

April 8, 2006

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

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 - ISSUANCE OF
EMERGENCY AMENDMENT RE: ALLOWED OUTAGE TIME EXTENSION
FROM 7 DAYS TO 10 DAYS FOR EMERGENCY DIESEL GENERATOR
EG-Y-1A (TAC NO. MD1117)

Dear Mr. Crane:

The Commission has issued the enclosed Amendment No. 258 to Facility Operating License No. DPR-50 for Three Mile Island Nuclear Station, Unit No. 1. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated April 6, 2006, as supplemented by letter dated April 7, 2006.

The amendment revises TS 3.7.2.c, "Unit Electric Power System," to increase the TS allowed outage time with one inoperable emergency diesel generator from 7 days to 10 days, on a one-time basis.

A copy of our Safety Evaluation is also enclosed. The Safety Evaluation describes the emergency circumstances under which the amendment was issued and the final determination of no significant hazards. The Notice of Issuance, addressing the final no significant hazards determination and opportunity for a hearing, associated with the emergency circumstances, will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

Farideh E. Saba, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosures:

1. Amendment No. 258 to DPR-50
2. Safety Evaluation

cc w/encls: See next page

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AMERGEN ENERGY COMPANY, LLC

DOCKET NO. 50-289

THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1)

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 258
License No. DPR-50

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Amergen Energy Company, LLC (the licensee) dated April 6, 2006, as supplemented by letter dated April 7, 2006, 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-50 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 258, are hereby incorporated in the license. The AmerGen Energy Company, LLC shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and is applicable until the emergency diesel generator EG-Y-1A is returned to operable status or until April 12, 2006, at 21:00 hours, whichever occurs first.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Darrell J. Roberts, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: April 8, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 258

FACILITY OPERATING LICENSE NO. DPR-50

DOCKET NO. 50-289

Replace the following page of the Appendix A, "Technical Specifications" with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE

3-43

INSERT

3-43

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 258 FACILITY OPERATING LICENSE NO. DPR-50
AMERGEN ENERGY COMPANY, LLC
DOCKET NO. 50-289
THREE MILE ISLAND NUCLEAR STATION, UNIT 1

1.0 INTRODUCTION

By letter dated April 6, 2006, as supplemented by letter dated April 7, 2006, AmerGen Energy Company, LLC (AmerGen or the licensee) requested changes to the Technical Specifications (TSs) for the Three Mile Island Nuclear Station, Unit 1 (TMI-1). The proposed changes would revise TS 3.7.2.c, "Unit Electric Power System," to increase the TS allowed outage time (AOT) with one inoperable emergency diesel generator (EDG) from 7 days to 10 days, on a one-time basis. The extension would allow continued operation of TMI-1 while repairs and related testing of the inoperable EDG (EG-Y-1A) are completed.

Under the current requirements of TS 3.7.2.c, if one EDG is found to be inoperable, the inoperable EDG must be restored to operable status within 7 days. At the conclusion of the 7-day AOT, TS 3.0.1 requires that within 1 hour, actions shall be initiated to place the unit in Hot Standby within the next 6 hours, Hot Shutdown within the following 6 hours, and Cold shutdown within the subsequent 24 hours. The current AOT for the inoperable EDG expires on April 9, 2006 at 21:00 hours. The licensee has proposed that the following note be added to TS 3.7.2.c:

The 7-day allowed outage time of Technical Specification 3.7.2.c, which was entered on April 2, 2006, at 2100 hours, may be extended one time by an additional 3 days to complete repair and testing of EG-Y-1A.

2.0 REGULATORY EVALUATION

2.1 Mechanical Deterministic Assessment

TS 3.7.2.c at TMI-1 currently requires that at the conclusion of the 7-day AOT, with one inoperable EDG, within 1 hour, actions shall be initiated to place the unit in Hot Standby within the next 6 hours, Hot Shutdown within the following 6 hours, and Cold shutdown within the subsequent 24 hours of the AOT expiration in accordance with TS 3.0.1.

