



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001
September 21, 2010

Mr. Michael J. Pacilio
President and Chief Nuclear Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT
NO. 191 RE: EMERGENCY PLAN CHANGE (TAC NO. ME3693)

Dear Mr. Pacilio:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 191 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit No. 1. The amendment is in response to your letter dated April 2, 2010, which superseded the prior 50.54(q) letter request dated June 19, 2009, and as supplemented by letter dated March 31, 2010.

The amendment revises the Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station, Table B-1, "Minimum Staffing Requirements for the On-Shift Clinton Station ERO," to increase the Non-Licensed Operator staffing from two to four, allow in-plant protective actions to be performed by personnel assigned to other functions, and replace a Mechanical Maintenance person with a Non-Licensed Operator.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Nicholas J. DiFrancesco".

Nicholas J. DiFrancesco, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures:

1. Amendment No. 191 to NPF-62
2. Safety Evaluation

cc w/encls: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT NO. 1

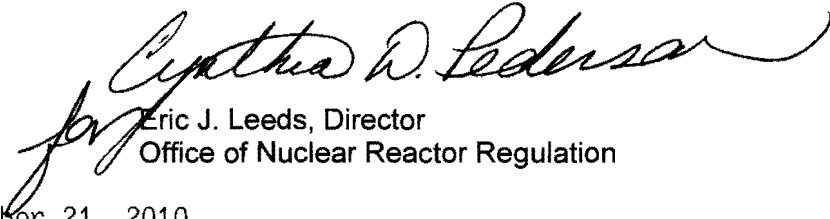
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 191
License No. NPF-62

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (the licensee), dated April 2, 2010, which superseded the prior letter request dated June 19, 2009, and as supplemented by letter dated March 31, 2010, complies with the standards and requirements of the Atomic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 to authorize revision of the current licensing basis for Clinton Power Station, Unit No. 1, as set forth in the application for amendment by the licensee, dated April 2, 2010. The licensee shall revise the Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station, Table B-1, "Minimum Staffing Requirements for the On-Shift Clinton Station Emergency Response Organization," to increase the non-licensed operator staffing from two to four, allow in-plant protective actions to be performed by personnel assigned to other functions and remove the two on-shift radiation protection personnel assigned for in-plant protective actions, and replace a mechanical maintenance person with a non-licensed operator.

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

FOR THE NUCLEAR REGULATORY COMMISSION


Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Date of Issuance: September 21, 2010

ATTACHMENT TO LICENSE AMENDMENT NO. 191

FACILITY OPERATING LICENSE NO. NPF-62

DOCKET NO. 50-461

Replace the following pages of the Facility Operating License and Appendix "A" Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

Insert

License NPF-62
Page 3

License NPF-62
Page 3

TSs
None

TSs
None

- (4) Exelon Generation Company, pursuant to the Act and to 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) Exelon Generation Company, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
- (6) Exelon Generation Company, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility. Mechanical disassembly of the GE141 isotope test assemblies containing Cobalt-60 is not considered separation; and
- (7) Exelon Generation Company, pursuant to the Act and 10 CFR Part 30, to intentionally produce, possess, receive, transfer, and use Cobalt-60.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Exelon Generation Company is authorized to operate the facility at reactor core power levels not in excess of 3473 megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 191 are hereby incorporated into this license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 191 TO FACILITY OPERATING LICENSE NO. NPF-62

EXELON GENERATION COMPANY, LLC

CLINTON POWER STATION, UNIT NO. 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter to the Nuclear Regulatory Commission (NRC, the Commission) dated April 2, 2010, Exelon Generation Company, LLC (EGC, the licensee), superseded their prior 50.54(q) letter request dated June 19, 2009, and as supplemented by letter dated March 31, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML100950124, ML091700736, and ML100910142, respectively), requested changes to the Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station, for Clinton Power Station, Unit No. 1 (CPS). The changes revise the Exelon Nuclear Radiological Emergency Plan (E-plan) Annex for Clinton Station, Table B-1, "Minimum Staffing Requirements for the On-Shift Clinton Station ERO," to increase the Non-Licensed Operator staffing from two to four, allow in-plant protective actions to be performed by personnel assigned to other functions, and replace a Mechanical Maintenance person with a Non-Licensed Operator (NLO). The letters prior to amendment request dated April 2, 2010, did not change the NRC staff's proposed finding of no significant hazards consideration determination as published in the *Federal Register* on June 1, 2010 (75 FR 30445).

