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

September 23, 2011

Mr. Thomas Joyce
President and Chief Nuclear Officer
PSEG Nuclear LLC
P.O. Box 236, N09
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION AND SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2 - APPROVAL OF EMERGENCY ACTION LEVEL SCHEME CHANGE (TAC NOS. ME4883, ME4884 AND ME4885)

Dear Mr. Joyce:

By letter dated October 14, 2010, as supplemented by letters dated July 14, 2011, July 19, 2011, and August 25, 2011, PSEG Nuclear LLC requested approval of changes to the emergency action levels (EALs) for Hope Creek Generating Station (HCGS) and Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem). The requested changes support a conversion from the current EAL scheme used at HCGS and Salem to a scheme based on Nuclear Energy Institute 99-01, Revision 5, "Methodology for Development of Emergency Action Levels."

The Nuclear Regulatory Commission staff has completed its review as documented in the enclosed Safety Evaluation (SE). Our SE concludes that the proposed changes meet the requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.47(b)(4) and Section IV.B of Appendix E to 10 CFR Part 50, and provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Therefore, the NRC staff approves the proposed changes.

Sincerely,

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Docket Nos. 50-354, 50-272 and 50-311

Enclosure:
Safety Evaluation

cc: ListServ

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

EMERGENCY ACTION LEVEL SCHEME CHANGE

PSEG NUCLEAR LLC

HOPE CREEK GENERATING STATION

AND SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-354, 50-272, AND 50-311

1.0 INTRODUCTION

By letter dated October 14, 2010, as supplemented by letters dated July 14, 2011, July 19, 2011, and August 25, 2011 (References 12, 13, 14, and 15, respectively), PSEG Nuclear, LLC (PSEG, the licensee), requested prior U.S. Nuclear Regulatory Commission (NRC) approval for proposed changes to the emergency action levels (EALs) for the Hope Creek Generating Station (HCGS) and Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem). The requested changes support a conversion from the current EAL scheme used at HCGS and Salem to a scheme based on the Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels," Revision 5, dated February 2008 (Reference 5). HSGS and Salem currently utilize an EAL scheme that is plant-specific, yet developed in accordance with the guidance provided in Nuclear Management and Resources Council, Inc./National Environmental Studies Project (NUMARC/NESP)-007,"Methodology for Development of Emergency Action Levels," Revision 2, dated January 1992 (Reference 3).

2.0 REGULATORY EVALUATION

The NRC staff reviewed the proposed EAL changes against the regulations and guidance described below.

2.1 Regulations

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.47, "Emergency plans," sets forth emergency plan requirements for nuclear power plant facilities. The requirements in 10 CFR 50.47(a)(1)(i) state, in part, that

> ...no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

Section 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that the licensee can and will take adequate protective measures in the event of a radiological emergency. Planning Standard (4) of this section requires that:

> A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Section IV.B of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, states, in part, that:

> The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. These initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis. A revision to an emergency action level must be approved by the NRC before implementation if:
>
> (1) The licensee is changing from one emergency action level scheme to another emergency action level scheme (e.g., a change from an emergency action level scheme based on NUREG-0654 to a scheme based upon NUMARC/NESP-007 or NEI 99-01);
>
> (2) The licensee is proposing an alternate method for complying with the regulations; or
>
> (3) The emergency action level revision decreases the effectiveness of the emergency plan.

PSEG submitted the proposed EAL changes for HCGS and Salem for NRC approval pursuant to Section IV.B(1) of Appendix E to 10 CFR Part 50.

This review is based upon a revision to the HCGS and Salem EAL scheme provided in the licensee's application letter and supplemented by the licensee's responses to the NRC's request for additional information. Attachment 3 (HCGS) and Attachment 4 (Salem) of the

licensee's letter dated July 14, 2011 (Reference 13), as supplemented by the licensee's letter dated August 25, 2011 (Reference 14), contains the final version of the licensee's proposed plant-specific EAL scheme for HCGS and Salem and is therefore the final version reviewed by the NRC for acceptability.