The Nuclear Regulatory Commission (NRC or the Commission) Regulatory Guide (RG) 1.9, Revision 3, "Selection, Design Qualification, and Testing of Emergency Diesel Generator Units

Enclosure

Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants,” and referenced Standards of Institute of Electrical and Electronics Engineers 387-1995 and the American Society of Mechanical Engineers Boiler and Pressure Vessel Code OM-16 provide guidance for testing of EDGs to comply with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, Criterion 17 and Criterion 18, and 10 CFR Part 50, Appendix B, Criterion III. The intent of testing and inspection, as specified, is to demonstrate the operation readiness of the component and to track degradation to provide reasonable assurance that the components will be capable of performing their intended function when called upon.

2.2 Electrical Deterministic Assessment

General Design Criterion (GDC) 17, “Electric Power Systems,” of Appendix A. “General Design Criteria for Nuclear Power Plants,” of 10 CFR, Part 50, requires, in part, that nuclear power plants have onsite and offsite electric power systems to permit the functioning of structures, systems, and components that are important safety. The onsite system is required to have sufficient independence, redundancy, and testability to perform its safety function, assuming a single failure. The offsite power system is required to be supplied by two physically-independent circuits that are designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. In addition, this criterion requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as a result of loss-of-power from the unit, the offsite transmission network, or the onsite power supplies.

GDC-18, “Inspection and Testing of Electric Power Systems,” requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing.

RG1.93, “Availability of Electric Power Sources,” provides guidance with respect to operating restrictions if the number of available alternate current (AC) sources is less than that required by the TS limiting condition of operation (LCO). In particular, this guide prescribes a maximum AOT of 72 hours for an inoperable AC source.

2.3 Risk Assessment

In evaluating the risk information submitted by the licensee, the NRC staff followed the three-tiered approach documented in RG 1.177, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications.”

Under the first tier, the staff determines if the proposed change is consistent with the NRC’s Safety Goal Policy Statement, as documented in RG 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” for adequacy of plant protection from potential risk. Specifically, the first tier objective is to ensure that the plant risk does not increase unacceptably during the period the equipment is taken out of service.

The second tier addresses the need to preclude potentially high-risk plant configurations that could result if additional equipment, not associated with the proposed change, is taken out of service during the proposed 3-day AOT extension.

The third tier addresses the establishment of a configuration risk management program for identifying risk-significant configurations resulting from maintenance or other operational activities, and taking appropriate compensatory measures to avoid such configurations.

3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee's regulatory and technical analyses in support of its proposed one-time license amendment which is described in the licensee's submittal.

The licensee's submittal dated April 6, 2006, as supplemented by letter dated April 7, 2006, in response to a request for additional information (RAI), is risk-informed in that the licensee considered deterministic¹ and probabilistic² safety aspects. The NRC staff evaluated the deterministic and probabilistic assessments provided by the licensee.

3.1 Proposed TS Changes

EDG EG-Y-1A, is presently inoperable due to a planned maintenance outage. During this maintenance outage, excessive pump drive to flex-drive clearances were found on the main lube oil pump and the engine driven fuel oil pump, and wear was identified on the lube oil gear teeth. The cause of the excessive pump clearances and lube oil gear teeth damage is identified to be from a worn flex-drive unit bearing.

The licensee states that due to the additional time required to replace the worn flex-drive unit bearing and to return EDG EG-Y-1A to an operable status, the current TS AOT of 7 days, which expires at 21:00 hours on April 9, 2006, may be exceeded. The licensee is requesting a one-time extension of this 7-day AOT by an additional 3 days to assure adequate time is available for completion of repairs, post-maintenance testing, and surveillance testing of the inoperable EDG.

3.2 Mechanical Deterministic Evaluation

3.2.1 Technical Evaluation

The NRC staff has reviewed the licensee's regulatory and technical analysis in support of its license amendment which is described in Enclosure 1 of the licensee's submittal dated April 6, 2006.

On April 2, 2006, at 21:00 hours, the licensee entered TS 3.7.2.c to perform routine maintenance and inspection of EDG EG-Y-1A. During performance of the routine EDG inspection, TMI-1 maintenance personnel identified that the pump drive to flex-drive clearance on the main lube oil pump (EG-P-4A) and the engine driven fuel oil pump (EG-P-9A) was excessive. The EDG EG-Y-1A flex-drive was disassembled, and wear was found on the gears

¹ A deterministic analysis is an assessment of the availability of safety equipment necessary to ameliorate the consequences of design-basis accidents.

