Dominion Energy Kewaunee, Inc.
5000 Dominion Boulevard, Glen Allen, VA 23060
Web Address: www.dom.com

Dominion®

February 28, 2013

10 CFR 2.202
EA-12-051

Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Serial No.: 12-164B
NL&OS/MAE: R3
Docket No.: 50-305
License No.: DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
OVERALL INTEGRATED PLAN IN RESPONSE TO MARCH 12, 2012 COMMISSION ORDER MODIFYING LICENSES WITH REGARD TO REQUIREMENTS FOR RELIABLE SPENT FUEL POOL INSTRUMENTATION (ORDER NUMBER EA-12-051)

References:

1. NRC Order Number EA-12-051, Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation, dated March 12, 2012 (ML12073A202)

2. NRC Interim Staff Guidance JLD-ISG-2012-03, Compliance with Order EA-12-051, Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation, Revision 0, dated August 29, 2012 (ML12221A339)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Dominion Energy Kewaunee, Inc. (DEK). Reference 1 (the Order) was immediately effective and directs DEK to have a reliable indication of the water level in associated spent fuel storage pools. Specific requirements are outlined in Attachment 2 of the Order.

An answer to the Order was provided on March 26, 2012 (Serial No. 12-164) and an Initial Status Report was provided within 60 days of the issuance of Reference 2, on October 25, 2012 (Serial No. 12-164A). This letter confirms that DEK has applied Reference 2 and developed an Overall Integrated Plan in accordance with the guidance. This letter also provides the Overall Integrated Plan as required by Section IV, Condition C.1.a of the Order as an enclosure to this letter. The Overall Integrated Plan is based on conceptual design information. Finalized design details and associated procedural guidance as well as any modifications or clarifications to the information contained in the enclosure, will be provided in the 6-month Integrated Plan updates required by the Order.

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NRR

On February 25, 2013, DEK submitted a letter to the NRC certifying that it has decided to permanently cease power operation of Kewaunee Power Station (KPS) on May 7, 2013 (Serial No. 13-107). Therefore, DEK intends to seek relief from appropriate portions of the Order consistent with Section IV of the Order.

If you have any questions, please contact Ms. Margaret Earle at (804) 273-2768.

Sincerely,

David A. Heacock
President and Chief Nuclear Officer
Dominion Energy Kewaunee, Inc.

Enclosure

Commitments made by this letter: No New Regulatory Commitments

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by David A. Heacock who is President and Chief Nuclear Officer of Dominion Energy Kewaunee, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of the Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 28TH day of February, 2013.

My Commission Expires: May 31, 2014.

Vicki L. Hull
Notary Public

(SEAL)

VICKI L. HULL
Notary Public
Commonwealth of Virginia
140542
My Commission Expires May 31, 2014

cc: Director of Office of Nuclear Reactor Regulation (w/o Enclosure)
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop 13H16M
11555 Rockville Pike
Rockville, MD 20852-2738

U. S. Nuclear Regulatory Commission, Region III
Regional Administrator
2443 Warrenville Road
Suite 210
Lisle, Illinois 60532-4352

Mr. David H. Jaffe
U. S. Nuclear Regulatory Commission
Two White Flint North
Mail Stop T6 D23
11545 Rockville Pike
Rockville, MD 20852-2738

Mr. Karl D. Feintuch
NRC Project Manager Kewaunee
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop O8-D15
11555 Rockville Pike
Rockville, MD 20852-2738

NRC Senior Resident Inspector
Kewaunee Power Station

Serial No. 12-164B
Order EA-12-051
Docket No. 50-305

Enclosure

Kewaunee Overall Integrated Plan

Reliable Spent Fuel Pool Instrumentation

Kewaunee Power Station

Dominion Energy Kewaunee, Inc. (DEK)

Kewaunee Overall Integrated Plan Reliable Spent Fuel Pool Instrumentation

I. Introduction

Overview

The Nuclear Regulatory Commission (NRC) issued Order EA-12-051, *Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation* (Reference 1), on March 12, 2012. The Order requires licensees to have a reliable indication of the water level in spent fuel pools (SFPs) capable of supporting identification of the following pool water level conditions by trained personnel: (1) level that is adequate to support operation of the normal fuel pool cooling system, (2) level that is adequate to provide substantial radiation shielding for a person standing on the SFP operating deck, and (3) level where fuel remains covered and actions to implement make-up water addition should no longer be deferred. The Order also requires an overall integrated plan that provides a description of how the requirements of the Order will be achieved.