2.0 REGULATORY EVALUATION

Title 10 of the Code of Federal Regulations (10 CFR), Section 50.54(q) establishes that all holders of a nuclear power reactor operating license must follow and maintain in effect emergency plans which meet the standards in Section 50.47(b) and the requirements in Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50. Section 50.47 of 10 CFR, "Emergency plans," sets forth emergency plan requirements for nuclear power plant facilities.

Section 50.47(b)(1) states, in part, that: "...each principal response organization has staff to respond and to augment its initial response on a continuous basis."

Section 50.47(b)(2) states, in part, that: "...adequate staffing to provide initial facility accident response in key functional areas is maintained at all times," and that "timely augmentation of response capabilities is available...."

Appendix E to 10 CFR Part 50, Section IV, Part A, "Organization," requires, in part, that: "The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization...."

2.1 Guidance

Regulatory Guide 1.101 (RG 1.101), "Emergency Response Planning and Preparedness for Nuclear Power Reactors," provides guidance on methods acceptable to the NRC staff for implementing specific parts of the NRC's regulations – in this case, 10 CFR 50.47(b) and Appendix E to Part 50. Revision 2 of RG 1.101 endorses Revision 1 to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," (NUREG-0654) which provides specific acceptance criteria for complying with the standards set forth in 10 CFR 50.47. These criteria provide a basis for NRC licensees, and State and local governments to develop acceptable radiological emergency plans, and improve emergency preparedness.

In NUREG-0654, Section II, "Planning Standards and Evaluation Criteria," Evaluation Criteria II.B.1 and II.B.5 address the 10 CFR 50.47(b)(2) planning standard. Evaluation Criteria II.B.1 specifies the onsite emergency organization of plant staff personnel for all shifts, and its relation to the responsibilities and duties of the normal shift complement. Evaluation Criteria II.B.5, states, in part, that:

Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.

Regulatory Issue Summary 2005-02, "Clarifying the Process for Making Emergency Plan Changes," was issued by the NRC to clarify the meaning of "decrease in effectiveness" and the process for making changes to E-plans, and to provide some examples of changes that are considered to be a decrease in effectiveness.

3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of its proposed emergency plan changes, as described in the application April 2, 2010, which superseded the prior request dated June 19, 2009, and as supplemented by letter dated March 31, 2010. The staff's technical evaluation is detailed below.

3.1 Increase the Non-Licensed Operator On-Shift Staffing from two to four

The licensee discusses that the on-shift staff must be capable of taking emergency actions to safely shut down the reactor, mitigate accident consequences, notify augmented ERO staff, perform firefighting and provide medical assistance, if needed. Increasing the number of NLO

staffing from two to four improves the response of site personnel whose emergency plan role is to assist with operator and maintenance response to the emergency event, and provides an increased number of personnel for repair and corrective actions.

The NRC staff finds the proposed change to the increased on-shift NLO staffing continues to meet the intent of the NRC-approved Emergency Plan, and continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

3.2 Replace a Mechanical Maintenance Person with a Non-Licensed Operator

The licensee provides that a review of the NUREG-0654, Table B-1 requirements for fulfilling the maintenance functions during the first 90 minutes of an Emergency Plan event was performed. When responding to accidents operators use emergency operating procedures (EOP), Appendix R procedures, and abnormal procedures. The NRC staff review was based on the need for maintenance personnel to support the actions directed by these procedures.

The licensee further provides that the necessary timeframe for performing manual actions as well as the training required to perform the tasks was considered. Although the CPS Updated Safety Analysis Report (USAR) does not state specific testing results for time periods (i.e., minutes), it is assumed under the design of the plant and the results of the USAR testing program that only operator actions in conjunction with normal expected system operation is needed to mitigate events associated with an E-plan classification. Overall, for all items reviewed, the need for maintenance personnel within the first 90-minutes of an emergency condition is limited to those actions associated with the EOPs or for troubleshooting or abnormal system alignment to operate equipment that did not respond as expected during the event.

The licensee further provides that the following table documents the results of the above review of Operations procedures:

Emergency Operating Procedures

Task	Timeframe
Install Jumpers for bypassing various interlocks.	For use during a "beyond design-basis" accident, therefore, none assumed or required per EOP philosophy documents.
Install Blocks for bypassing various interlocks.	For use during a "beyond design-basis" accident, therefore, none assumed or required per EOP philosophy documents.
Moving barrels of boron for alternate boron injection accident.	For use during a "beyond design-basis" accident, therefore, none assumed or required per EOP philosophy documents.

