March 22, 2007

CAL No. NRR-07-029

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Amergen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CONFIRMATORY ACTION LETTER, THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1 (TAC NO. MD4191)

Dear Mr. Crane:

This letter confirms commitments by AmerGen Energy Company, LLC (AmerGen), regarding Alloy 82/182 butt welds in the pressurizer at Three Mile Island Nuclear Station, Unit No. 1.

The discovery, in October 2006, of five circumferential indications in three dissimilar metal (DM) welds on the pressurizer at the Wolf Creek Generating Station (Wolf Creek) raised safety concerns based on the size and location of the indications. At Wolf Creek, three indications were in the pressurizer surge nozzle-to-safe end weld, and two separate indications were in the safety and relief nozzle-to-safe end welds. These findings also indicated that significant concerns might exist with the inspection schedules for addressing the pressurizer weld concerns issued by the industry-sponsored Materials Reliability Program (MRP), in "Primary System Piping Butt Weld Inspection and Evaluation Guideline (MRP-139)."

The Nuclear Regulatory Commission (NRC) is concerned about the pressurizer surge nozzle-to-safe end weld indications, as this is the first time that multiple circumferential primary water stress-corrosion cracking (PWSCC) indications have been identified in a weld. This condition calls into question the degree of safety margin present in past structural integrity evaluations for flawed DM welds susceptible to PWSCC, since multiple stress-corrosion cracking flaws may grow independently and ultimately grow together, significantly reducing the time from flaw initiation to leakage or rupture. The size of the relief nozzle-to-safe end flaw is also of concern, as this flaw has a much larger aspect ratio than those assumed in the estimates used to establish the basis for completing the baseline inspections required by the industry-sponsored MRP. Larger aspect ratios could result in achieving a critical flaw size and rupture before the onset of detectable leakage.

The long-term resolution of this issue is expected to involve changes to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), and will involve changes to the NRC regulations in Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a, "Codes and standards." The development of the NRC regulations, whether the rule adopts the ASME Code standards or defines separate requirements, will likely benefit from additional operating experience, continuing assessments, and analysis being conducted by the NRC and the MRP.

Until NRC regulations are revised, it is necessary to establish a minimum set of enhanced reactor coolant system (RCS) DM butt weld inspection expectations for nickel-based Alloy 82/182 pressurizer surge, spray, safety, and relief nozzle butt welds, including safe end welds, to supplement existing inspection and other requirements of the ASME Code and NRC regulations. In addition, enhanced monitoring of RCS leakage is needed to promptly identify any through-wall flaws in the pressurizer surge, spray, safety, or relief nozzle DM butt welds or safe end DM butt welds to prevent additional degradation from occurring. The above actions provide reasonable assurance that there is no undue risk to the health and safety of the public while the NRC regulations are revised.

The NRC communicated the need for near-term enhancements to the industry through public meetings held on November 30, 2006, December 20, 2006, and February 2, 2007. Licensees submitted letters voluntarily committing to the enhanced inspection and leakage monitoring requirements. After teleconferences with specific licensees held between February 12 through February 23, 2007, the licensees submitted supplemental commitment letters addressing the NRC staff's concerns regarding inspection, compensatory actions, and reporting.

In your letter dated February 21, 2007 (Agencywide Documents Access & Management System (ADAMS) Accession Number ML070520499) you described actions you will take at Three Mile island Nuclear Station, Unit No. 1 for the pressurizer dissimilar metal butt welds containing Alloy 82/182 material. These commitments address: 1) completion schedules for inspection/mitigation of the welds; 2) RCS leak monitoring frequency, action levels, and actions; 3) reporting requirements, and 4) reinspection frequencies.

The NRC staff has reviewed these actions and commitments and agrees the actions and commitments are appropriate to address the potential of PWSCC of the applicable pressurizer dissimilar metal butt welds containing Alloy 82/182 material with clarifications on 6 of the actions/commitments as indicated in bold below regarding inspection schedule, RCS leak monitoring, and reporting.

- **AmerGen will complete inspection or mitigation activities on the pressurizer surge, spray, safety, and relief nozzle butt welds and safe end butt welds containing Alloy 82/182 material by December 31, 2007, for Three Mile Island Nuclear Station, Unit No. 1.**

- Once the 72 hour evaluation period**, i.e. the 72 hour period of sustained increased leakage,** is complete, and the leakrate is still elevated, Three Mile Island Nuclear Station Unit 1 will be placed in **Hot Shutdown** within 6 hours and in **Cold Shutdown** within 36 additional hours and a bare metal visual inspection of unmitigated Alloy 82/182 pressurizer nozzles will be performed.

- If a post-shutdown inspection identifies the source of the unidentified RCS leakage to originate from a source other than the pressurizer, a pressurizer bare metal visual **inspection** would not be performed**, provided the leak can be quantified and that quantity drops the unidentified RCS leakage below the appropriate threshold(s).**

- Reports of any Alloy 82/182 pressurizer nozzle connections inspection results for Three Mile Island Nuclear Station Unit 1 will be submitted to the NRC within 60 days of the completion date of the inspection. **This includes reports of any bare metal visual inspections as a result of increased RCS leak rate, and reports of any corrective or mitigative actions taken on the pressurizer surge, spray, safety, or relief nozzle butt welds and safe end butt welds containing Alloy 82/182 material.**

- The re-examination of **unmitigated** welds **identified in Attachment 1 of your February 21, 2007 letter**, using ultrasonic techniques, shall be performed within **every** 4 years (as opposed to the MRP-139 requirements of within 5 years)

- **The NRC will be informed in writing prior to changing any of the commitments or actions above or in the referenced letter.**

These clarifications were discussed with and agreed upon by your staff during a telephone discussion on March 20, 2007, between Tom Dougherty, Plant Manager, and Michele Evans, Director-Division of Component Integrity, and further clarified through electronic correspondence (ADAMS Accession Number ML070800591).