NEI 12-02, *Industry Guidance for Compliance with NRC Order EA-12-051, To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation* (Reference 2), provides an approach for complying with Order EA-12-051. NRC Interim Staff Guidance (ISG) JLD-ISG-2012-03, *Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation* (Reference 3), considers that the methodologies and guidance in conformance with the guidelines provided in NEI 12-02, Revision 1, subject to the clarifications and exceptions specific to Section 3.4, Qualification, are an acceptable means of meeting the requirements of Order EA-12-051.

This integrated plan provides the Kewaunee Power Station (KPS) approach for complying with Order EA-12-051 using the methods described in NRC ISG JLD-ISG-2012-03. The current revision of the KPS Reliable Spent Fuel Pool Instrumentation (RSFPI) Plan is based on conceptual design information and will be revised as detailed design engineering proceeds. The discussion of the KPS RSFPI Plan for power operations is consistent with the requirements of Order EA-12-051 and the guidance in NEI 12-02. However, for reasons discussed below and described further in Section XVI, the RSFPI Plan actually implemented at KPS will not be completely consistent with NEI 12-02 and will require relief from the Order. Six-month reports will delineate progress made, any proposed changes in compliance methods, updates to the schedule, and if needed, requests for relief and the bases.

Status of Kewaunee Power Station Operation

On February 25, 2013, DEK submitted a letter to the NRC certifying that it has decided to permanently cease power operation of KPS on May 7, 2013 (Serial No. 13-107). Therefore, DEK intends to seek relief from applicable portions of the Order consistent with Section IV of the Order. Upon completion of reactor defueling activities, spent nuclear fuel on site will be located either in the SFP[1] or in dry storage at the onsite Independent Spent Fuel Storage Installation (ISFSI). DEK currently plans to submit a certification of permanent fuel removal from the reactor in the second quarter of 2013 to formalize the possession-only status of the plant.

The decision to permanently shut down and defuel the KPS reactor affects DEK's approach to compliance with Order EA 12-051 because the plant will have been permanently shut down and defueled by the time the mitigation strategies and equipment could reasonably be expected to be put in place. After permanent shutdown, a beyond-design-basis external event (BDBEE) that involves core cooling and containment integrity is no longer relevant. Responding to the safety of the spent fuel in the SFP will be the primary safety focus of responders.

DEK understands that because the KPS reactor continues to operate at this time, an overall integrated plan for compliance must be provided consistent with Order EA 12-051. Therefore, a reliable SFP instrumentation (RSFPI) plan, assuming continued power operations, is provided below but only applies should the plant continue operation. Further, this plan reflects the state of conceptual design at the time the decision to permanently cease power operation at KPS was made. The "operating plant" RSFPI plan is not expected to be implemented at KPS. The more likely changes to the KPS RSFPI plan reflect a plant with a possession-only license and are summarized in Section XVI below. The proposed "possession only license" method of compliance for ensuring reliable SFP instrumentation reflects a simpler approach than that described in the NEI guidance because of the extended times available for action, due to a lower and decaying heat load in the SFP because of the absence of continued operating reactor off loads.

The proposed simpler approach to ensuring SFP cooling and providing reliable SFP instrumentation at KPS is consistent with the fact that the underlying intent of Order EA 12-051 is directed at operating reactors and does not fully apply to a plant in decommissioning.

[1] KPS stores spent fuel in storage racks in the spent fuel pool, the adjacent cask pool, and in a modified section of the transfer canal, all of which are connected by normally-open fuel transfer gates. Hereafter, the term "spent fuel pool" refers to all three pools together.