The licensee further provides that increasing the number of NLO staffing from two to four improves the response of site personnel whose E-plan role is to assist with operator and maintenance response to the emergency event and provides an increased number of personnel for repair and corrective actions.

The licensee further provides that based on this review, replacing a Mechanical Maintenance ERO responder with an NLO qualified to perform the required maintenance action has no effect on the performance of associated tasks during the early part of an event and maintains the effectiveness of the ERO on-shift maintenance response staff.

The staff requested additional information related to the training/qualifications provided to the NLOs with respect to performing minor or limited scope damage repair and corrective functions during the initial phase of an event. The licensee provided a response that, in summary, provided the NLOs are trained and qualified to perform the tasks necessary to affect limited scope damage repairs and corrective actions.

Based on the preceding analysis and the licensee's responses to a request for additional information, the NRC staff finds the compensation to designate the Repair and Corrective Actions function performed by Mechanical Maintenance personnel to a NLO to be acceptable. Therefore, the proposed change to the on-shift Mechanical Maintenance staffing continues to meet the intent of the NRC-approved Emergency Plan, and continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

3.3 Allow In-Plant Protective Actions to be Performed by Personnel Assigned to Other Functions and Remove the Two On-Shift Radiation Protection (RP) Personnel Assigned for In-Plant Protective Actions

3.3.1 Background

The on-shift staffing for CPS was originally approved by NUREG-0853, Supplement No. 4, "Safety Evaluation Report Related to the Operation of Clinton Power Station Unit No. 1," dated February 1985 (ADAMS Accession No. 8503210295). The evaluation stated, in part:

The applicant's emergency plan describes the onsite emergency response organization of plant personnel for all shifts and its relation to the responsibilities and duties of the normal shift complement (Table 2-1 of the emergency plan). The shift and augmented staffing specified in the emergency plan meet the specific staffing goals expressed in Table B-1 of NUREG-0654.

The staff finds that the applicant's emergency plan meets this Planning Standard [Onsite Emergency Organization]; the requirements of 10 CFR 50; and the guidance criteria of NUREG-0654.

Revision 4 to the CPS E-plan provided that there was one RP personnel on shift with six augmented within 30-minutes and six augmented within 60-minutes. Additionally, it provided that the RP personnel positions assigned to Protective Actions (In-plant) were "Positions manned by shift personnel assigned other functions."

After a staff augmentation issue during an Alert on February 13, 1998, the licensee requested prior approval of proposed changes to the CPS ERO by letter dated July 14, 1998 (ADAMS Accession No. 9807220055). The licensee stated in this letter:

The proposed changes to the CPS ERO minimum emergency staffing levels will increase the effectiveness of the CPS Emergency Plan, and the Emergency Plan as revised will continue to meet 10 CFR 50.54(b)(2) and 10 CFR 50, Appendix E requirements.

The proposed changes included having a minimum of four RP personnel (one radiological protection shift supervisor and three technicians) on-shift at all times, and replace the six 30-minute and six 60-minute responders with 12 designated 60-minute responders. Additionally, it provided that the RP personnel positions assigned to Protective Actions (In-plant) were dedicated positions for on-shift personnel.

By letter dated September 28, 1998 (ADAMS Accession No. 9810020212), the NRC staff provided the following:

The NRC staff has reviewed your request and based on your statements has determined that the request does not meet the criteria of needing prior NRC approval in accordance with 10 CFR 50.54(q). These changes may be subject to NRC inspection in the future.

The licensee provided the following background in its letter dated June 19, 2009:

In February 1998, plant equipment malfunctions resulted in a loss of shutdown cooling. Off Normal procedures were entered in response to plant conditions. The on-duty shift supervisor (SS) declared an Alert at approximately 0410 hours to obtain additional resources in restoring shutdown cooling capabilities. Following the Alert declaration, CPS Emergency Response Organization (ERO) facilities were not activated within the specified time period because minimum staffing of the facilities was not obtained in a timely manner. One of the deficiencies identified following activation of the ERO involved the late arrival of RP personnel.