² A probabilistic analysis is an assessment of the probability that given accident sequences will lead to core damage and/or a large early release of radioactivity.

after cleaning. The radial bearing, which is considered a potential source of the increased backlash clearances, was removed, inspected and judged to have some abnormal wear. The component, being out-of-tolerance or at the high end of its acceptance band, is being replaced to ensure long-term reliability. The lube oil pump drive also indicated signs of wearing a knife-edge on the gear teeth due to the excessive clearance. After disassembly, the gear was inspected and no knife-like condition was found. The ongoing maintenance effort repairs the pump drive to flex-drive clearances on the EG-P-9A and EG-P-4A pump drives, and replaces the lube oil pump drive gear assembly. EDG EG-Y-1A did not exhibit signs of operational degradation prior to the scheduled maintenance outage.

EDG EG-Y-1A was last overhauled in April 2004. A review of the analysis parameters that evaluate component wear (direct-read ferrography and spectrochemical analysis) show no significant trend changes since the last overhaul. Wear particle concentrations (direct-read ferrography) were in the 20 to 25 (ratio of small particles to large particles) range. This range is considered to be in the normal operating range for this type of equipment. Spectrochemical analysis showed no increase in metallic trace elements. It is noted that iron concentration in EDG EG-Y-1A was 8-10 ppm higher than that in EDG EG-Y-1B. These oil analysis results are consistent with the wear that was found on the EDG EG-Y-1A gears and bearings.

There is reasonable assurance that the flexible drive gear backlash out-of-tolerance condition that was found on EDG EG-Y-1A does not exist on EDG EG-Y-1B, and that there is no currently-identified common mode failure mechanism.

The licensee states that the most recent 24-month preventive maintenance performed on EDG EG-Y-1B in October 2004, found no abnormal wear on the flexible drive gears or associated pump gears. The results of the surveillance procedure for the affected pumps indicated "No Deficiencies Noted - All Satisfactory." EDG EG-Y-1B performed acceptably in its most recent surveillance run on March 15, 2006, and showed no signs of degradation of any of the pumps connected to the flexible drive. The engine started and carried its load acceptably for 1 hour and met its acceptance criteria, with the only noted deficiency being on a thermocouple. The engine fast-started and accepted load successfully during its most recent fast-start demand during power transfer testing in refueling outage T1R16, in November 2005.

The licensee further states that other indications available to monitor the performance of EDG EG-Y-1B (i.e., oil analysis and vibrations) have given no indications that there may be a problem with these gears or of the bearings wearing abnormally.

A review of the analysis parameters that evaluate component wear (direct-read ferrography and spectrochemical analysis) show no significant trend changes since the oil was replaced in 2004. Wear particle concentrations (direct-read ferrography) are in the 15 to 20 range. This range is considered to be within normal, expected operating ranges. A review of the spectrochemical analysis shows no increase in metallic trace elements. Iron content in oil would be an early indicator of abnormal wear on these gears and bearings. Vibration data were reviewed for EDG EG-Y-1B. There were no adverse trends noted, and no indication of issues with the flexible drive.

There are no proposed changes to any technical operability performance requirement or test acceptance criteria.

3.2.2 Conclusion

The NRC staff concludes, based on its mechanical deterministic review, that the proposed change to TS 3.7.2.c, to increase the TS AOT with one inoperable EDG from 7 days to 10 days, on a one-time basis for TMI-1, is acceptable. The change will allow for the completion of required maintenance and subsequent post-maintenance testing, and will provide greater confidence in the ability of the EDG to perform its intended functions.

3.3 Electrical Deterministic Evaluation

3.3.1 Technical Evaluation

The TMI-1 offsite or preferred power for the AC power system is supplied from the 230 kV transmission system through the auxiliary transformers. Alternate power for the engineered safety feature (ESF) is available through alternate feeder breakers that can feed the ESF bus from the opposite auxiliary transformer when the unit is not at power. The main and alternate feeder breakers are administratively controlled so that in no case can the two offsite power sources be tied together during power operations.

Within a division, AC loads are divided into two groups, each supplied by its auxiliary transformer. An EDG is assigned to power each load group, when required. The EDGs are connected to a dedicated bus. In case of a loss-of-offsite power, a load-shedding scheme initiates, tripping all breakers on 4160 V and 480 V AC buses, except the 4160/480 V transformer, ESF motor control center feeders, and previously-running high-pressure injection (HPI) or low-pressure injection (LPI) pumps. After the EDG reaches normal voltage and frequency, sequential loading follows if an engineered safeguards condition exists.

