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May 7, 2007
LIC-07-0033

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

- References:
1. Docket No. 50-285
 2. NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," dated February 7, 2007 (NRC-07-0011)

SUBJECT: Fort Calhoun Station Unit No. 1, Response to Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients"

In response to Reference 2, the Omaha Public Power District (OPPD) is providing the requested information for Fort Calhoun Station (FCS) Unit No. 1.

No new regulatory commitments are being made in this letter.

I declare under penalty of perjury that the foregoing is true and correct. (Executed on May 7, 2007.)

If you should have any additional questions, or require further information, please contact Mr. Thomas C. Matthews at (402) 533-6938.

Sincerely,

Harry J. Faulhaber
Division Manager
Nuclear Engineering

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Attachment

c: Gordon Clefton, Nuclear Energy Institute

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ATTACHMENT

Response to Generic Letter 2007-01, “Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients”

The NRC's requested information in Generic Letter 2007-01 and the Omaha Public Power District's (OPPD's) responses as applicable to Fort Calhoun Station (FCS) Unit No. 1 are as follows:

NRC Request (1):

Provide a history of inaccessible or underground power cable failures for all cables that are within the scope of 10CFR50.65 (the Maintenance Rule) and for all voltage levels. Indicate the type, manufacturer, date of failure, type of service, voltage class, years of service, and the root causes for the failure.

OPPD Response (1):

To date, there have been no in-service or testing failures of inaccessible or underground power cables, within the scope of 10CFR50.65 (the Maintenance Rule), identified due to water intrusion at Fort Calhoun Station (FCS), as delineated in Generic Letter 2007-01. Any specific cable failure(s) observed have been due to damage from trenching or hole digging operations, or from a single cable pulling operation in the switchyard.

The design of the Fort Calhoun Station places the majority of the operational structures adjacent to each other, resulting in very little reliance on underground and potentially submerged cables. The separated structures such as the warehouse and security building have limited safety function(s), and only the intake structure has safety related cables. The cabling routed to the intake structure travels through parallel cable pull boxes, through a trench system to manhole MH-5, through conduit to MH-31, and into the intake structure. Manhole MH-5 is located at the southeast corner of the service building and manhole MH-31 is located at the southwest corner of the intake structure.

NRC Request (2):

Describe inspection, testing and monitoring programs to detect the degradation of inaccessible or underground power cables that support EDGs, offsite power, ESW, service water, component cooling water and other systems that are within the scope of 10CFR50.65 (the Maintenance Rule).

OPPD Response (2):

Fort Calhoun Station (FCS) does not currently have a comprehensive Cable Management Program (i.e., inspection, testing and monitoring program) for detecting the degradation of inaccessible or underground power cables that support emergency diesel generators (EDGs), offsite power, emergency service water (ESW), service water, component cooling water and other systems that are within the scope of 10CFR50.65 (the Maintenance Rule).

FCS has incorporated many of the aspects of cable management into plant practices. Cables have assigned equipment database numbers to allow tracking of associated maintenance activities and existing cables are tracked via the FCS Automated Cable Tracking System (FACTS) database. Preventive maintenance (PM) activities have been established to inspect manholes and underground vaults, megohm resistance test (megger) cables, etc.

Although FCS does not currently have a Cable Management Program, FCS has addressed issues similar to those identified in Generic Letter 2007-01. Information Notice 2002-12 and various industry operating experiences have been addressed via the plant corrective action Condition Report (CR) system. A recent review of the CR system resulted in the identification of various underground cable issues due to water intrusion and appropriate corrective actions were taken which included incorporating preventive maintenance (PM) actions (e.g., manhole and cable inspections).

Among those identified was a water leak in the intake structure in August 1998 (CR 199801719). The source of the leak was determined to be coming from the electrical vault (MH-31) located just west of the southwest entry in the intake structure. The water was pumped out and steps were taken to identify and eliminate potential water intrusion routes. Manhole MH-5 was also opened, and water was found and subsequently removed from the vault. An abandoned conduit was determined as a potential path of ground water flooding and was plugged. The manholes were monitored on a monthly basis through December 15, 1998, and no measurable increase was determined. A PM action was initiated to provide future monitoring of the manholes. Specifically, this PM action inspects the foam sealing and conduits in the electrical vault on a 5-year frequency.

Actions taken and attributed in response to Information Notice 2002-12 include:

- Raw water pump cables are megohm resistance tested (meggered) annually as part of routine inspection and maintenance of the raw water pumps.

- Inspections were completed during the 2003 refueling outage for MH-5 and MH-31. Water was noted in both manholes, but no intrusion source was noted. Cables were inspected and found to be in good condition. Cable trays and supports were observed to be in good condition.
- The PM for MH-31 was updated and an inspection task was established for MH-5, at a 5-year frequency to inspect cables, trays and structures and make repairs as necessary. The 5-year frequency was established based on the observed good condition over the 30-year life of the plant.

In June 2005, when MH-5 was accessed to pull cable for installation of an engineering change, water was observed in the manhole; covering all but the top two cable trays. (CR200503247) Actions taken in response to this condition report were:

- Manholes, cables and structures were inspected and the water was pumped from the cable vault. No cable failures were observed.
- The frequency of the PM was changed from 5 years to 18 months.
- The previous analysis was restated that it is acceptable for cables to be submerged.

In October 2005, as a result of OE about testing of submerged cables at other facilities, the testing voltage for 4160V cables was changed from 5KV to 2500V, per recommendations of IEEE 43-2000, in the 4160V motor inspection procedure EM-PM-EX-1001 (CR 200504396).

In addition, as part of the License Renewal Project, OPPD committed to develop a non-EEQ Cable Aging Management Program prior to the period of extended operation. FCS is also participating in industry efforts to develop a comprehensive Cable Management Program in keeping with industry best practices.

Conclusions:

In conclusion, Fort Calhoun Station has no demonstrated failures of underground cables due to water intrusion, but has taken proactive steps to address potential issues caused by water intrusion into cable vaults and manholes. Preventive maintenance actions are in place to monitor the existing cables and cable structures, and repair any potential damages.

Periodic annual megohm resistance testing (meggering) of medium-voltage, safety related cables have continued to show insulation resistances are intact and exceeding requirements for continued safe operations.

A cable tracking database (FACTS) is in place to track existing cables. Cables have assigned equipment database numbers to allow tracking of associated maintenance activities. A non-EEQ Cable Management Program will be implemented prior to the period of extended operation as part of a previous License Renewal commitment.