PHILADELPHIA ELECTRIC COMPANY 2301 MARKET STREET P.O. BOX 8699 PHILADELPHIA, PA. 19101 JUN 06 1984 (215) 841-4502 JOHN S. KEMPER VICE-PRESIDENT ENGINEERING AND RESEARCH Mr. A. Schwencer, Chief Docket Nos.: 50-352 Licensing Branch No. 2 50-353 Division of Licensing U. S. Nuclear Regulatory Commission Washington, D.C. 20555 Subject: Limerick Generating Station, Units 1&2 Additional Information for Materials Engineering Branch (MTEB) Regarding SER Confirmatory Issue #12: Preservice Inspection (PSI) Program Attachments: 1. Limerick Unit 1 PSI Relief Request Submittal Program 2. Limerick Unit 1 PSI Relief Requests (Draft) File: GOVT 1-1 (NRC) Dear Mr. Schwencer: We are pleased to submit the following information to support the resolution of SER confirmatory issue #12 regarding the Limerick Unit 1 PSI program. Attachment (1) provides a descriptive summary of the Limerick Unit 1 PSI relief request submittal program. Pursuant to the provisions of 10CFR50.55a(q) and consistent with our commitment made in response to RAI-250.5 (FSAR Rev. 30), Attachment (2) is provided to identify ASME Section XI code categories for which reliefs of impractical PSI examinations are requested for reactor pressure vessel and piping components. The balance of the material described in Attachment (1), including supporting technical justifications for the relief requests, will be submitted by June 30, 1984. Should any additional information be required, please do not hesitate to contact us. Sincerely, 8406110298 840606 PDR ADOCK 0500035 JHA/gra/052384230 cc: See Attached Service List

cc: Judge Lawrence Brenner Judge Richard F. Cole Troy B. Conner, Jr., Esq. Ann P. Hodgdon, Esq. Mr. Frank R. Romano Mr. Robert L. Anthony Charles W. Elliot, Esq. Zori G. Ferkin, Esq. Mr. Thomas Gerusky Director, Penna. Emergency Management Agency Angus R. Love, Esq. David Wersan, Esq. Robert J. Sugarman, Esq. Spence W. Perry, Esq. Jay M. Gutierrez, Esq. Atomic Safety & Licensing Appeal Board Atomic Safety & Licensing Board Panel Docket & Service Section Martha W. Bush, Esq. Mr. James Wiggins Mr. Timothy R. S. Campbell Ms. Phyllis Zitzer Judge Peter A. Morris

(w/o enclosure)

(w/o enclosure) (w/o enclosure) (w/o enclosure) (w/o enclosure) (w/o enclosure)

(w/o enclosure)

(w/o enclosure) (w/o enclosure) (w/o enclosure) (w/o enclosure) (w/o enclosure)

Attachment 1

Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

Submittal Program

1. Introduction

1.1 The following provides our plan for submitting relief requests for those Unit 1 Reactor Pressure Vessel (RPV) and piping components that could not be fully examined to the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components.

2. Scope

- 2.2 Requests for relief for limited preparations of the pressure retaining and support compare piping, vessels, pumps, and valves are applicable to quirements of the 1974 Edition of Section XI, as modified by the Addenda through the Summer 1975, Appendix III of the Winter 1975 Addenda and paragraph IWA-2232 of the Summer 1976 Addenda.
- 2.3 The requirements of Subsections IWP and IWV, pump and valve operability testing, are not included in the scope of this document.

3. References

- 3.1 Final Safety Analysis Report, Limerick Generating Station, Units 1 & 2
- 3.2 Safety Evaluation Report, related to the operation of Limerick Generating Station, Units 1 & 2, August 1983
- 3.3 ASME Boiler & Pressure Vessel Code, Section XI
 - 3.3.1 1980 Edition as modified by the Addenda through the Winter 1980.
 - 3.3.2 1974 Edition as modified by the Addenda through the Summer 1975, Appendix III of the Winter 1975 Addenda and paragraph IWA-2232 of the Summer 1976 Addenda.