During Root Cause Evaluation of the event, CPS identified a number of issues that led to the late facility staffing. Some of the issues identified include the following:

- Not all ERO Responders had their ERO badges with them. ERO badges were issued to all ERO responders to indicate they were qualified to respond to the emergency event. Failure of ERO Responders to carry their ERO badges caused unnecessary hold ups in accessing the Protected Area as Security had to validate each responder's ERO qualifications prior to allowing access.
- The Main Control Room was not timely in notifying Security to activate the ERO.
- Some 30 minute and 60 minute responders incurred unexpected delays in arriving at the site including stopping to put gas in their car and performing normal personal morning routine activities prior to going to work for the day.

As a result of the root cause evaluation, CPS implemented a corrective action to increase the on-shift staffing for RP personnel from one individual to four. The addition of these three RP personnel was the corrective action to address the failure to meet minimum staffing requirements due to the late arrival of RP personnel. These additional on-shift RP personnel were intended to ensure that adequate staffing would be available during the early part of an event.

The licensee provided the following background in its letter dated June 19, 2009:

The two RP personnel assigned to in-plant protective actions on Table B-1, that EGC is proposing to delete from the on-shift staffing requirements, were added in response to the late arrival of responders to an actual event at CPS in 1998. The late arrival was contributed to by a number of issues for which the following changes have been implemented since 1998 for compensation.

- ERO badges are no longer utilized. The use of these badges lead to delays in plant access as Security had to validate ERO qualifications on responders who did not have their ERO badges prior to allowing plant access. Plant personnel now utilize normal access practices and are not held up for qualification verification.
- The Main Control Room initiates an automated ERO callout system called Dialogics. In 1998 the Main Control Room notified Security of the event and Security would then activate Dialogics. Activation of Dialogics directly from the Main Control Room eliminates delays in transferring information resulting in improved activation and response times.
- Dialogic system changes. The Dialogics system now automatically notifies additional ERO position responders. This ensures additional ERO personnel respond to an emergency event to fill positions.

3.3.2 Evaluation

In the technical evaluation of the proposed changes to the CPS E-plan requested in the letter dated April 2, 2009, the staff reviewed corrective actions to the event of 1998 and the ability to perform the required functions associated with Protective Actions (in-plant).

Protective Actions (in-plant) – NUREG-0654, Table B-1 guidance for Protective Actions (in-plant) indicates that two health physics (HP) technicians should be assigned on-shift to support radiation protection activities. NUREG-0654, Table B-1 notes that these HP technicians may be provided by shift personnel assigned other functions. The existing CPS E-Plan designated two RP personnel on-shift to perform this function (in excess of the NUREG-0654 Table B-1 guidance). The proposed CPS E-Plan change revises Table B-1 to note that the two RP personnel on-shift may be provided by personnel assigned to other functions.

The licensee provides the following in its letter dated June 19, 2009:

CPS is proposing to remove the two on-shift RP personnel assigned for In-Plant Protective Actions. As noted above, these on-shift positions were added in 1998 as a corrective action due to issues with timeliness of personnel staffing during an emergency event. CPS proposes to allow these duties to be performed by personnel assigned other functions.

CPS will still maintain two RP personnel assigned for emergency events as on-shift staffing. This change re-aligns CPS on-shift staffing with that specified in NUREG-0654 prior to the 1998 corrective actions associated with the RP personnel.

Table 2 of Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements," provides NRC guidance in the area of minimum onsite emergency response staffing levels. The following major tasks are those designated to be met by on-shift RP personnel.

- Access control
- Personnel monitoring
- Dosimetry
- In plant surveys
- HP coverage for repair, corrective actions, search and rescue, first-aid, and firefighting

The assigned two on-shift RP personnel, whose tasks are dose assessment and in-plant surveys, are available to accompany personnel entries into the CPS radiologically controlled area (RCA) for accident mitigation during the early stages of the accident. These two RP personnel will be available at the scene of in-plant operations to provide radiological assessment, decision-making, and radiological leadership.

Some Radiation Protection Technician (RPT) support functions associated with in-plant protective actions, such as access control, personnel monitoring, dose assessment, and dosimetry, now require less dedicated support time since they are covered by plant process enhancements such as newer technology and tools. The improved technology and tools use available equipment such as portal monitors, self-alarming dosimeters, and an automated access control point. All onsite ERO members expected to be dispatched into the plant for evaluation, operations or repair activities are Radiation Worker qualified and understand and are trained on how to use the available tools.