The availability of offsite power, coupled with the availability of the remaining operable EDG, continues to provide adequate assurance of the capability to provide power to the ESF buses under postulated accident conditions. Also available as an alternate AC power source is the station blackout (SBO) diesel, which is available within 10 minutes of the onset of the SBO event, and has sufficient capability and capacity to operate systems necessary for coping with a SBO for the required SBO duration of 4 hours to bring the plant to, and maintain it in, safe shutdown.

Based on the above information, the NRC staff concludes that the availability of the offsite power, coupled with the remaining EDG and SBO diesel generator, continues to provide assurance of the capability to provide power to the ESF buses in the event of loss-of-offsite power or SBO during the extended AOT.

3.3.2 Conclusion

The NRC staff concludes, based on its electrical deterministic review, that extending the AOT for an additional 3 days, on a one-time basis, to complete the repair of EDG EG-Y-1A is acceptable. The NRC staff's conclusion is based on the following:

1. The availability of the SBO diesel generator during the extended AOT.
2. The availability of the stable offsite grid to minimize challenges to the remaining sources of onsite AC power.
3. Implementation of compensatory measures to ensure the availability of the remaining sources of AC power during the extended AOT during the additional 3 days of repair and testing period.
4. Avoidance of high-risk activity during the additional 3-day repair and testing period.

3.4 Probabilistic Evaluation

3.4.1 Basis and Quality of Risk Assessment

The licensee used its probabilistic risk assessment (PRA) model and appropriate conservative assumptions to assess the risk increase associated with operation at-power for a period of 3 additional days without EDG EG-Y-1A being operable. The licensee employed a plant-specific CAFTA model, which employs a large fault tree/small event tree model, similar to the NRC's Standardized Plant Risk Analysis (SPAR) model. The licensee stated that the assessment of an event using the plant-specific PRA model was consistent with the result of an analysis using the NRC's SPAR model. The TMI-1 internal events PRA received a formal industry peer review in August 2000, and all significant findings and observations have since been addressed in the updated models, except the certain areas (instrument AC and pressurizer safety valves, among others) associated with the need to include common cause events that may impact on the EDG importance measures. The licensee stated that it has essentially no impact (less than 5%) on EDG importance measures.

All risk quantification was performed using PARAGON with a truncation limit of $10E-11$. The risk consideration included maintaining defense-in-depth and quantifying risk to determine the change in core damage frequency (CDF) and large early release frequency (LERF) as a result of the proposed 3-day AOT extension. PARAGON is the latest software, and is equivalent to PRA Quant and EOOS for configuration-specific risk assessment. Also, the licensee is maintaining the continuous on-line risk management program to control the performance of other risk-significant tasks during the extended AOT period, with consideration of specific compensatory measures listed in the initial submittal and subsequent RAI response letter to minimize risk. The dominant accident sequences contributing to the assessed risk increase include the occurrence of conditions due to the unavailability of, and demand for, the use of EDG EG-Y-1A.

The NRC staff evaluated the quality of the PRA models, limited to the systems related to the proposed change, major assumptions, and data used in the risk assessment, and found it acceptable for this application. This evaluation compared the applicable findings from the NRC

staff's review of the licensee's PRA with the NRC's SPAR model, Version 3.2, employing NRC PRA quantification tool, SAPHIRE Version 7, and NRC Manual Chapter 0609, Appendix H for LERF, as well as findings from similar evaluations of similar plants.

3.4.2 Risk Impact of the Proposed Change (Tier 1)

An acceptable approach to risk-informed decisionmaking is to show that the proposed change to the design basis meets several key principles. One of these principles is to show that the proposed change results in a small, but acceptable, increase in risk in terms of CDF and LERF, and is consistent with the NRC's Safety Goal Policy Statement. Acceptance guidelines for meeting this principle are presented in RG 1.174. The licensee used its PRA model to calculate risk increases due to the AOT extension of 3 days, during which associated EDG EG-Y-1A and SBO EDG are available. Both the incremental conditional core damage probability (ICCDP) and the incremental conditional large early release probability (ICLERP) were assessed. These quantities are a measure of the increase in probability of core damage and large early release, respectively, during a single diesel generator outage that would last for the entire duration allowed by the proposed change. The acceptance guideline for an extension of the TS AOT is provided in RG 1.177 as 5.0E-7 and 5.0E-8 for ICCDP and ICLERP, respectively. However, the RG 1.177 guideline is for a permanent change, and the reviewer has considered additional credits for the proposed one-time extension within the bound of adequate protection under the guideline in RG 1.174. Based on the one-time extension of 3 days, the incremental changes are summarized in the following table:

		Baseline CDF	Incremental Change in CCDP	Baseline LERF	Incremental Change in ICLERP
Prior to AOT Extension		3.4E-05/yr		3.7E-06/yr	
Increase because of 3-day AOT extension (licensee results)			1.1E-07		6.4E-09
New Baseline CDF		3.4E-05/yr		3.7E-06/yr	
Increase because of 7-day AOT Extension	A. using NRC SPAR 3.2 Model		3.9E-07		<3.97E-8
	B. Compensatory Measures*		Not credited		Not credited
Acceptance Guidelines**			5E-7		5E-8

* Quantifiable compensatory measures provided by the licensee

** Criteria for permanent change, flexibility considered for one-time changes.

Based on the NRC staff's analysis using the SPAR model, the configuration risk increase associated with internal initiating events with EDG EG-Y-1A out-of-service (fail-to-start and fail-to-run) is 1.7E-7 in ICCDP, well within the threshold value of 5.0E-07, the acceptance

guideline for total CDF risk (internal and external events, including internal fires) in RG 1.177 for permanent changes. Additional consideration of external events risk, including fires, is discussed below. The LERF is calculated employing NRC Inspection Manual Chapter 0609, SDP Appendix H with the CDF-LERF conversion factor of 0.1. This conversion multiplier is a ratio of LERF-to-CDF to evaluate the LERF value conservatively for those plants without available Levels II and III PRA models.

The TMI-1 containment is a large, dry, post-tensioned concrete containment with a steel liner. Because of this design feature, containment failure mechanisms do not typically contribute to LERF. As is the case for other large, dry containments, the major contributors to LERF is from the containment bypass sequences, which include interfacing systems, loss-of-coolant accidents, and steam generator tube rupture events. However, without any bias toward containment bypass sequences, the LERF multiplier (based on CDF) is typically less than 0.1, and this is consistent with the licensee's evaluation of the ICLERP.

The licensee evaluated the configuration risk without EDG EG-Y-1A, using a "zero maintenance" model, and a sensitivity study was performed for consistency with the NRC risk model. The parametric uncertainty analysis indicated that the error factor was reasonable and acceptable. The licensee maintains a separate SBO diesel generator, and contingency procedures were established to respond to SBO and grid instability during the extended AOT period.

The impact of external events due to seismic and high winds are evaluated, and the licensee concluded that the incremental risk associated with these external events is negligible for the duration of the requested extension of the AOT. On fire-related issues, TMI-1's Fire Probabilistic Risk Assessment is currently being developed, although still in draft stage, and is used to determine areas or scenarios that may be impacted by the unavailability of EDG EG-Y-1A. The areas affected by EDG EG-Y-1A include "B" trains of ES 480V switchgear room, inverter, DC panel and the battery charger room, and 4160V switchgear room, as well as other areas at 322' elevation and 338'-6", where a fire may challenge the availability of offsite power. However, no new fire scenarios are introduced by the unavailability of EDG EG-Y-1A. To increase sensitivity to fire prevention in these areas, the licensee will provide hourly fire watches during the proposed AOT extension period.

On a potential common-cause failure of 1A, 1B and SBO diesels and respective output breakers and fuel oil transfer pumps, the NRC staff evaluated the deterministic failure mechanisms and its associated failure modes, and concluded that there is no potential for the common-cause failure during the proposed extension period considering the current EDG EG-Y-1A failure mechanism.

During the proposed extension period, the total CDF and LERF have been increased due to the incremental changes in ICCDP and ICLERP, respectively, resulting from the one-time 3-day extension of the AOT under TS 3.7.2.c. However, the licensee employed several conservative assumptions with separate compensatory measures during the maintenance activities to reduce the plant risk. The specifics of risk quantification (qualitative and quantitative) of the proposed compensatory measures are documented in the proposed request letter and supplemented in the RAI response letter. The proposed compensatory measures are not credited in the incremental risk figures, and the risk increases under the proposed AOT extension are well within the acceptable guidelines.