- 3.4 General Electric (GE) Document LIM-PIP-1, Preservice Inspection Program Plan for the Reactor Pressure Vessel, Limerick Unit No. 1
 - 3.4.1 GE Dwg. 160-83B-18, Sheets 1-4, Weld Identification (RPV)
- 3.5 Nuclear Energy Services (NES) Document 80A1558, Limerick Generating Station, Unit 1, Preservice Inspection Program Plan for Nuclear Piping Systems

4. Description

- 4.1 Limited RPV examinations are documented in Relief Requests 1 through 5 and Attachment #7 of the USNRC Regulatory Guide 1.150 "Report of Unexamined Volume".
 - 4.1.1 Relief Requests 1 through 5 include:
 - 4.1.1.1 A summary of the Code requirements for the preservice examination of a particular group of RPV components. Generally there is one Relief Request per Code Item No. of Table IWB-2500-1.
 - 4.1.1.2 The particular Code requirement from which relief is requested.
 - 4.1.1.3 Identification of the RPV component(s) included in each Relief Reguest.
 - 4.1.2 Attachment #7, Report of Unexamined Volume includes:
 - 4.1.2.1 A list of the RPV welds that were examined including a description of the limited examinations and the obstruction causing the limitation.
 - 4.1.2.2 A description of the examination technique used for each weld (manual vs. remote automatic) and the coverage provided by each technique.
 - 4.1.2.3 Calculations of the areas examined and not examined.
 - 4.1.2.4 A graphic representation of the areas in 4.1.2.2 and 4.1.2.3 above.

- 4.2 Limited piping component examinations are documented in Relief Requests 6 through 20, the Component Summary Table and the Safety Impact Summary.
 - 4.2.1 Relief Requests 6 through 20 include:
 - 4.2.1.1 A summary of the Code requirements for the preservice examination of a particular group of piping components. Generally, there is one Relief Request per Code Item No. of Tables IWB-2600 and IWC-2600. (More than one Relief Request is possible if there is a difference in the particular Code requirement from which relief is requested.)
 - 4.2.1.2 The particular Code requirement from which relief is requested.
 - 4.2.1.3 Identification of the number of piping components included in each Relief Request.
 - 4.2.1.4 Technical justification for granting relief.
 - 4.2.2 Component Summary Table includes:
 - 4.2.2.1 The identity of each pipe component for which relief is requested. Components are listed on the Component Summary Table in the same order that they are listed in NES document 80A1558 (Reference 3.5). The Table includes:
 - Component identification number.
 - Isometric drawing number.
 - Code Item No. & Category.
 - Description of the physical configuration.
 - Incomplete Executation Analysis Report Number.
 - Description of the obstruction limiting the examination.
 - Identification of the examinations that were limited and to what extent.
 - Safety Impact Category Number.
 - Relief Request Number.
 - 4.2.3 Safety Impact Summary includes:
 - 4.2.3.1 A brief description of the Plant requirements based on a postulated complete failure of each piping component that was not completely examined.

5. Submittal

- 5.1 Submittal of the request for relief is provided for resolution of SER confirmatory Item #12 as detailed in our response to NRC RAI 250.5.
 - 5.1.1 A draft of the Relief Requests, Items 4.1.1 and 4.2.1, identifying the Code Categories from which relief is expected to be requested, is submitted as Attachment (2).
 - 5.1.2 The balance of the material will be submitted by June 1984. This will include:
 - 5.1.2.1 Final Relief Requests with supporting Technical Justification (Items 4.1.1 & 4.2.1)
 - 5.1.2.2 USNRC Regulatory Guide 1.150 Report with Attachment #7 (Item 4.1.2)
 - 5.1.2.3 Component Summary Table (Item 4.2.2)
 - 5.1.2.4 Safety Impact Summary (Item 4.2.3)

Attachment 2



Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

1. Class 1 Pressure Retaining Welds in Reactor Vessel Code Item No. Bl.11, Category B-A

Code Requirement:

The Reactor Vessel circumferential shell welds shall be volumetrically examined per Table IWB-2500-1, Category B-A, Item No. Bl.11. The examinations shall cover 100% of the circumferential shell welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall be as shown on Figure IWB-2500-1 and shall include 100% of the weld length.

Relief Request:

Relief is requested from examining 100% of the required length of four welds identified as AA, AC, AD, and AE. A description of the examination coverage, percent complete, and the obstruction(s) for each weld is included in the Regulatory Guide 1.150 Report, Attachment #7.



2. Class 1 Pressure Retaining Welds in Reactor Vessel Code Item No. Bl.12, Category B-A

Code Requirement:

The Reactor Vessel longitudinal shell welds shall be volumetrically examined per Table IWB-2500-1, Category B-A, Item No. B1.12. The examinations shall cover 100% of the longitudinal shell welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall be as shown on Figure IWB-2500-2 and shall include 100% of the weld length.

Relief Request:

Relief is requested from examining 100% of the required length of four welds identified as BA, BB, BC, and BN. A description of the examination coverage, percent complete, and the obstruction(s) for each weld is included in the Regulatory Guide 1.150 Report, Attachment #7.