Order EA 12-051 states, in part:

> "The lack of information on the condition of the spent fuel pools contributed to a poor understanding of possible radiation releases *and adversely impacted effective prioritization of emergency response actions by decision makers."* [emphasis added]

and:

> "During the events in Fukushima, responders were without reliable instrumentation to determine water level in the spent fuel pool. This caused concerns that the pool may have boiled dry, resulting in fuel damage. *Fukushima demonstrated the confusion and misapplication of resources that can result from beyond-design-basis external events when adequate [SFP] instrumentation is not available."* [emphasis added]

After permanent reactor shutdown and defueling, the concerns pertaining to "effective prioritization of emergency response actions by decision makers" and "misapplication of resources" will not apply at KPS because all of the fuel will be in the SFP or at the ISFSI. Protection of the spent fuel after a BDBEE will be the responders' sole safety priority. Furthermore, it is expected that the heat load from the spent fuel in the SFP will have been decayed for a substantial amount of time (approximately 12 months) by the time Order EA 12-051 can be reasonably implemented at KPS. This continuing reduction of the decay heat load in the SFP continues to extend the time available to take actions to restore and maintain SFP cooling after a BDBEE.

In summary, the discussion in Sections II through XV below reflect the KPS power operation RSFPI Plan to the extent conceptual design was complete at the time the announcement of the permanent shutdown of KPS was made. Section XVI below discusses the modified RSFPI Plan reflecting the possession-only period after permanent reactor shutdown and defueling when the plant will be in a SAFSTOR mode in anticipation of decommissioning.

II. Schedule

The schedule for providing reliable SFP instrumentation at KPS is consistent with the requirements of Order EA-12-051 in that the new systems will be installed and functional no later than two refueling cycles following submittal of this overall integrated plan, or December 2016, whichever occurs first. KPS will enter its next refueling outage (KR33) in the fall of 2013; therefore, a functional system is required prior to completion of refueling outage KR34 in the spring of 2015. The current project milestone is:

- Level measurement system functional: Spring 2015

III. Identification of Spent Fuel Pool Water Levels

Spent fuel is stored in the SFP in the Auxiliary Building. The SFP is a reinforced concrete, Seismic Class I structure lined with stainless steel plate a minimum of 0.1875-inch thick and is designed for the underwater storage of spent fuel assemblies, control rods, and burnable poison rods after their removal from the reactor. Normal water level of the SFP is at elevation 647'-2".

1) **Level 1-** This is indicated level on either the primary or back-up instrument channel of greater than elevation 645'-2" plus the accuracy of the SFP level instrument channel, which is to be determined. This level is based on the elevation at which the SFP cooling pump suction lines penetrate the pool walls.

2) **Level 2-** This is indicated level on either the primary or back-up instrument channel of greater than plant elevation 632'-11" plus the accuracy of the SFP level instrument channel, which is to be determined. This elevation is approximately 10 feet above the top of the fuel racks and ensures a minimum level of 10 feet above the top of the fuel. This water level ensures there is sufficient depth to provide radiation shielding for personnel to respond to Beyond-Design-Basis External Events and to initiate SFP makeup strategies.

3) **Level 3 –** This is indicated level on either the primary or back-up instrument channel of greater than elevation 622'-11" plus accuracy of the SFP level instrument channel, which is to be determined. This monitoring level assures that there is adequate water level above the stored fuel assemblies seated in the racks.

IV. Instruments

Design of the instruments will be consistent with the guidelines of NRC ISG JLD-ISG-2012-03 and NEI 12-02 as discussed below.

The KPS SFP primary and back-up instrument channels will use Guided Wave Radar (GWR)-based level measurement technology. GWR level measurement instruments work based on the Time Domain Reflectometry (TDR) principal. The device transmits low-intensity electromagnetic pulses along a rigid or flexible conductor where pulses move at the speed of light. When the pulses reach the surface of the medium to be measured, a portion of the signal is reflected back to the electronics. The instrument measures the time from when the pulse is transmitted to when it is received; half of the measured time represents the distance from the reference point of the device to the surface of the measured process. The time value will be representative of the measured level and converted for use in displaying level information.

Attributes of a GWR/TDR system include:

- The sensor probe is fully immersible using a slotted tube coaxial body with a repairable head and high-strength, low–drag tube/rod construction.
- The GWR/TDR technology is effectively immune to interference when coaxial cable is used because the signal field pattern tightly envelopes the cable.
- The GWR/TDR technology is relatively immune to changes in temperature and humidity. The system can accurately characterize boiling / frothing environments and detect and discriminate between air-froth and froth-liquid interfaces.
- The GWR/TDR technology can detect boiling swell and other transient events.
- GWR/TDR systems can accurately detect level to within at plus or minus one inch, or better, over the entire range.