2.2 Guidance

EAL development guidance was initially established via Generic Letter (GL) 79-50 (Reference 1) and subsequently established in NUREG-0654/FEMA-REP-1 (Reference 2), which was endorsed as an approach for the development of an EAL scheme via NRC Regulatory Guide (RG) 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Revision 2. As industry and regulatory experience was gained with the implementation and use of the EAL scheme, the industry developed revised EAL scheme development guidance documents to gain the benefit of lessons-learned. To date, NUMARC/NESP-007 (Reference 3), NEI 99-01, Revision 4 (Reference 4), and NEI 99-01, Revision 5 (Reference 5), were provided to the NRC for review and endorsement as generic (non plant-specific) EAL development guidance. RG 1.101, Revisions 3 and 4 (Reference 6), endorsed NUMARC/NESP-007 and NEI 99-01 Revision 4 as acceptable to the NRC staff as alternative methods to that described in NUREG-0654/FEMA-REP-1 for developing EALs. NEI 99-01, Revision 5, was endorsed as generic (non plant-specific) EAL development guidance via NRC letter dated February 22, 2008 (Reference 7).

GL 79-50, NUREG-0654/FEMA-REP-1, NUMARC/NESP-007, NEI 99-01 Revision 4, and NEI 99-01, Revision 5, are all considered generic EAL development guidance documents, as they are not plant-specific and may not be entirely applicable for some reactor designs. However, the guidance contained in these documents bounds the most typical accident/event scenarios for which emergency response is necessary in a format that allows for industry standardization and consistent regulatory oversight. Most licensees choose to develop their plant-specific EAL schemes using the latest endorsed EAL development guidance with appropriate plant-specific alterations, as applicable.

The NRC considers the following methods acceptable for use in developing plant-specific EALs that meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), with the understanding that licensees may want to develop EALs that differ from the applicable guidance document as allowed in RG 1.101 and in the letter dated February 22, 2008:

- Appendix 1, "Emergency Action Level Guidelines for Nuclear Power Plants," to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 1980;

- NUMARC/NESP-007, Revision 2, "Methodology for Development of Emergency Action Levels," dated January 1992;

- NEI 99-01, Revision 4, "Methodology for Development of Emergency Action Levels," dated January 2003; and

- NEI 99-01, Revision 5, "Methodology for Development of Emergency Action Levels," dated February 2008.

NRC Regulatory Issue Summary (RIS) 2003-18, including Supplements 1 and 2 (Reference 9), also provides guidance for developing or changing a standard emergency classification and action level scheme. In addition, this RIS and its Supplements provide recommendations to assist licensees, consistent with Section IV.B of Appendix E to Part 50, in determining whether to seek prior NRC approval of deviations from the guidance.

Regardless of the generic EAL scheme development guidance document used by a licensee to develop their EAL scheme, or if a licensee chooses to develop their EAL scheme using an alternative approach not endorsed by the NRC, or a combination of the two (most typical), the NRC will review the EAL scheme to ensure it meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4).

3.0 TECHNICAL EVALUATION

In References 12 through 15, the licensee submitted the proposed EAL scheme for HCGS and Salem, their technical basis, a comparison matrix, the EAL numbering scheme, and an explanation for any difference or deviation from NEI 99-01. The comparison matrix provided a cross reference relating the proposed EAL scheme to the EAL scheme in NEI 99-01, Revision 5.

HCGS and Salem currently utilize an EAL scheme based on the generic EAL scheme development guidance from NUMARC/NESP-007, Revision 2 (Reference 3) with plant-specific modifications due to design issues and/or licensee preference. The licensee is converting to an EAL scheme using the development guidance from NEI 99-01, Revision 5, with plant-specific modifications due to design issues and/or licensee preference.

The proposed plant-specific EAL scheme is unique to HCGS and Salem; however, to ensure consistency and regulatory stability, the NRC staff reviewed the proposed plant-specific EAL scheme to ensure the following key characteristics of an effective EAL scheme are in place:

- Consistency (i.e., the EALs would lead to similar decisions under similar circumstances at different plants), up to and including standardization in intent, if not in actual wording;

- Human engineering and user friendliness;

- Potential for classification upgrade only when there is an increasing threat to public health and safety;

- Ease of upgrading and downgrading;

- Thoroughness in addressing and disposing of the issues of completeness and accuracy raised regarding Appendix 1 to NUREG-0654;

- Technical completeness for each classification level;

- Logical progression in classification for multiple events; and

- Objective and observable values.