The following provides a summation of the improved technology and tools associated with the in-plant protective actions.

a. Access Control

- Access to the RCA is controlled electronically. The electronic access control system provides for the user to electronically sign radiation work permits to self authorize themselves to access the RCA and self issuance of an electronic dosimeter in addition to the assigned thermoluminescence dosimeter (TLD) that is always worn. Access to the RCA is controlled electronically without interface with an RPT.
- Access entry points to high radiation areas are controlled by lock and key. [CPS] Operations maintain high radiation area keys for needed access under emergency conditions. Personnel access to high radiation areas is controlled by station program procedures.

b. Personnel monitoring

- Personnel are issued TLDs quarterly that are continuously worn for constant monitoring. No RPT support is needed for issuance of TLDs to on-shift emergency workers.
- Secondary dosimeters are self-issued through the electronic access control system. The secondary dosimeters are self-reading, alarming, electronic dosimeters that provide readout of accumulated dose and ambient dose rate. No RPT support is needed for issuance of electronic dosimeters since issuance and use of the electronic dosimeters are part of radiation worker training.
- Automated whole body monitors provide contamination monitoring. All radiation workers are qualified to use the automated whole body monitors without RPT interface.
- In circumstances when the automated whole body monitors are not available, hand held friskers are used for personnel contamination monitoring. All radiation workers are qualified to use the hand held friskers without RPT interface.

c. Dosimetry

- Personnel are issued TLDs quarterly that are continuously worn for constant monitoring. No RPT support is needed for issuance of TLDs to on-shift emergency workers.
- As described above, secondary dosimeters are self-issued through the electronic access control system. No RPT support is needed for issuance of electronic dosimeters.
- If a TLD is lost or damaged under emergency conditions, additional TLDs are staged for emergency issuance. Emergency issuance requires a TLD number and name of the person to who it is issued. This task does not require an ANSI [American National Standards Institute] qualified RPT to perform.
- If an electronic dosimeter is lost or damaged, additional electronic dosimeters are maintained in a fast-activation mode for immediate monitoring. This task does not require an ANSI qualified RPT to perform.
- Additionally, if an electronic dosimeter is lost or damage[d], self-reading pencil dosimeters are pre-stage[d] for emergency use. Issuance of these [dosimeters do] not require an ANSI qualified RPT.

d. In-plant surveys

The proposed change that allows in-plant protective actions to be performed by personnel assigned [to] other functions is based on the knowledge that the need for RP coverage occurs primarily following the onset of fuel damage. NUREG-0654 notes that the range of times between the onset of accident

conditions and the start of a major radiological release is on the order of one-half hour to several hours. This assumption for worst-case accident scenarios provides the basis for RP response.

CPS utilizes the Mark III containment design for the containment of source term following design-basis accidents. NUREG/CR-6295, "Reassessment of Selected Factors Affecting Siting of Nuclear Power Plants," Table 3-4, notes that for the Grand Gulf Nuclear Power Plant, which also utilizes a Mark III containment design, the earliest a radiological release would occur following the onset of an accident would be 2.3 hours.

Enclosure 1 [of the letter dated June 19, 2009] contains area dose rate data for design- basis accidents 1 hour following an event. This information was obtained from the review of Station Shielding for Post Accident Conditions by Sargent & Lundy Engineers - March 1981 in accordance with NUREG-0660, "NRC Action Plans Developed as a Result of the TMI-2 Accident," Evaluation Criteria II.B.2. This review was used to determine the extent of radiological controls that would have to be put in place by RP personnel following the declaration of emergency. The review provided one-hour radiological conditions within CPS following a design- basis accident. Enclosure 1 contains a table, which represents the dose rates in normally accessible areas of the power block. Dose rates in the auxiliary building, fuel building and containment would make these areas inaccessible one hour following an event based on this analysis.

The dose rates from [Enclosure 1 of the letter dated June 19, 2009] indicate that the majority of the plant areas needed for access to perform mitigating actions remain accessible without RP coverage following an event.

e. RP coverage for repair, corrective actions, search and rescue, first-aid, and firefighting

CPS USAR Chapter 15 describes the design-basis events that would require RPT support based on dose rates or contamination events. Overall, the plant design and the operator actions do not necessitate [...] multiple RP personnel. Operator actions from the Main Control Room provide the immediate actions for plant events. The RP personnel would be required to establish boundaries for contaminated areas and elevated dose rate areas to control access. However, electronic access control is used to limit any access to the RCA while specific area boundaries are being established.