3. Class 1 Pressure Retaining Welds in Reactor Vessels Code Item No. Bl.22, Category B-A

Code Requirement:

The Reactor Vessel bottom head meridional welds shall be volumetrically examined per Table IWB-2500-1, Category B-A, Item No. Bl.22. The examinations shall include 100% of the welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall be as shown on Figure IWB-2500-3 and shall include 100% of the accessible weld length.

Relief Request:

Relief is requested from examining 100% of the required length of six bottom head meridional welds identified as DA, DB, DC, DD, DE, and DF. A description of the examination coverage, percent complete and the obstruction(s) for each weld is included in the Regulatory Guide 1.150 Report, Attachment #7.

Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

4. Class 1 Pressure Retaining Welds in Reactor Vessel Code Item No. Bl.30, Category B-A

Code Requirement:

The Reactor Vessel shell-to-flange weld shall be volumetrically examined per Table IWB-2500-1, Category B-A, Item No. Bl.30. The examination shall be performed completely, once, as a preservice examination requirement. The examination volume shall be as shown on Figure IWB-2500-4 and shall include 100% of the weld length.

Relief Request:

Relief is requested from examining 100% of the required length of the shell-to-flange weld identified as AF. A description of the examination coverage, percent complete, and the obstruction(s) is included in the Regulatory Guide 1.150 Report, Attachment #7.



5. Class 1 Full Penetration Welds of Nozzles in Vessels-Inspection Program B
Code Item No. B3.90, Category B-D

Code Requirement:

Those Reactor Vessel nozzle to vessel welds included in Code Category B-D, Item No. B3.90 shall be volumetrically examined per Table IWB-2500-1. The examinations shall cover 100% of the welds and shall be performed completely, once, as a preservice examination requirement. The examination volume(s) shall be as shown in the applicable Figures IWB-2500-7 (a) through (d) including the adjacent areas of nozzle and vessel base metal.

Relief Request:

Relief is requested from examining 100% of the required volume of feedwater inlet nozzle N4D nozzle to vessel weld. A description of the examination coverage, percent complete, and the obstruction(s) for each nozzle to vessel weld is included in the Regulatory Guide 1.150 Report, Attachment #7.



6. Class 1 Pressure Retaining Welds in Piping Code Item No. B4.5, Category B-J

Code Requirement:

Those pipe longitudinal and circumferential pressure retaining welds included in Code Category B-J of Table IWB-2500 shall be volumetrically examined per Item No. B4.5 of Table IWB-2600. The examinations shall cover 100% of the pressure retaining welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall include the weld plus the base metal on each accessible side of the weld for a distance of 1/2 T or 1 inch, whichever is smaller.

Relief Request:

Relief is requested from examining 100% of the required volume due to an obstruction as noted in the Component Summary Table. Examinations were performed perpendicular and parallel to the weld axis in accordance with subarticles III-4420 and III-4430, respectively. The percent complete of each examination is also noted in the Table. There are $\overline{\rm XX}$ welds included in this relief request.

Justification:



7. Class 1 Pressure Retaining Welds in Piping Code Item No. B4.6, Category B-J

Code Requirement:

Those pipe branch connection welds exceeding six inches in diameter included in Code Category B-J of Table IWB-2500 shall be volumetrically examined per Item No. B4.6 of Table IWB-2600. The examinations shall cover 100% of the pressure retaining welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall include the weld plus the base metal for one wall thickness beyond the edge of the weld on the main run, and at least two inches of base metal from the edge of the weld on the branch run.

Relief Request:

Relief is requested from examining 100% of the required volume due to an obstruction as noted in the Component Summary Table. There are \underline{XX} welds included in this relief request.



Class 1 Support Members for Pumps Code Item No. B5.4, Category B-K-1

Code Requirement:

Those pump integrally-welded external support attachment welds included in Code Category B-K-1 of Table IWB-2500 shall be volumetrically examined per Item No. B5.4 of Table IWB-2600. The examinations shall cover 25% of the supports with attachment welds and shall be performed completely, once as a preservice examination requirmeent. The examination volume shall include the attachment weld to the pressure retaining boundry plus the base metal beneath the weld and along the attachment for a distance of 2 support thicknesses.

Relief Request:

Relief is requested from examining 100% of the required volume, obstructed by either attachment design or the support clamp. The number of attachments per support along with a description of the obstruction are noted in the Component Summary Table. There are \overline{XX} supports included in this relief request.

Justificat'n:

Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

9. Class 1 Pump Casings Code Item No. B5.7, Category B-L-2

Code Requirement:

Those pump internal pressure boundary surfaces included in Code Category B-L-2 of Table IWB-2500 shall be visually examined per Item No. B5.7 of Table IWB-2600. The examinations shall cover one pump in each group of pumps performing similar functions in a system and shall be performed completely, once, as a preservice examination requirement.