To aid in understanding the nomenclature used in this Safety Evaluation (SE), for each category of EALs reviewed the following naming/numbering convention is used: the first letter signifies the category; the second letter signifies the classification level (G = General Emergency (GE), S = Site Area Emergency (SAE), A = Alert, U = Notification of Unusual Event (UE)); and the number is the applicable number from the plant-specific EAL scheme. For ease of use, this SE will use the numbering system from the plant-specific EAL scheme rather than from the generic EAL development guidance.

3.1 Category 'R' - Abnormal Radiological Release/Radiological Effluent

3.1.1 EAL Set RG1/RS1/RA1/RU1

This EAL set is based upon plant-specific indications of a release of radioactivity (gaseous and/or liquid). The progression from UE to GE is appropriate and consistent with EAL scheme development guidance.

The licensee chose to modify this EAL set by using a site-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance, as well as using 'R' in lieu of 'A' to reference this category. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the site-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.1.2 EAL Set RA2/RU2

This EAL set is based upon plant-specific indications of fuel uncovery. The progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE

and GE classification levels for this specific accident progression are bounded by indications available in the fission barrier matrix as well as EALs RS1 and RG1.

The licensee chose to modify this EAL set by using a site-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance, as well as using 'R' in lieu of 'A' to reference this category. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the site-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.1.3 EAL RA3

This EAL set is based upon indications of a rise in plant radiation levels that impedes normal access to the Control Room (CR) and Central Alarm Station (CAS). Note that Salem has the CAS, therefore the CAS is not a threshold for the HCGS EAL.

The Alert EAL is primarily intended to ensure that the plant emergency response organization (ERO) is activated to support the CR in removing the impediment to normal access to the CR and CAS. Indications of increasing radiation levels in the plant are bounded by indication of fission barrier loss or potential loss, as well as RS1 and RG1.

The licensee chose to modify this EAL set by using a site-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance, as well as using 'R' in lieu of 'A' to reference this category. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the site-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.2 Category 'C' - Cold Shutdown/Refueling System Malfunction

3.2.1 EAL Set CA1/CU1

This EAL set is based upon a loss of available alternating current (AC) power sources to the emergency busses. The progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in EALs RS1 and RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. In addition, the licensee chose to use mathematical symbols instead of their noun equivalent where applicable. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation, values, and listing of applicable power sources derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.2.2 EAL Set CG3/CS3/CA3/CU3

This EAL set is based upon a loss of reactor pressure vessel inventory and/or reactor coolant system (RCS) leakage. The progression from UE to GE is appropriate and consistent with EAL scheme development guidance. In addition, the licensee adopted EAL CU2 (from NEI 99-01) into this EAL set and is considered acceptable as the applicable operating mode is appropriately developed.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. In addition, the licensee chose to use mathematical symbols instead of their noun equivalent where applicable. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.2.3 EAL Set CA4/CU4

This EAL set is based upon an inability to maintain control of decay heat removal. The progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in EALs RS1 and RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. In addition, the licensee chose to use mathematical symbols instead of their noun equivalent where applicable. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.2.4 EAL CU5

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to highlight the importance of emergency communications by ensuring an EAL is declared if normal communication methods for onsite and offsite personnel, or for offsite response organizations including the NRC, are lost.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The communication methods derived for this EAL are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.2.5 EAL CU6

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to highlight the significance of inadvertent criticality events by ensuring an EAL is declared if unplanned positive and sustained period is observed on nuclear instrumentation.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.2.6 EAL CU2

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to ensure an EAL is declared when a loss of direct current (DC) power event occurs as it compromises the ability of the licensee to monitor and control the removal of decay heat during Cold Shutdown or Refueling modes of operation.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.3 Category 'E' - Independent Spent Fuel Storage Installation (ISFSI)

3.3.1 EAL EU1

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is limited to radiological events at the ISFSI. While security-related events at the ISFSI are also of

concern, they are bounded by the licensee's EAL HA4. Note that HCGS and Salem share an ISFSI and that HCGS will maintain the EAL for events at the ISFSI.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.4 Category 'H' - Hazards