A review of the design-basis events verifies that two RP personnel can perform all the RP tasks necessary to respond to the event for the initial 60 minutes.

In addition, CPS does not utilize RP personnel as fire brigade members. This ensures RP personnel are available to support any required RP tasks associated with the emergency event in a timely fashion.

f. Dose assessment

Dose assessment is performed utilizing a computer program. Application of this program to determine projected dose involves input of data obtained from computer Plant Parameter Display System screens. Dose projections can be accomplished from start to finish within three to five minutes. The quick determination of dose assessment allows the assigned RP person for this task time to assist the ERO with other related RP tasks during an emergency event. This dose assessment can be performed at various locations on-site and at the off-site Emergency Operations Facility.

g. Corrective actions

The two RP personnel assigned to in-plant protective actions on Table B-1, that EGC is proposing to delete from the on-shift staffing requirements, were added in response to the late arrival of responders to an actual event at CPS in 1998. The late arrival was contributed to by a number of issues for which the following changes have been implemented since 1998 for compensation.

- ERO badges are no longer utilized. The use of these badges lead to delays in plant access as Security had to validate ERO qualifications on responders who did not have their ERO badges prior to allowing plant access. Plant personnel now utilize normal access practices and are not held up for qualification verification.
- The Main Control Room initiates an automated ERO callout system called Dialogics. In 1998 the Main Control Room notified Security of the event and Security would then activate Dialogics. Activation of Dialogics directly from the Main Control Room eliminates delays in transferring information resulting in improved activation and response times.
- Dialogic system changes. The Dialogics system now automatically notifies additional ERO position responders. This ensures additional ERO personnel respond to an emergency event to fill positions.

Therefore, based on the above evaluation, EGC has confirmed that two on-shift RP personnel can provide the necessary support for all Table B-1 functions during the initial 60 minutes of an event. The CPS proposal to re-align Table B-1 to the NUREG-0654 Table B-1 requirements which allows in-plant protective actions to be performed by personnel assigned other functions will provide adequate RP response capability during early stages of an emergency event.

The licensee provides the following in its letter dated April 2, 2010:

[T]he proposed changes to the CPS Emergency Plan Table B-1, "Minimum Staffing Requirements for the On-Shift Clinton Station ERO," were evaluated against the following criteria.

- NUREG-0654 Table B-1 staffing guidance
- Functional areas and tasks listed in NUREG-0654
- Plant operations during design-basis accidents
- RP personnel tasks associated with design-basis accidents
- Radiological accident assessment

The reallocation of functions between ERO responders and the addition of two NLOs does not reduce the minimum number of on-shift staffing, nor does it reduce or impede the tasks that the station is required to perform during an emergency event. Since NUREG-0654, Table B-1 allows in-plant protective actions to be performed by personnel assigned other functions during the early stages of an emergency event; the proposed changes to CPS Table B-1 would still satisfy the planning standard established by NUREG-0654.

These changes still exceed the number of on-shift staffing personnel as defined by NUREG-0654 and do not reduce the functionality of tasks required to be performed. Therefore, from an ERO performance stand point this change does not reduce the effectiveness of the Emergency Plan.

However, the proposed change may be perceived as a decrease in effectiveness based on the removal of two of the three RP personnel that were added to the CPS Emergency Plan Table B-1 in 1998 as a corrective action to support timely minimum staffing. The addition of RP personnel in 1998 was done in response to the failure of CPS to achieve required minimum staffing within the specified time frame during a classified event. As discussed in this evaluation, the process improvements made by CPS associated with the activation of the ERO will ensure emergency responders will be available on-site in the allotted time frame. Additionally, the station has successfully demonstrated the capability to fully staff and activate the ERO facilities in a September 16, 2004, off-hours augmentation drive-in drill.

The staff requested additional information related to the review of the design-basis events to verify that the two PR personnel can perform all of the RP tasks necessary to respond to an event for the initial 60-minutes. The licensee provided the analysis of all of the Chapter 15 events considered on a pre-Alternative Source Term basis. The licensee's analyses include protective sequences utilized to accommodate the events and their effects, and the systems involved in the protective actions.