The primary and back-up channels will use a fixed instrument providing continuous level measurement over the entire range of interest for SFP level. The measured range will be from approximately elevation 647'-2" to elevation 622'-11" for a total indicated range of approximately 24'-3" (291 inches). SFP level is verified daily in accordance with existing procedures.

Primary instrument channel level sensing components will be located on the south wall of the SFP. Back-up instrument channel level sensing components will be located on the north wall of the SFP.

V. Reliability

Reliability of the primary and back-up instrument channels will be assured by conformance with the guidelines of NRC ISG JLD-ISG-2012-03 and NEI 12-02, as discussed in Section IX, Qualification. Reliable level indication will be functional during all modes of operation consistent with Section XIII, Testing.

VI. Instrument Channel Design Criteria

Instrument channel design criteria will be consistent with the guidelines of NRC ISG JLD-ISG-2012-03, Revision 0 and NEI 12-02, Revision 1.

Design criteria for both the primary and back-up channels will be consistent with the design criteria and basis associated with the SFP as described in the KPS USAR. Design requirements will be used as design input to drive the detailed design, final equipment and vendor selection and final implementation.

VII. Arrangement

The primary and back-up channel level sensor probes will be installed on opposite ends of the SFP to maintain adequate channel separation. Specific details will be developed during the detailed design phase.

Vendor electronics will be located in a mild environment of the Auxiliary Building providing adequate protection from temperature, humidity, and radiation. Specific details will be developed during the detailed design phase.

The cables associated with a channel's sensor, power supply and indicator will be independently routed in separate raceways from cables associated with the other channel.

VIII. Mounting

Both the primary and back-up systems will be installed as Seismic Category I to meet the NRC ISG JLD-ISG-2012-03 and NEI 12-02 guidance.

IX. Qualification

General

The sensors and cables for both channels will be reliable at temperature, humidity, and radiation levels consistent with the SFP water at saturation conditions over an extended period of time. Post event temperature at sensors and for cables located above the SFP is assumed to be 212°F. Post event humidity in the SFP floor area near and above the SFP is assumed to be 100% with condensing steam.

The sensors and cables will be qualified for expected conditions at the installed location assuming the SFP has been at saturation for an extended period. The sensors and cables located in the vicinity of the SFP will be qualified to withstand peak and total integrated dose radiation levels for their installed location based on post event SFP water level equal to Level 3 for an extended period of time.

Sensor cable terminations will not be subject to pool overflow. The mounting and cable connecting the sensors will be qualified to the SFP environment described above. Conduit design in the SFP area will be installed to Seismic Class 1 criteria. Both existing and new barriers will be used to provide a level of protection for the exposed cable located on or near the refueling floor from potential missiles that may be generated by an event. The existing and new raceway used to route the sensor cable to the indicating transmitters (electronics) enclosures will be installed to Seismic Class 1 criteria.

Instrument channel reliability will be demonstrated via a combination of design, analyses, operating experience, and/or testing of channel components for the following sets of parameters:

- Conditions in the area of instrument channel component use for instrument components,
- Effects of shock and vibration on the instrument channel components, and
- Seismic effects on instrument channel components used during and following a potential seismic event.

Augmented quality requirements, consistent with NEI 12-02, Appendix A, will be applied to this project.

Conditions

Temperature, humidity and radiation levels consistent with conditions in the vicinity of the SFP and the area of use considering normal operational, event and post-event conditions for no fewer than seven days post-event or until off-site resources can be deployed by the mitigating strategies resulting from Order EA-12-049 (Reference 4) will be addressed in the engineering and design phase. Examples of post-event (beyond-design-basis) conditions that will be considered are:

- Radiological conditions for a normal refueling quantity of freshly discharged (100 hours) fuel with Level 3 SFP water level as described in Section III,
- Temperatures of 212 degrees F and 100% relative humidity environment,
- Boiling water and/or steam environment,
- A concentrated borated water environment, and
- The impact of FLEX mitigating strategies.