3.4.1 EAL Set HA1/HU1

This EAL set is based upon the effect natural and destructive hazards may have on the licensee. The progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in the fission barrier matrix and EALs RS1 and RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. In addition, the licensee chose to use mathematical symbols instead of their noun equivalent where applicable. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The method of determining seismic events is consistent with the development strategies stated in the generic EAL development guidance. Seismic event classification criteria, for both the UE and Alert classification levels, are appropriate, considered part of a standard EAL scheme, and meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, are acceptable for implementation. Note that HCGS and Salem use common EAL thresholds and are noted as such in their plant-specific EAL schemes.

High wind and tornado events, as well as the development of plant-specific areas considered in these EALs, are consistent with the development strategies stated in the generic EAL development guidance. These EALs are considered part of a standard EAL scheme and meet

the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4). Therefore, these EALs are acceptable for implementation.

Rotating equipment failures from the main turbine are appropriately developed using the generic EAL development guidance with plant-specific terminology and plant-specific areas of consideration determined for these EALs. These EALs are considered part of a standard EAL scheme and meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4). Therefore, these EALs are acceptable for implementation

Internal flooding events are appropriately developed using the generic EAL development guidance with plant-specific terminology and plant-specific areas of consideration determined for these EALs. While consistent with the development strategies stated in the generic EAL development guidance, the actual wording used is different. However, these EALs are considered part of a standard EAL scheme and meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4). Therefore, these EALs are acceptable for implementation.

The licensee developed additional EALs related to river water levels for the UE and Alert classification levels. The instrumentation and set points developed for these EALs are appropriate and applicable for this licensee. The generic EAL scheme development guidance, as well as NUREG-0654/FEMA-REP-1, has the licensee consider unique hazard events applicable to their specific plant and to develop plant-specific EALs to address these hazards. These EALs are considered part of a standard EAL scheme and meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4). Therefore, these EALs are acceptable for implementation.

Events based upon vehicle crashes within the protected area or vital area has typically been difficult to differentiate between the UE and Alert classification levels. GL 79-50, NUREG-0654/FEMA-REP-1, and NUMARC/NESP-007 used language equating vehicles to aircraft, trains, and barges. NEI 99-01, Revision 4, used language equating vehicles to that large enough to cause damage. With the issuance of NRC Bulletin 2005-02 (Reference 10), the need for EALs related to airborne, waterborne, or land-based security events have been resolved with the development of security-specific EALs. In addition, the intended basis for an UE EAL is, among other considerations, the resultant degradation in the level of safety of the plant. Eliminating the UE EAL due to vehicle crashes is consistent with the intent of the UE classification and removes any misunderstanding with the remaining Alert classification. The Alert classification is based upon indications of degraded performance or visible damage to a specific list of areas considered applicable to this EAL. Removing the UE EAL based upon vehicle crashes, and revising the wording of the remaining Alert EAL, continues to be considered part of a standard EAL scheme and meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4). Therefore, these EALs are acceptable for implementation.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.4.2 EAL Set HA2/HU2

This EAL set is based upon the effect fire and explosions may have on the plant. The progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in the fission barrier matrix, EALs RS1 and RG1, or applicable EALs from the Systems Malfunction category.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The development of plant-specific areas considered in these EALs is consistent with the development strategies stated in the generic EAL development guidance even though the actual wording used is different, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.4.3 EAL Set HA3/HU3

This EAL set is based upon the effect toxic, corrosive, asphyxiant or flammable gases may have on plant operations. The progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in the fission barrier matrix, EALs RS1 and RG1, or applicable EALs from the Systems Malfunction category.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The development of plant-specific areas considered in these EALs, is consistent with the development strategies stated in the generic EAL development guidance even though the actual wording used is different, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.4.4 EAL Set HG4/HS4/HA4/HU4

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

This EAL set is based upon security-related events originally developed via the guidance from NRC Bulletin 2005-02 (Reference 10) or RIS 2006-12 (Reference 11) for licensees to implement regardless of the specific version of the generic EAL scheme development guidance used, or if the particular licensee developed their EAL scheme using an alternative approach. Based upon lessons-learned from implementation and use of this EAL set, particularly from when licensees performed combined security and emergency preparedness drills, the NRC staff and the industry worked to enhance the language of these EALs so as to eliminate any confusion without changing the intent of the EAL set as set forth in NRC Bulletin 2005-02 and RIS 2006-12. The NRC staff generated EAL Frequently Asked Question (EALFAQ) 2009-48 (Reference 8) to address the changes made to the generic EAL scheme development guidance document.