The NRC staff has developed risk insights, associated with conducting the repair to EDG EG-Y-1A during at-power operation, and qualitatively compared the risk with the total risk of performing the maintenance activities following transitional operation and shutdown without EDG EG-y-1A. The staff concludes that the shutdown and transitional risk is greater than at-power risk.

In conclusion, a one-time 3-day extension of TS LCO 3.7.2.c at power to perform appropriate maintenance work would be more desirable from a risk standpoint than to perform maintenance at hot shutdown.

3.4.3 Avoidance of High-Risk Plant Configurations (Tier 2)

The licensee's PRA will identify and estimate major risk contributors of plant configurations, contributing event sequences, and associated cutsets. Potential major risk contributors include plant equipment failures, human errors and common cause failures. Insights from the risk assessment will be used in identifying and monitoring the plant configurations or conditions that may lead to significant risk increases during the AOT extension. The NRC staff finds that the proposed precautions, as well as the proposed compensatory measures, identified in the licensee's submittal and the RAI response letter, are adequate for preventing plant configurations or conditions that may increase risk significantly. In conclusion, there is reasonable assurance that high-risk plant configuration will not occur during the proposed 3-day extension period.

3.4.4 Risk-Informed Configuration Risk Management (Tier 3)

The intent of risk-informed configuration risk management is to ensure that plant safety is maintained and monitored. A formal commitment to maintain a configuration risk management program is necessary on the part of a utility prior to implementation of a risk-informed TS. This program can support the licensee's decision-making regarding the appropriate actions to control risk whenever a risk-informed TS LCO is entered. The NRC staff finds that the licensee has an adequate configuration risk management program to support the proposed license amendment.

3.4.5 Summary

The NRC staff has developed risk insights, associated with conducting the repair to EDG EG-Y-1A during at-power operation, and qualitatively compared the risk with the total risk of performing the maintenance activities following transitional operation and shutdown without EDG EG-Y-1A. The staff concludes that the shutdown and transitional risk is greater than at-power risk and, thus, the proposed one-time 3-day extension of the AOT with EDG EG-Y-1A inoperable, is acceptable.

4.0 REGULATORY COMMITMENTS

The licensee has made the following commitments concerning the additional 3-day AOT for EDG EG-Y-1A:

- a. While in the extended EDG EG-Y-1A outage time period, overall plant risk will be managed by the existing Maintenance Rule (a)(4) program. This program utilizes the PARAGON™ software to evaluate unique plant configurations. The PARAGON model

has the capability of running the TMI-1 CAFTA PRA model in the same manner as PRA Quant and/or EOOS to generate configuration specific risk numbers. This PRA information is combined with deterministic defense-in-depth information to obtain an overall risk color. AmerGen procedure WC-AA-101, "On-Line Work Control Process," addresses the actions required to be taken at each risk level.

- b. In accordance with WC-AA-101, TMI-1 is in a "YELLOW" risk condition, and is expected to remain in this category for the extended outage period for EDG EG-Y-1A. Flagging/Robust barriers have been established on protected equipment per HU-AA-101, "Human Performance Tools And Verification Practices." This specific equipment includes:
- EDG EG-Y-1B
 - 1E 4160V Switchgear ("B" train Emergency Safeguards (ES) 4160V switchgear)
 - EG-Y-4 SBO diesel generator
- c. The following restrictions will be in effect until EDG EG-Y-1A is restored to an Operable status:
- Elective maintenance will not be performed on EDG EG-Y-1B or the SBO diesel generator.
 - Elective maintenance (that would challenge the offsite power connections or offsite power unavailability) will not be performed in the switchyard.
 - Elective maintenance will not be performed on the opposite train emergency core cooling system (ECCS) equipment
- d. Additionally, elective maintenance and testing normally allowed during EDG EG-Y-1A maintenance will be rescheduled to a time that is not coincident with the extended AOT, in order to minimize aggregate risk. This will specifically include the following system/components:
- EDG EG-Y-1B
 - SBO diesel generator
 - Offsite power lines/ 230 KV switchyard
 - 125V DC
 - AC Power (4KV - 480V)
 - Instrument air compressors 1A, 1B, and 4
 - Turbine bypass valves
 - Atmospheric dump valves
 - Decay heat removal
 - Decay heat closed cooling water
 - Decay heat river water
 - Power-operated relief valve (PORV) / PORV block valves
 - Emergency feedwater
 - Fire service water pumps 1, 2, and 3
 - Makeup/HPI
 - Condensate pumps
 - Main feedwater
 - Nuclear river water