Shock and Vibration

Components of the instrument channels will be qualified for shock and vibration using one or more of the following methods:

- Components are supplied by manufacturers using commercial quality programs (such as ISO 9001, *Quality management systems – Requirements* (Reference 5)) with shock and vibration requirements included in the purchase specification at levels commensurate with portable hand-held device or transportation applications;

- Components have a substantial history of operational reliability in environments with significant shock and vibration loading, such as portable hand-held device or transportation applications; or

- Components are inherently resistant to shock and vibration loadings, such as cables.

Seismic

For seismic effects on the installed instrument channel components, the following measures will be used to verify that the design and installation are adequate. Applicable components of the instrument channels are rated by the manufacturer (or otherwise tested) for seismic effects at levels commensurate with those of postulated design basis event conditions at the location of the instrument channel component using one or more of the following methods:

- Substantial history of operational reliability in environments with significant vibration, such as for portable hand-held devices or transportation applications. Such a vibration design envelope will be inclusive of the effects of seismic motion imparted to the components proposed at the location of the proposed installation;

- Adequacy of seismic design and installation is demonstrated based on the guidance in Sections 7, 8, 9, and 10 of IEEE Standard 344-2004, *IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations*, (Reference 6) or a substantially similar industrial standard; or

- Demonstration that proposed devices are substantially similar in design to models that have been previously tested for seismic effects in excess of the plant design basis at the location where the instrument is to be installed (g-levels and frequency ranges).

These requirements will be used as design input for the detailed design, vendor selection and final implementation.

X. Independence

The primary instrument channel will be redundant to and independent of the back-up instrument channel. Both the primary and back-up instrument channels will be of the same technology, manufacturer, and model.

Independence will be achieved through physical separation of the final installed instruments. The cables associated with each channel will follow separate and independent routes from the instruments to each electronics enclosure and from the enclosures to the displays. The normal AC power source for each channel will be provided from independent and separate sources.

XI. Power Supplies

The normal power supply for each channel will be provided by different power sources such that loss of one power source will not result in the loss of both channels. In addition to the normal plant AC and/or DC power supply to each channel, a back-up power source will also be provided to each channel in the form of a back-up battery independent of the normal AC or DC power sources.

Specific details will be developed during the detailed design phase.

XII. Accuracy

The instrument channels will maintain their design accuracy following a power interruption or change in power source without requiring recalibration. Since the instrumentation is generally commercial off the shelf supplied components, the vendor-published instrument accuracies are acceptable and will be used as a basis for final configuration and calibration procedures.

Accuracy requirements will consider SFP conditions, e.g., saturated water, steam environment, and concentrated borated water. Additionally, instrument accuracy will be sufficient to allow trained personnel to determine when the actual level drops below the specified lower level of each indicating range (Levels 1, 2 and 3) without conflicting or ambiguous indication. The GWR/TDR technology is capable of providing reliable level indication accurate to within the resolution requirements of NEI 12-02, Figure 1.

Specific details regarding accuracy will be obtained from the supplier during the detailed design phase.

XIII. Testing

The instrument channel design will provide for routine testing and calibration. The installed sensors will be designed to allow testing and/or calibration via in-situ methods while mounted in the pool. Removal of the sensor from the pool will not be required for calibration.

Instrument channel design will provide for routine testing and calibration consistent with Order EA-12-051 and the guidance in NEI 12-02. Details will be finalized upon receipt of final vendor information during the detailed design phase.

Specific details regarding testing procedures and requirements will be reviewed and determined with the supplier during the detailed design phase.

XIV. Display

Trained personnel must be capable of monitoring the SFP water level from a location remote to that of the SFP area (e.g. control room, remote shutdown panel or other appropriate and accessible location). To that end, the selected location for the display(s) will ensure SFP level information is promptly made available to plant staff and key decision makers.

Since final indicator location will be based on the detailed design package, the distance between the sensing element and the display is currently not fully defined. However, it is expected that the display will be located at a distance within 500 feet from the sensing element in an appropriate and accessible area with the following characteristics:

- Occupied or promptly accessible to the appropriate plant staff giving appropriate consideration to various drain down scenarios,
- Outside the area surrounding the SFP floor, e.g., an appropriate distance from the radiological sources resulting from an event impacting the SFP,
- Inside a structure providing protection against adverse weather, and
- Outside any very high radiation area or locked high radiation area during normal operation.