The development of this EAL set is consistent with the guidance provided in NRC Bulletin 2005-02 and RIS 2006-12, as further enhanced by the lessons-learned from implementation and drills, and revised in NEI 99-01 Revision 5 and evaluated in EALFAQ 2009-48.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.4.5 EAL Set HS5/HA5

This EAL set is based upon CR evacuation. The progression from Alert to SAE is appropriate and consistent with EAL scheme development guidance. The GE classification level for this specific accident progression is bounded by indications available in the fission barrier matrix or EAL RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic

EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.4.6 EAL Set HG6/HS6/HA6/HU6

This EAL set is based upon providing the EAL decision-maker EALs to consider when their judgment deems an emergency classification is warranted.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5 Category 'S' – System Malfunction

3.5.1 EAL Set SG1/SS1/SA1/SU1

This EAL set is based upon a loss of available AC power sources to the emergency busses. The progression from UE to GE is appropriate and consistent with EAL scheme development guidance.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. In addition, the licensee chose to use mathematical symbols instead of their noun equivalent where applicable. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation, values, and listing of applicable power sources derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5.2 EAL Set SG3/SS3/SA3/SU3

This EAL set is based upon the effect a failure of the reactor protection system may have on the plant, as well as inadvertent criticality for SU3. The progression from UE to GE is appropriate and consistent with EAL scheme development guidance.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. In addition, the licensee chose to use mathematical symbols instead of their noun equivalent where applicable. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5.3 EAL SU4

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to ensure an EAL is declared when the plant is not brought into the required operating mode within the time allowed via their Technical Specifications Limiting Conditions for Operation action statement completion time.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format other than that provided in the generic EAL scheme development guidance. The numbering and format of this EAL is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5.4 EAL Set SS5/SA5/SU5

This EAL set is based upon the effect a loss of indication, control, and annunciation capabilities has on the plant. The progression from UE to SAE is appropriate and consistent with EAL scheme development guidance. The GE classification level for this specific accident progression is bounded by indications available in the fission barrier matrix or EAL RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format other than that provided in the generic EAL scheme development guidance. In addition, the licensee chose to use mathematical symbols instead of their noun equivalent where applicable. The numbering, sequencing, and format of this EAL set is consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5.5 EAL SU6

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to highlight the importance of emergency communications by ensuring an EAL is declared if normal communication methods for onsite and offsite personnel, or for offsite response organizations including the NRC, are lost. No escalation path is necessary for this event progression.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.
The communication methods derived for this EAL are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5.6 EAL SU7

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to ensure an EAL is declared when the plant has indications of fuel clad degradation. By design, this EAL is redundant with corresponding indicators from a loss or potential loss of fission barriers, as well as radiation monitoring, to ensure reactor and/or fission barrier events are recognized regardless of the particular EAL table a licensee may be referring to. EAL escalation is bounded by fission barrier indicators and EALs RA1, RS1, and RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5.7 EAL SU8

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to ensure an EAL is declared when the plant has indications of RCS leakage. By design, this EAL is redundant with corresponding indicators from a loss or potential loss of fission barriers, as well as radiation monitoring, to ensure reactor and/or fission barrier events are recognized regardless of the particular EAL table a licensee may be referring to. EAL escalation is bounded by fission barrier indicators and EALs RA1, RS1, and RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.5.7 EAL SS2

This EAL does not require an EAL set within the overall EAL scheme as the EAL's intent is to ensure an EAL is declared when a loss of DC power event occurs as it compromises the ability of the licensee to monitor and control the removal of decay heat. The GE classification level for this event is bounded by fission barrier matrix indicators and EAL RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

3.6 Category 'F' - Fission Barrier Matrix

This category is unique in the overall EAL scheme as the thresholds are not intended to be stand-alone indicators of a particular event occurring at the plant. Rather, they are to be used as triggers within the particular logic configuration needed to reflect a loss or potential loss of a fission barrier. Each licensee has three fission barriers: fuel cladding, the RCS, and the primary containment. Licensees are to develop thresholds that provide EAL decision-makers input into making an event declaration based upon degradation of one or more of these fission barrier barriers.