Pursuant to Section 182 of the Atomic Energy Act, 42 U.S.C. 2232, you are required to:

1) Notify me immediately if your understanding differs from that set forth above;

2) Notify me if for any reason you cannot complete the actions and commitments within the specified schedule and advise me in writing of your modified schedule in advance of the change; and

3) Notify me in writing when you have completed the actions and commitments addressed in this Confirmatory Action Letter.

Issuance of this Confirmatory Action Letter does not preclude issuance of an order formalizing the above commitments or requiring other actions on the part of the licensee; nor does it preclude the NRC from taking enforcement action for violations of NRC requirements that may have prompted the issuance of this letter. In addition, failure to take the actions addressed in this Confirmatory Action Letter may result in enforcement action.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's ADAMS, accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will

create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Sincerely,

/ra/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Docket No. 50-289
License No. DPR-50

cc: See next page

create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Sincerely,

/ra/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Docket No. 50-289
License No. DPR-50

cc: See next page

Distribution:
PUBLIC LPL1-2 R/F RidsNrrPMVNerses RidsNrrLACSola
RidsNrrDorlLpl1-2 RidsOgcRp RidsAcrsAcnwMailCenter
RidsRgn1MailCenter RidsNrrOd RidsNrrDorl
RidsNrrDci RidsNrrDirs RidsOEMailCenter
RidsEdoMailCenter JLamb, EDO Region 1 DScrenci, OPA, Region 1
MMcLaughlin, State Liaison Officer, Region 1
TLupold, NRR ESullivan, NRR RPascarelli, NRR
RidsNrrDciCpnb RidsNrrAdes

ADAMS Accession No. ML070740631

OFFICE	CPNB	DCI	LPL1-2/PM	LPL1-2/LA	LPL1-2/BC	TECH ED	DIRS/TA
NAME	TLupold	ESullivan	VNerses	CSola	HChernoff	HChang	RPascarelli
DATE	3 /20 /07	3/22/07	3 /20/07	3 /20/07	3 /20/07	2/28/07	3/21/07

OFFICE	CPNB/BC	DRP/D RGN 1	DORL/D	DCI/D	AD:DES	NRR/D
NAME	Tchan (GBG for)	DLew (per e-mail)	CHaney (MCC for)	Mevans (WHB for)	JGrobe	JDyer
DATE	3/20/07	3 /21/07	3/22/07	3/22/07	3/22/07	3/22/07

OFFICIAL RECORD COPY

Three Mile Island Nuclear Station, Unit 1

cc:

Site Vice President - Three Mile Island Nuclear Station, Unit 1
AmerGen Energy Company, LLC
P. O. Box 480
Middletown, PA 17057

Senior Vice President - Nuclear Services
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President - Operations, Mid-Atlantic
AmerGen Energy Company, LLC
200 Exelon Way, KSA 3-N
Kennett Square, PA 19348

Vice President - Licensing and Regulatory Affairs
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Chairman
Board of County Commissioners
of Dauphin County
Dauphin County Courthouse
Harrisburg, PA 17120

Chairman
Board of Supervisors
of Londonderry Township
R.D. #1, Geyers Church Road
Middletown, PA 17057

Senior Resident Inspector (TMI-1)
U.S. Nuclear Regulatory Commission
P.O. Box 219
Middletown, PA 17057

Director - Licensing and Regulatory Affairs
AmerGen Energy Company, LLC
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

Director
Bureau of Radiation Protection
Pennsylvania Department of
Environmental Protection
Rachel Carson State Office Building
P.O. Box 8469
Harrisburg, PA 17105-8469

Plant Manager - Three Mile Island Nuclear Station, Unit 1
AmerGen Energy Company, LLC
P. O. Box 480
Middletown, PA 17057

Regulatory Assurance Manager - Three Mile Island Nuclear Station, Unit 1
AmerGen Energy Company, LLC
P.O. Box 480
Middletown, PA 17057

Ronald Bellamy, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Michael A. Schoppman
Framatome ANP
Suite 705
1911 North Ft. Myer Drive
Rosslyn, VA 22209

Vice President, General Counsel and Secretary
AmerGen Energy Company, LLC
2301 Market Street, S23-1
Philadelphia, PA 19101

Three Mile Island Nuclear Station, Unit 1

cc:

Dr. Judith Johnsrud
National Energy Committee
Sierra Club
433 Orlando Avenue
State College, PA 16803

Eric Epstein
TMI Alert
4100 Hillsdale Road
Harrisburg, PA 17112

Correspondence Control Desk
AmerGen Energy Company, LLC
P.O. Box 160
Kennett Square, PA 19348

Manager Licensing - Three Mile Island Nuclear Station, Unit 1
Exelon Generation Company, LLC
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

Assistant General Counsel
AmerGen Energy Company, LLC
200 Exelon Way
Kennett Square, PA 19348