- Nuclear service closed cooling water
 - Secondary closed cooling water
 - Intermediate closed cooling water
 - MS-PT-950 and 1184 - "A" and "B" once-through steam generator (OTSG) steam pressure transmitters
- e. The following actions will be taken to provide an increased assurance of grid stability:
- No test or maintenance activities that could reduce switchyard reliability will be performed.
 - TMI-1 will contact the system dispatcher to ensure that no short-term activities adversely affecting grid stability are planned or have transpired.
- f. Operations shift briefings will be conducted to review procedural guidance for utilization of the SBO diesel generator in the event of a loss-of-offsite power. These briefings will also include the potential impacts of severe weather and any grid disturbances.

5.0 EMERGENCY CIRCUMSTANCES

The NRC's regulations at 10 CFR 50.91 contain provisions for issuance of an amendment where the Commission finds that an emergency situation exists in that failure to act in a timely way would result in shutdown of a nuclear power plant. In such a situation, the NRC may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or for public comment. In such a situation, the Commission will not publish a notice of proposed determination on no significant hazards consideration, but will publish a notice of issuance under 10 CFR 2.106.

In this instance, an emergency situation exists in that the proposed amendment is needed to allow the licensee to preclude an unnecessary plant shutdown. The licensee, in its application dated April 6, 2006, stated:

The need to request an emergency TS change arose from an unexpected condition found during a planned diesel generator major mechanical inspection performed on [EDG] EG-Y-1A beginning April 2, 2006.

During performance of the routine EDG inspection, maintenance personnel identified that the pump drive to flex-drive clearance on the Main Lube Oil Pump (EG-P-4A) and the Engine Driven Fuel Oil Pump (EG-P-9A) was excessive. The cross drive to governor drive clearance for EG-P-9A was found to be 0.024", with an acceptance criteria of 0.002"- 0.006". The pump drive to flex-drive clearance for EG-P-4A was found to be 0.016", with an acceptance criteria of 0.002"- 0.006". The lube oil pump drive also indicated signs of wearing a knife-edge on the gear teeth due to the excessive clearance. After disassembly the gear was inspected and no knife-like condition was found. The suspected cause of this excessive clearance is a worn flex-drive unit bearing. A preliminary investigation revealed the excessive wear could have resulted from a high number of diesel generator fast starts performed over the life of the diesel. This issue has been entered into the site Corrective Action Program (CAP) for resolution and

determination of causes and corrective actions. An Equipment Apparent Cause Evaluation will be performed to confirm this preliminary assessment.

If the EG-Y-1A EDG mechanical inspection had been completed based on original scope during the initial planned inspection duration, TS 3.7.2.c would have been exited prior to the expiration of the seven (7) day AOT.

The work is currently scheduled to complete on April 8, 2006 at 1900 hours. The TS 3.7.2.c action was entered on April 2, 2006 at 2100 hours, and will expire on April 9, 2006 at 2100 hours. As a result of the complexity of repairing the pump drive to flex-drive clearances on the EG-P-9A and EG-P-4A pump drives, replacement of the lube oil pump drive gear assembly, and restoration of EG-Y-1A operability, a one-time TS change is requested to ensure that TMI Unit 1 would not be unnecessarily required to shut down.

AmerGen could not have foreseen the need for this TS change prior to identification of the unacceptable pump drive to flex-drive clearances and worn lube oil pump drive gear assembly. The EG-Y-1A EDG did not exhibit signs of operational degradation prior to the scheduled maintenance outage. Therefore, AmerGen requests that this proposed TS change be considered under emergency circumstances as described in 10 CFR 50.91(a)(5).

The Commission expects licensees to apply for license amendments in a timely fashion. In this situation, however, the NRC staff has determined that the licensee has explained, as set forth above, why this emergency situation occurred and why it could not avoid this situation. Based on the licensee's reasons set forth above, the NRC staff has determined that the licensee could not reasonably have foreseen the continued inoperability of the subject EDG, and could not file the application in advance of that event. Accordingly, the NRC staff has determined that the licensee made a timely application for the amendment, has not abused the emergency provisions of 10 CFR 50.91(a)(5), and did not itself create the emergency.

