operated in a regime having sufficient margin to ensure, when stressed, the vessel boundary behaves in a ductile manner and the probability of a rapidly propagating fracture is minimized; And

2. P/T operating and test limit curves provide adequate margin in consideration of uncertainties in determining the effects of irradiation on material properties.

The ASME XI, Appendix G, procedure was conservatively developed based upon the level of knowledge existing in 1974 concerning RPV materials and the estimated effects of operation. Since 1974, the level of knowledge concerning these topics has greatly expanded. This increased knowledge permits relaxation of the ASME XI, Appendix G, requirements via application of ASME Code Case N-640, while maintaining the underlying purpose of the ASME Code and NRC regulations to ensure an acceptable margin of safety.

10 CFR 50. 12(a)(2)(iii): The RCS pressure-temperature operating window is defined by the P/T operating and test limit curves developed in accordance with the ASME XI, Appendix G procedure. Continued operation of the DAEC with these P/T curves without the relief provided by ASME Code Case N-640 would unnecessarily restrict the P/T operating window. This restriction requires the Operations staff to maintain a high temperature during pressure tests and also subjects inspection personnel to increased safety hazards while conducting inspections of systems with the potential for steam leaks in a primary containment at elevated temperatures.

This constitutes an unnecessary burden that can be alleviated by the application of ASME Code Case N-640 in the development of the proposed P/T curves. Implementation of the proposed P/T curves, as allowed by ASME Code Case N-640, does not significantly reduce the margin of safety.

10CFR50.12(a)(2)(v): The requested exemption provides only temporary relief from the applicable regulation and the DAEC has made a good faith effort to comply with the regulation. NMC requests the exemption be granted until such time that the NRC generically approves ASME Code Case N-640 for use by the nuclear industry.

Code Case N-640 Conclusion for Exemption Acceptability

Compliance with the specified requirement of 10 CFR 50.60(a) will result in hardship and unusual difficulty without a compensating increase in the level of quality and safety. ASME Code Case N-640 allows a reduction in the lower bound fracture toughness used by ASME XI, Appendix G, in the determination of reactor coolant P/T limits. This proposed alternative is acceptable, because the Code Case maintains the relative margin of safety commensurate with the margin of safety that existed at the time ASME XI, Appendix G, was approved in 1974. Therefore, application of ASME Code Case N-640 for the DAEC ensures an acceptable margin of safety and does not present an undue risk to the public health and safety.

TSCR-038

ATTACHMENT 6
to NG-00-1717

GE-NE-A22-00100-08-01
Revision 0
September 2000

# GE Nuclear Energy

Engineering and Technology
General Electric Company
175 Curtner Avenue,
San Jose, CA 95125

GE-NE-A22-00100-08-01
Revision 0
Class III
September 2000

*GE PROPRIETARY INFORMATION*

# Pressure-Temperature Curves

# For

# Duane Arnold Energy Center

Prepared by: B D Frew

B. D. Frew, Senior Engineer
Structural Assessment and Mitigation

Prepared by: Asgar Faal Amiri

A.Faal-Amiri, Senior Engineer
Structural Assessment and Mitigation

Approved by: B J Branlund

B. J. Branlund, Principal Engineer
Structural Assessment and Mitigation

# General Electric Company

# AFFIDAVIT

**I, George B. Stramback,** being duly sworn, depose and state as follows:

(1) I am Project Manager, Regulatory Services, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

(2) The information sought to be withheld is contained in the GE proprietary report GE-NE-A22-00100-08-01, *Pressure-Temperature Curves for Duane Arnold Energy Center,* Revision 0, Class III (GE Proprietary Information), dated September 2000. The proprietary information is delineated by bars marked in the margin adjacent to the specific material.

(3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), 2.790(a)(4), and 2.790(d)(1) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information", and some portions also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;

d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;

e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in both paragraphs (4)a. and (4)b., above.

(5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified in paragraph (2), above, is classified as proprietary because it contains detailed methods and processes, which GE has developed and applied to pressure-temperature curves for the BWR over a number of years.

The development of the BWR pressure-temperature curves was achieved at a significant cost, on the order of ¾ million dollars, to GE. The development of the

evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GE asset.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GE's comprehensive BWR safety and technology base, and its commercial value extends development of the expertise to determine and apply the appropriate evaluation process. In beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

STATE OF CALIFORNIA )
) ss:
COUNTY OF SANTA CLARA )

George B. Stramback, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 28th day of September 2000.

George B. Stramback
General Electric Company

Subscribed and sworn before me this 28th day of September 2000.

VICKY D. SCHROER
Commission # 1224251
Notary Public - California
Santa Clara County
My Comm. Expires Jun 12, 2003

Vicky D. Schroer
Notary Public, State of California