Relief Request:

Relief is requested from performing the required visual examination. There are $\underline{2}$ pumps comprising $\underline{1}$ group included in this relief request.

Justification:

Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

10. Class 1 Valve Bodies Code Item No. B6.7, Category B-M-2

Code Requirement:

Those valve internal pressure boundary surfaces included in Code Category B-M-2 of Table IWB-2500 shall be visually examined per Item No. B6.7 of Table IWB-2600. The examinations shall cover one valve in each group of valves of the same constructional design and manufacturer that performs similar functions in a system and shall be performed completely, once, as a preservice examination requirement.

Relief Request:

Relief is requested from performing the required visual examinations. These valves are identified by system in the Component Summary Table and by group in the Class 1 Valve Group Table. There are 73 valves comprising 17 groups included in this relief request.

Justification:

Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

11. Class 2 Pressure Retaining Nozzle Welds in Vessels Code Item No. Cl.2, Category C-B

Code Requirement:

Those nozzle to vessel attachment welds included in Code Category C-B of Table IWC-2520 shall be volumetrically examined per Item No. Cl.2 of Table IWC-2600. The examinations shall cover 100% of the welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall include 100% of the nozzle to vessel weld.

Relief Request:

Relief is requested from examining 100% of the required volume due to an obstruction as noted in the Component Summary Table. There are \overline{XX} welds included in this relief request.

DRAFI

Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

12. Class 2 Integrally Welded Support Attachments to Vessels Code Item No. Cl.3, Category C-C

Code Requirement:

Those vessel integrally welded external support attachment welds included in Code Category C-C of Table IWC-2520 shall be surface examined per Item No. Cl.3 of Table IWC-2600. The examinations shall cover 100% of the welds and shall be performed completely, once, as a preservice examination requirement. The examination surface shall include 100% of the attachment weld.

Relief Request:

Relief is requested from examining 100% of the required surface, obstructed by either attachment design or the support clamp. The number of attachments per support along with a description of the obstruction are noted in the Component Summary Table. There are XX supports included in this relief request.



Class 2 Pressure Retaining Welds in Piping Code Item No. C2.1, Categories C-F and C-C

Code Requirement:

Those pipe circumferential butt welds included in Code Categories C-F and C-G of Table IWC-2520 shall be volumetrically examined per Item No. C2.1 of Table IWC-2600. The examinations shall cover 100% of the C-F welds and 50% of the C-G welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall include the weld plus the base metal on each accessible side of the weld for a distance of 1/2 T or 1 inch, whichever is smaller.

Relief Request:

Relief is requested from examining 100% of the required volume of the C-F welds due to an obstruction as noted in the Component Summary Table. Examinations were performed perpendicular and parallel to the weld axis in accordance with subarticles III-4420 and III-4430, respectively. The percent complete of each examination is also noted in the Table. There are XX welds included in this relief request.



14. Class 2 Pressure Retaining Welds in Piping Code Item No. C2.2, Categories C-F and C-G

Code Requirement:

Those longitudinal weld joints in pipe fittings included in Code Categories C-F and C-G of Table IWC-2520 shall be volumetrically examined per Item No. C2.2 of Table IWC-2600. The examinations shall include 100% of the C-F welds and 50% of the C-G welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall include the weld plus the base metal on each accessible side of the weld for a distance of 1/2 T or 1 inch, whichever is smaller.

Relief Request:

Relief is requested from examining 100% of the required volume of the C-F welds due to an obstruction as noted in the Component Summary Table. Examinations were performed perpendicular and parallel to the weld axis in accordance with subarticles III-4420 and III-4430, respectively. The percent complete of each examination is also noted in the Table. There are XX welds included in this relief request.



15. Class 2 Pressure Retaining Welds in Piping Code Item Nos. C2.1 and C2.2, Categories C-F and C-G

Code Requirement:

Those pipe circumferential butt welds and those longitudinal weld joints in pipe fittings included in Code Categories C-F and C-G of Table IWC-2520 shall be volumetrically examined per Item Nos. C2.1 and C2.2 of Table IWC-2600. The examinations shall include 100% of the C-F welds and 50% of the C-G welds and shall be performed completely, once, as a preservice examination requirement. Appendix III is not applicable because Radiography was used as the volumetric examination technique. The required volume then includes the weld plus the base metal for a distance of one-wall thickness beyond the edge of the weld per Table IWC-2520.