The conceptual design locates the electronic enclosure and primary display in the SFP Heat Exchanger Room. Specific details regarding the display and display location(s) will be finalized during the detailed design phase.

XV. Instrument Channel Program Criteria

Training

The Systematic Approach to Training (SAT) will be used to identify the population to be trained and to determine both the initial and continuing elements of the required training. Training will be completed prior to placing the instrumentation in service.

Specific details regarding training will be reviewed and determined between the plant and the supplier as part of the procurement process for the new instruments.

Procedures

Procedures will be developed using guidelines and vendor instructions to address the maintenance, operation, and abnormal response issues associated with the new SFP instrumentation.

A combination of emergency, abnormal, and annunciator response procedures, as well as FLEX Support Guidelines (FSGs) will address a strategy to ensure actions to restore and maintain SFP cooling and level are initiated at an appropriate time consistent with implementation of NEI 12-06, *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide* (Reference 7).

Administrative controls will also address the following situations:

- If, at the time of an event or thereafter until the unit is returned to normal service, an instrument channel ceases to function, its function will be recovered within a period of time consistent with the emergency conditions that may apply at the time.
- If, at the time of an event or thereafter until the unit is returned to normal service, an instrument channel component must be replaced, commercially available components may be used that may not meet all of the qualifications (Section VII) to maintain the instrument channel functionality.

Testing and Calibration

Processes will be established and maintained for scheduling and implementing necessary testing and calibration of the primary and back-up SFP level instrument channels to maintain the instrument channels at the design accuracy. Testing and calibration of the instrumentation will be consistent with vendor recommendations and any other documented basis. Calibration will be specific to the mounted instrument and the monitor.

XVI. Need for Relief and Basis

After the KPS reactor is permanently shut down and defueled, the spent fuel from the reactor will reside either in the SFP or at the ISFSI. In addition, the fuel most recently discharged from the reactor will have decayed for over 12 months by the time the RSFPI strategy can be reasonably implemented with instrumentation installed and functional, therefore substantially reducing the decay heat load in the SFP. After the reactor is defueled, the primary safety focus of personnel will be protection of the spent fuel in the SFP. Relatively low decay heat load in the SFP provides significant time after a BDBEE (estimated at more than 113 hours to reach 200°F after one year of decay time) for responders to restore and maintain SFP cooling and level. Therefore, a simplified approach to providing reliable SFP level instrumentation, commensurate with the low risk of fuel damage is proposed. This approach proposes continuing to use narrow range SFP level instrumentation, which requires relief from the Order requirement for licensees to provide wide-range SFP level instrumentation.

Based on the above, the RSFPI Plan is to provide primary and backup SFP level instrumentation which will provide indication and/or alarms to an accessible plant location. The range of the level instrumentation will remain narrow, with low- and high-level setpoints at approximately 3'-4" and 2'-2" below the operating deck, respectively, which maintains over 20 feet of water above the fuel. These SFP levels represent the normal administrative control band for SFP level.

Responders will restore SFP level after a BDBEE, using an on-site, diesel-powered pump drawing suction from Lake Michigan and feeding through the SW emergency makeup line to the SFP. Because the decay heat in the SFP will be low, more than 113 hours will be available before the SFP level reaches low-level. With simple and direct response actions, responders have a significant time frame to restore SFP level to the normal range. Therefore, wide-range SFP level instrumentation is not required at KPS to assess "effective prioritization of emergency response actions by decision makers."

SFP level instrumentation is powered from the 120VAC distribution system and is not inverter-backed. As discussed in the KPS plan for Order EA 12-049, in BDBEE response Phase 2, an onsite portable 120VAC diesel generator will be provided to re-power both the primary and back-up SFP level instrument.

XVII. References

1) US Nuclear Regulatory Commission Order EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," March 12, 2012

2) NEI 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, 'To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation,'" Revision 1, August 2012

3) NRC Interim Staff Guidance JLD-ISG-2012-03, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," Revision 0, August 29, 2012

4) US Nuclear Regulatory Commission Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," March 12, 2012

5) ISO 9001, "Quality management systems – Requirements", Fourth Edition

6) IEEE Standard 344-2004, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations"

7) NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, August 2012