The evaluation used in determining the RP coverage for repair, corrective actions, search and rescue, first-aid, and firefighting discussed in Section III.e, of letter dated June 19, 2009, reviewed the Chapter 15 events (including those discussed in the Nuclear Safety Operational Analysis (NSOA)), to determine which events would require RP technician support.

The licensee provided that all NSOA events discussed in CPS USAR, Appendix 15A were evaluated to ensure that two on-shift RPTs can provide an adequate response to these events. This evaluation concluded that two RPTs is an appropriate on-shift complement.

The staff concludes that adequate resources are available to support in-plant protective actions within 60-minutes of event classification prior to staff augmentation. The licensee relies on the availability of computer systems and enhanced processes to relieve RP personnel of access

control, personnel monitoring and dosimetry tasks, thereby freeing the RP personnel to cover any vital response activities. The proposed staffing of two RP personnel on-shift exceeds the NUREG-0654 Table B-1 staffing for total RP personnel on-shift by one. In addition, the corrective actions for the untimely ERO augmentation for the Alert in 1998 appear to be adequate based on the station successfully demonstrating an off-hours augmented drill in 2004.

As stated by the licensee in its letter dated March 31, 2010:

In accordance with EP-AA-1000, "Exelon Nuclear Standardized Radiological Emergency Plan," Section N.2.f, "At least once per drill cycle (every 6 years), an off-hours, unannounced activation of the ERO Notification System with actual response to the emergency facilities is conducted by each station." This activity also meets the NUREG-0654 Evaluation Criteria N.1.b requirement to conduct an off-hours, unannounced drill once per cycle.

The staff finds the compensation to change the staffing for this task to be acceptable. Therefore, the staff concludes that the proposed change to the on-shift staffing continues to meet the intent of the NRC approved emergency plan, and continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact was published in the *Federal Register* on July 22, 2010 (75 FR 42790). Accordingly, based upon the environmental assessment, the Commission has determined that issuance of this amendment will not have a significant effect on the quality of the human environment.

6.0 CONCLUSION

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

7.0 REFERENCES

1. Exelon Letter, "Request for NRC Approval of Changes to the Clinton Power Station Emergency Plan," dated June 19, 2009 (ADAMS Accession No. ML091700736).
2. Exelon Letter, "Response to Request for Additional Information Related to Request for NRC Approval of Changes to the Clinton Power Station Emergency Plan," dated March 31, 2010 (ADAMS Accession No. ML100910142).

3. Exelon Letter, "Request for NRC Approval of Changes to the Clinton Power Station (CPS) Emergency Plan," dated April 02, 2010 (ADAMS Accession No. ML100950124).
4. NUREG-0654/FEMA REP-1, Revision 1, Supplement 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November, 1980 (ADAMS Accession No. ML040420012).
5. Regulatory Guide 1.101, Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors," dated October 1981 (ADAMS Accession No. ML090440294).
6. NRC Regulatory Issue Summary 2005-02, "Clarifying the Process for Making Emergency Plan Changes," dated February 14, 2005 (ADAMS Accession No. ML042580404).
7. NUREG-0853, Supplement 4, "Safety Evaluation Report Related to the Operation of Clinton Power Station, Unit1," dated February 1985 (ADAMS Accession No. 8503210295).
8. NRC letter, "Emergency Response Organization Minimum Staffing, Clinton Power Station, Unit 1," dated September 28, 1998 (ADAMS Accession No. 9810020212).

Principal Contributor: M. Norris

Date: September 21, 2010

September 21, 2010

Mr. Michael J. Pacilio
President and Chief Nuclear Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT
NO. 191 RE: EMERGENCY PLAN CHANGE (TAC NO. ME3693)

Dear Mr. Pacilio:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 191 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit No. 1. The amendment is in response to your letter dated April 2, 2010, which superseded the prior 50.54(q) letter request dated June 19, 2009, and as supplemented by letter dated March 31, 2010.

The amendment revises the Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station, Table B-1, "Minimum Staffing Requirements for the On-Shift Clinton Station ERO," to increase the Non-Licensed Operator staffing from two to four, allow in-plant protective actions to be performed by personnel assigned to other functions, and replace a Mechanical Maintenance person with a Non-Licensed Operator.

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

Sincerely,
/RA/

Nicholas J. DiFrancesco, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures:

1. Amendment No. 191 to NPF-62
2. Safety Evaluation

cc w/encls: Distribution via Listserv

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ADAMS Accession no. ML101900030 NRR-058 *by SE Letter

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