While there are only four EALs within this set (FG1/FS1/FA1/FU1), there are numerous triggers used as logic inputs to decide on the appropriate classification based upon the number of loss and/or potential loss indicators that are triggered for each barrier. By design, these indicators are redundant with other similar indicators in the Category 'R' and Category 'S' EAL sets due to importance of licensees being able to recognize reactor and/or fission barrier events as timely as possible using the best available indicators from several different perspectives.

The NRC staff verified that the logic used to determine the appropriate emergency classification is consistent with the generic EAL scheme development guidance.

The instrumentation and set points derived for this EAL category are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are considered part of a standard EAL scheme.

The licensee chose to modify this EAL category by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The numbering, sequencing, and format of this EAL is consistent with the overall EAL scheme development guidance, is consistent with the plant-specific implementation strategies provided, and is considered part of a standard EAL scheme.

The plant-specific implementation method for this EAL category is in alignment with the key characteristics of an effective EAL scheme, and while different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and therefore, is acceptable for implementation.

4.0 CONCLUSION

The NRC staff has reviewed the technical basis for the proposed EAL scheme, the modifications from NEI 99-01, Revision 5, and the licensee's evaluation of the proposed changes. The licensee chose to modify their EAL scheme from the generic EAL scheme development guidance provided in NEI 99-01 in order to adopt a format more in alignment with

how they currently implement their EALs, as well as alignment with plant-specific writer's guides and preferences. The NRC staff determined that these modifications do not alter the intent of any specific EAL within an EAL set, EAL category, or within the entire EAL scheme as stated in NEI 99-01.

From the review, the NRC staff determined that the proposed EAL scheme uses objective and observable values, is worded in a manner that addresses human engineering and user friendliness concerns, follows logical progression for escalating events, and allows for event downgrading and upgrading based upon the potential risk to the public health and safety. Risk assessments were appropriately used to set the boundaries of the emergency classification levels and ensure that all EALs that trigger emergency classification are in the same range of relative risk. In addition, the NRC staff found that the proposed EAL scheme was consistent with EAL schemes implemented at similarly-designed plants.

Based on the above review, the NRC staff concludes that the proposed changes meet the requirements in 10 CFR 50.47(b)(4) and Section IV.B of Appendix E to 10 CFR Part 50, and provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Therefore, the proposed changes are acceptable.

5.0 REFERENCES

1. NRC Generic Letter 79-50 dated October 10, 1979, "Emergency Plans Submittal Dates," (ADAMS Accession No. ML031320278).

2. NRC and Federal Emergency Management Agency, NUREG-0654/FEMA-REP-1, dated November 1980, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," (ADAMS Accession No. ML040420012).

3. Nuclear Management and Resources Council, Inc./National Environmental Studies Project, NUMARC/NESP-007, Revision 2, dated January 1992, "Methodology for Development of Emergency Action Levels," (ADAMS Accession No ML041120174).

4. Nuclear Energy Institute, NEI 99-01, Revision 4, dated January 2003, "Methodology for Development of Emergency Action Levels," (ADAMS Accession No. ML041470143).

5. Nuclear Energy Institute, NEI 99-01, Revision 5, dated February 2008, "Methodology for Development of Emergency Action Levels," (ADAMS Accession No. ML080450149).

6. NRC Regulatory Guide 1.101, Revision 3, dated August 1992, and Revision 4, dated July 2003, "Emergency Planning and Preparedness for Nuclear Power Reactors," (ADAMS Accession Nos. ML003740302 and ML032020276, respectively).