6.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulation at 10 CFR 50.92(c) states that the Commission may make a final determination that a license amendment 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; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) result in a significant reduction in a margin of safety.

The NRC staff reviewed the following no significant hazards consideration (NSHC) evaluation that is provided by the licensee in its submittal dated April 6, 2006.

1. Does the proposed change involve a significant increase in the probability or the consequences of any accident previously evaluated?

Response: No

The proposed change affects the Allowed Outage Time for TS 3.7.2.c. The proposed change allows a one-time extension of the current Allowed Outage Time for the inoperable Emergency Diesel Generator (EDG) EG-Y-1A from seven (7) days to ten (10) days. The proposed change does not affect the design of the EDGs, the operational characteristics or function of the EDGs, the interfaces between the EDGs and other plant systems, or the reliability of the EDGs. Limiting conditions for operation and their associated allowed outage times are not considered initiating conditions for any accident previously evaluated, nor are the EDGs considered initiators of any previously evaluated accidents. The EDGs are provided to mitigate the consequences of previously evaluated accidents, including a loss of offsite power. The consequences of previously evaluated accidents will not be significantly affected by the extended EDG Allowed Outage Time because a sufficient number of onsite AC power sources will continue to remain available to perform the accident mitigation functions associated with the EDGs, as assumed in the accident analyses. Thus the consequences of accidents previously evaluated are not affected by the proposed change in Allowed Outage Time. To fully evaluate the effect of the proposed EDG Allowed Outage Time extension, Probabilistic Risk Assessment (PRA) methods and a deterministic analysis were utilized. The results of the analysis show no significant increase in Core Damage Frequency (CDF) or Large Early Release Frequency (LERF) based upon the guidance provided in Regulatory Guide 1.174 "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and [RG] 1.177, "An Approach for Plant-Specific, Risk-Inform Decisionmaking: Technical Specifications".

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change does not involve a change in the design, configuration, or method of operation of the plant. The proposed change will not alter the manner in which equipment operation is initiated, nor will the functional demands on credited equipment be changed. The proposed change allows operation of the unit to continue while EDG EG-Y-1A is repaired and retested. The proposed extension does not affect the interaction of EDG EG-Y-1A with any system whose failure or malfunction can initiate an accident. As such, no new failure modes are being introduced.

Therefore, the proposed action does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed change does not alter the plant design, nor does it affect the assumptions contained in the safety analyses. Specifically, there are no changes being made to the EDG design, including instrument setpoints. The proposed change has been evaluated both deterministically, and using risk-informed methods. Based upon these evaluations, margins of safety ascribed to EDG availability and to plant risk have been determined to not be significantly reduced. The evaluation has concluded the following with respect to the proposed change:

Applicable regulatory requirements will continue to be met, adequate defense-in-depth will be maintained, sufficient safety margins will be maintained, and any increases in CDF and LERF are small and consistent with the NRC Safety Goal Policy Statement (Federal Register, Vol. 51, p. 30028 (51 FR 30028), August 4, 1986, as interpreted by NRC Regulatory Guides 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and [RG]1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications". Furthermore, increases in risk posed by potential combinations of equipment out of service during the proposed extended EDG EG-Y-1A Allowed Outage Time will be managed under a configuration risk management program consistent with 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," paragraph (a)(4).

The availability of offsite power coupled with the availability of the other EDG[s] and the use of on-line risk assessment tools, as well as planned compensatory measures, provide adequate compensation for the potential small incremental increase in plant risk associated with the extended EDG EG-Y-1A Allowed Outage Time. The proposed extended EDG EG-Y-1A Allowed Outage Time in conjunction with the availability of the other EDG[s], continues to provide adequate assurance of the capability to provide power to the engineered safety features (ESF) buses.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on this review, the three standards of 10 CFR 50.92(c)(9) are satisfied. Therefore, the NRC staff has made a final determination that NSHC is involved for the proposed amendment and that the amendment should be issued as allowed by the criteria contained in 10 CFR 50.91.

7.0 STATE CONSULTATION

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

8.0 ENVIRONMENTAL CONSIDERATION

This amendment changes 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 amendment involves no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite, and that there is no

significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final finding that the amendment involves no significant hazards consideration. Accordingly, the amendment meets 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 amendment.

9.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

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