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June 8, 2007  
LIC-07-0055

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Reference: Docket No. 50-285

**SUBJECT: 30-Day Ground Water Protection Plan Report**

Attached is a report identifying tritium concentrations in onsite water samples at Fort Calhoun Station, Unit No. 1 (FCS) that meet the reporting criteria for offsite water samples specified in the FCS Radiological Environmental Monitoring Program (REMP).

The Omaha Public Power District (OPPD) voluntarily submits this report in accordance with reporting criteria contained in the FCS Groundwater Protection Plan and the Nuclear Energy Institute (NEI) Industry Initiative on Groundwater Protection.

No offsite water samples exceed the reporting criteria of the FCS REMF.

Please contact Mr. Timothy R. Dukarski at (402) 533-7126 if you should have any questions.

No commitments to the NRC are made in this letter.

Sincerely,

D. J. Bannister  
Manager – Fort Calhoun Station

DJB/MLE/mle

Attachment

## Background

The Nuclear Energy Institute (NEI) Industry Groundwater Protection Initiative is a voluntary industry-wide effort designed to assure timely detection of, and effective responses to, situations involving inadvertent radiological releases in groundwater. The goal of this initiative is to prevent migration of licensed radioactive materials offsite. Fort Calhoun Station, Unit No. 1, (FCS) has incorporated this guidance into the FCS Ground Water Protection Plan and the Offsite Dose Calculation Manual (ODCM). This voluntary communication protocol requires the submittal of a written report to the NRC of any sample result from onsite or offsite water that is, or could be, used as a source of drinking water that exceeds the criterion in the FCS Radiological Environmental Monitoring Program (REMP). The FCS REMP criterion for tritium in offsite water samples is 20,000-picoCuries per liter (pCi/L), which is equivalent to the Environmental Protection Agency (EPA) drinking water standard.

On May 11, 2007, FCS Chemistry Department personnel identified detectable levels of tritium, cesium-137, and antimony-125 in water that was seeping into the transfer canal pump room (Room 24) of the auxiliary building through an exterior wall (Room 24 is below ground level). In accordance with the FCS Groundwater Protection Plan and the NEI Groundwater Protection Initiative, OPPD is conservatively reporting this as potential ground water contamination using the FCS REMP criterion for offsite water samples.

## Discussion

Following the discovery, a response team was assembled and an action plan was developed in accordance with the FCS Groundwater Protection Plan. State, local, and NRC officials were notified. Actions were initiated to determine the source and the extent of the potential ground water contamination as well as the radiological consequences to the public and onsite personnel. Samples from the seepage were analyzed by an independent laboratory, and the NRC. The results of these separate analyses were similar to the FCS analysis confirming that the Room 24 seepage contained tritium, cesium-137, and antimony-125. Since the initial discovery, seepage samples have continued to be taken in Room 24. Groundwater samples are being taken from temporary Geoprobe<sup>®</sup> wells within the restricted area and the owner-controlled area.

## Room 24 Data

The following table shows the mean concentration of licensed radioactive materials detected to date in seepage samples from Room 24.

Isotope	Concentration	Trend
Tritium	173,000 pCi/L <sup>1</sup>	Increasing
Cesium-137	23,000 pCi/L	Stable
Antimony-125	950 pCi/L	Stable

<sup>1</sup> Concentration is above EPA drinking water standard and FCS threshold for offsite water samples.

### **Geoprobe<sup>®</sup> and Turbine Sump Data**

Five (5) Geoprobe<sup>®</sup> wells were drilled in the suspected ground water plume based on an assessment completed by the Electric Power Research Institute (EPRI). To date, the mean concentration of tritium in the Geoprobe<sup>®</sup> well samples is 3,295-pCi/L. The concentration has remained stable at this level, which is significantly below the EPA drinking water standard of 20,000-pCi/L. Samples taken from the turbine sump (a location known to have groundwater intrusion), showed tritium concentrations at or below the lower limits of detection (LLD).

Cesium-137 and antimony-125 are below LLD in the Geoprobe<sup>®</sup> and turbine sump samples.

### **Analysis of Offsite Well Water Samples**

An EPRI assessment indicates that the natural groundwater flow at FCS is slow and generally from west to east, toward the Missouri River. A well water sample from the nearest resident (0.65-miles) was analyzed by an independent laboratory in accordance with the FCS REMP. The concentration of tritium, cesium-137, and antimony-125 in the sample was confirmed to be at or below natural background levels.

### **Conclusions**

The FCS action plan requires an evaluation to be conducted in accordance with EPRI recommendations as to whether additional permanent onsite sampling wells should be drilled and if so, where they should be located.

Samples continue to be collected and analyzed from Room 24 and the five (5) temporary Geoprobe<sup>®</sup> wells. Activities to determine the source of the tritium, cesium-137, and antimony-125 in Room 24 continue. Depending on the outcome, appropriate remediation will be considered.

Tritium concentrations from both onsite and offsite wells including the five (5) temporary Geoprobe<sup>®</sup> wells are significantly below the EPA drinking water standard of 20,000-pCi/L. No other corrosion, activation, or fission products have been detected in any onsite or offsite well water samples. There is no indication that an inadvertent release of any licensed radioactive material to the public or to onsite personnel has occurred.