7. NRC letter (C. Miller) to Nuclear Energy Institute (A. Nelson) dated February 22, 2008, "U.S. Nuclear Regulatory Commission Review and Endorsement of NEI-99-01, Revision 5, dated February 2008," (ADAMS Accession No. ML080430535).

8. Emergency Action Level Frequently Asked Question 2009-48, (ADAMS Accession No. ML100710728).

9. NRC Regulatory Issue Summary 2003-18, dated October 8, 2003; Supplement 1, dated July 13, 2004; and Supplement 2, dated December 12, 2005, "Use of NEI-99-01, *'Methodology for Development of Emergency Action Levels,' Revision 4, dated January 2003*" (ADAMS Accession Nos. ML032580518, ML041550395, and ML051450482, respectively).

10. NRC Bulletin 2005-02, dated July 18, 2005, "Emergency Preparedness and Response Actions for Security-Based Events," (ADAMS Accession No. ML051740058).

11. NRC Regulatory Issue Summary 2006-12, dated July 19, 2006, "Endorsement of Nuclear Energy Institute Guidance, *'Enhancements to Emergency Preparedness Programs for Hostile Action*" (ADAMS Accession No. ML072670421).

12. PSEG letter (LR-N10-0355) to NRC dated October 14, 2010, "Emergency Action Level Changes," (ADAMS Package Accession No. ML110050378).

13. PSEG letter (LR-N11-0217) to NRC dated July 14, 2011 "Response to Requests for Additional Information (RAIs) for Emergency Action Level Changes," (ADAMS Accession No. ML11196A155).

14. PSEG letter (LR-N11-0220) to NRC dated July 19, 2011, "Response to NRC Request for Resubmittal of Specified Documents from Original Emergency Action Level Changes Approval Submittal," (ADAMS Package Accession No. ML112150511).

15. PSEG letter (LR-N11-0249) to NRC dated August 25, 2011, "Supplemental Response to Requests for Additional Information (RAIs) for Emergency Action Level Changes," (ADAMS Accession No. ML112370143).

Principal Contributor: D. Johnson

Date: September 23, 2011

September 23, 2011

Mr. Thomas Joyce
President and Chief Nuclear Officer
PSEG Nuclear LLC
P.O. Box 236, N09
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION AND SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2 - APPROVAL OF EMERGENCY ACTION LEVEL SCHEME CHANGE (TAC NOS. ME4883, ME4884 AND ME4885)

Dear Mr. Joyce:

By letter dated October 14, 2010, as supplemented by letters dated July 14, 2011, July 19, 2011, and August 25, 2011, PSEG Nuclear LLC requested approval of changes to the emergency action levels (EALs) for Hope Creek Generating Station (HCGS) and Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem). The requested changes support a conversion from the current EAL scheme used at HCGS and Salem to a scheme based on Nuclear Energy Institute 99-01, Revision 5, "Methodology for Development of Emergency Action Levels."

The Nuclear Regulatory Commission staff has completed its review as documented in the enclosed Safety Evaluation (SE). Our SE concludes that the proposed changes meet the requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.47(b)(4) and Section IV.B of Appendix E to 10 CFR Part 50, and provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Therefore, the NRC staff approves the proposed changes.

Sincerely,
/ra/
Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Docket Nos. 50-354, 50-272 and 50-311

Enclosure:
Safety Evaluation

cc: ListServ

DISTRIBUTION:

PUBLIC	LPL 1-2 R/F	RidsOgcRp Resource
RidsNrrDorlLpl1-2 Resource	RidsNrrDorlDpr Resource	RidsAcrsAcnw_MailCTR Resource
RidsNrrLAABaxter Resource	JDAnderson, NSIR/DPR	RidsRgn1MailCenter Resource
RidsNrrPMSalem Resource	DJohnson, NSIR/DPR	

ADAMS Accession No: ML112560428 *SE dated 9/6/11 **via email

OFFICE	LPL1-2/PM	LPL1-2/LA**	NSIR/DPR/BC*	LPL1-2/BC	DORL/D	NRR/D
NAME	REnnis	ABaxter	JAnderson	HChernoff	JGiitter	ELeeds
DATE	9/22/11	9/15/11	9/6/11	9/20/11	9/20/11	9/23/11

OFFICIAL RECORD COPY