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July 31, 2006  
LIC-06-0079

Mr. Stuart A. Richards, Deputy Director  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Reference: Docket No. 50-285

**SUBJECT: Groundwater Protection – Data Collection Questionnaire**

Dear Mr. Richards:

The nuclear industry, in conjunction with the Nuclear Energy Institute, has developed a questionnaire to facilitate the collection of groundwater data at commercial nuclear reactor sites. The objective of the questionnaire is to compile baseline information about the current status of site programs for monitoring and protecting groundwater and to share that information with NRC. The completed questionnaire for Fort Calhoun Station, Unit No. 1 is enclosed.

This submittal contains no new regulatory commitments.

If you have any questions or require additional information, please contact Mr. Timothy R. Dukarski at (402) 533-7126.

Sincerely,

J. L. McManis  
Manager  
Nuclear Licensing

JLM/mle

Enclosure

- c: NRC Document Control Desk
- B. S. Mallett, NRC Regional Administrator – Region IV
- A. B. Wang, NRR Project Manager
- J. D. Hanna, NRC Resident Inspector
- Ralph Andersen, Nuclear Energy Institute

U.S. Nuclear Regulatory Commission  
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# **Groundwater Protection Data Collection Questionnaire**

**Industry Groundwater Protection Initiative  
Voluntary Data Collection Questionnaire**

**Plant:** Fort Calhoun Station (FCS)

- 1. Briefly describe the program and/or methods used for detection of leakage or spills from plant systems, structures, and components that have a potential for an inadvertent release of radioactivity from plant operations into groundwater.**

FCS has an operable spent fuel leakage detection system that is used to monitor leakage from the spent fuel pool.

Refueling cavity leakage is determined every refueling outage in accordance with preventative maintenance activity WP005823.

Other tanks such as the Safety Injection Refueling Water Tank (SIRWT) are inspected periodically.

In accordance with FCS Radiation Protection Department Guideline 018 and Form FC-RP-202-5, a quarterly site radiological survey is performed.

Engineers perform periodic walkdowns of the systems for which they are responsible. Identified leaks and spills are addressed through immediate clean up, notifying supervision for assistance, writing a work request and/or initiating a Corrective Action Report.

Operations personnel perform routine surveillance rounds each shift. Identified leaks and spills are addressed through immediate clean up, notifying supervision for assistance, writing a work request and/or initiating a Corrective Action Report.

- 2. Briefly describe the program and/or methods for monitoring onsite groundwater for the presence of radioactivity released from plant operations.**

- FCS has a total of 10 wells.
- Well #1 is a preoperation/postoperation monitoring well which is approximately 600 feet north of containment.
- Well #2 is a preop/postop monitoring well which is approximately 700 feet northwest of containment.
- Well #3 is a plant supply well to the Reverse Osmosis (RO) unit which is approximately 500 feet west of containment.
- A total of five wells are installed for site burial of industrial waste (MW-1 through 5 which are approximately 1000 feet south-south east of containment).
- FCS has one sanitary lagoon make-up well which is located 900 feet south-south east of containment.
- FCS also has one sanitary lagoon industrial well that is used for flushing piping, which is approximately 3000 feet south of containment.

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FCS performs quarterly sampling on Well #2, the sanitary lagoon makeup well, and two of the five industrial waste monitoring wells. The sanitary lagoon makeup well sample is analyzed by an offsite vendor for tritium to a 300 pCi/L minimum detectable activity (MDA). All other well samples are analyzed onsite for tritium to a MDA of 2000 pCi/L.

In addition, one offsite well is analyzed by FCS personnel to a MDA of 2000 pCi/L. Positive indication of tritium in a sample would prompt FCS personnel to perform gamma spectroscopy analysis to the FCS Radiological Environmental Monitoring Program (REMP) lower limit of detection (LLD). Sr-90 would be analyzed with an MDA at the EPA limit. None of the onsite wells are used as a source of drinking water or irrigation.

**3. If applicable, briefly summarize any occurrences of inadvertent releases of radioactive liquids that had the potential to reach groundwater and have been documented in accordance with 10 CFR 50.75(g).**

FCS has not documented any 10 CFR 50.75(g) occurrences of inadvertent releases of radioactive liquids that had the potential to reach groundwater.

FCS Standing Order (SO)-G-110, "Record Keeping for Decommissioning Planning," states: "if cleanup was successful and contaminants have not spread to inaccessible locations and significant contamination no longer remains, the records need not be included in the decommissioning file." Significant contamination is defined as >5,000 dpm/100 cm<sup>2</sup> fixed contamination or >1000 dpm/100 cm<sup>2</sup> removable beta-gamma combined contamination. Therefore, according to SO-G-110, FCS does not document non-significant events that are remediated under 10 CFR 50.75(g).

FCS experienced the following two spills that, if not cleaned up in a timely manner, could have resulted in radioactive liquids contacting groundwater.

- A spill occurred in the early 1980s where water from the SIRWT spilled into a corridor and out of the truck bay door onto the soil. Following that incident, the soil was excavated and disposed of as radioactive waste.
- The FCS Reverse Osmosis (RO) unit is located outside the Protected Area (fenced area) in an old warehouse inside the Owner Controlled Area. Inside the warehouse, in the vicinity of the RO unit, a temporary Restricted Area is set up to store contaminated equipment. In July 2004, a spill from the RO unit piping occurred and water entered the temporary Restricted Area. The spill was cleaned up and the area was surveyed indicating no spread of contamination. This event is documented in the FCS Corrective Action Program.

**4. If applicable, briefly summarize the circumstances associated with any onsite or offsite groundwater monitoring result indicating a concentration in groundwater**

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**of radioactivity released from plant operations that exceeds the maximum contaminant level (MCL) established by the USEPA for drinking water.**

There have been no identified instances of radioactivity released from FCS that resulted in groundwater concentrations exceeding the USEPA maximum contaminant levels for drinking water.

- 5. Briefly describe any remediation efforts undertaken or planned to reduce or eliminate levels of radioactivity resulting from plant operations in soil or groundwater onsite or offsite.**

With the exception of the SIRWT spill from the early 1980s, FCS has not spilled liquids contaminated with radioactivity outside of buildings. As stated in the reply to question 3, soil from that spill was excavated and disposed of as radioactive waste.