Relief Request:

Relief is requested from the area requirement of Table IWC-2520. Using Radiography as the examination technique, the examination volume shall include the weld plus the base metal for a distance of 1/4 inch beyond the edge of the weld. There are $\underline{40}$ circumferential and $\underline{40}$ longitudinal welds associated with $\underline{20}$ Main Steam elbows included in this relief request.



16. Class 2 Support Members for Piping Code Item No. C2.5, Category C-E-1

Code Requirement:

Those pipe integrally-welded attachment welds included in Code Category C-E-1 of Table IWC-2520 shall be surface examined per Item No. C2.5 of Table IWC-2600. The examinations shall include 100% of the supports with attachment welds and shall be performed completely, once, as a preservice examination requirement. The examination surface shall include the attachment weld to the pressure retaining boundary plus the base metal beneath the weld and along the attachment for a distance of 2 support thicknesses.

Relief Request:

Relief is requested from the area requirement of Table IWC-2520. For preservice inspection the examination surface shall include the attachment weld to the pressure retaining boundary plus the base metal beneath the weld and along the attachment for 1/2 inch on all sides. There are \underline{XXX} supports included in this relief request.



17. Class 2 Pressure Retaining Welds in Pumps Code Item No. C3.1, Categories C-F and C-G

Code Requirement:

Those pump casing weld joints included in Code Categories C-F and C-G of Table IWC-2520 shall be volumetrically examined per Item No. C3.1 of Table IWC-2600. The examinations shall cover 100% of the C-F welds and 50% of the C-G welds and shall be performed completely, once, as a preservice examination requirement. The examination volume shall include 100% of the weld plus the base metal for one wall thickness beyond the edge of the weld.

Relief Request:

Relief is requested from examining 100% of the required volume of the C-F welds due to an obstruction as noted in the Component Summary Table. There are \underline{XX} welds included in this relief request.

Justification:



18. Class 2 Support Components for Pumps Code Item No. C3.4, Category C-E-2

Code Requirement:

Those pump support components included in Code Category C-E-2 of Table IWC-2520 shall be visually examined per Item No. C3.4 of Table IWC-2600. The examinations shall cover 100% of the support components and shall be performed completely, once, as a preservice examination requirement. The area subject to examinations shall include the support components that extend from the pump attachment to and including the attachment to the supporting structure. Support settings shall be verified.

Relief Request:

Relief is requested from visually examining the inaccessible portions of the pump anchor studs. The number of studs included per pump is noted on the Component Summary Table. There are \overline{XX} pumps with anchor studs included in this relief request.

Justification:

Limerick Generating Station, Unit 1 Preservice Inspection Relief Requestable ASME B&PV Code, Section XI

19. Class 1 Pressure Retaining Welds in Piping Code Item No. B4.5, Category B-J

Code Requirement:

Those pipe longitudinal and circumferential pressure retaining welds included in Code Category B-J of Table IWB-2500 shall be volumetrically examined per Item B4.5. Indications (recorded and sized at 50% DAC) shall be evaluated using the acceptance standards specified in the 1974 Edition of Section III, subsubarticle NB-5330 per subarticle IWA-3100(b).

Relief Request:

Relief is requested from performing the evaluation of 7 longitudinal welds, identified as RRA-027LD Max./Min., RRA-028LU Max./Min., RRA-037LD Max., RRA-038LU Max., RHB-005LD Max., and 1 circumferential weld identified as FWB-028, using the acceptance standards specified in NB-5330. These welds are included in the Component Summary Table. Supplemental evaluations using the acceptance standards specified in the 1980 Edition of Section XI as modified by the Addenda through the Winter 1981 shall also be submitted.

Limerick Generating Station, Unit 1 Preservice Inspection Relief Request ASME B&PV Code, Section XI

Class 2 Pressure Retaining Welds in Piping Code Item No. C2.1, Categories C-F and C-G

Code Requirement:

Those pipe circumferential butt welds included in Code Categories C-F and C-G of Table IWC-2520 shall be volumetrically examined per Item No. C2.1 of Table IWC-2600. Indications (recorded and sized at 50% DAC) shall be evaluated to the acceptance standards specified in the 1974 Edition of Section III, subsubarticle NC-5330 per subarticle IWA-3100(b).

Relief Request:

Relief is requested from performing the evaluation of $\underline{3}$ welds, identified as RHB-194, RDA-019, and RDB 011, using the acceptance standards specified in NC-5330. These welds are included in the Component Summary Table. Supplemental evaluations using the acceptance standards specified in the 1980 Edition of Section XI as modified by the Addenda through the Winter 1981 shall also be submitted.