



Crystal River Nuclear Plant
Docket No. 50-302
Operating License No. DPR-72

March 31, 2011
3F0311-10

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

Subject: Crystal River Unit 3 – Groundwater Protection – Data Collection Questionnaire

Reference: FPC to NRC letter, 3F0706-03, dated July 25, 2006, “Groundwater Protection – Data Collection Questionnaire” (Accession No. ML 062280588)

Dear Mr. Cheok:

The nuclear industry, in conjunction with the Nuclear Energy Institute, developed a questionnaire to facilitate the collection of groundwater data at commercial nuclear reactor sites in 2006. The objective of the questionnaire was to compile baseline information about the status of site programs for monitoring and protecting groundwater and to share that information with Nuclear Regulatory Commission.

Florida Power Corporation, doing business as Progress Energy Florida, Inc., submitted the completed questionnaire for Crystal River Unit 3 (CR-3) by the above referenced letter.

During a recent review of the CR-3 Groundwater Protection – Data Collection Questionnaire response, it became apparent that three historical events that occurred at CR-3 were not included in the response to Question 3 in the above referenced submittal. As denoted by a revision line bar located in the right margin, this submittal provides the supplemental information to Question 3 and a minor administrative clarification to Question 5 which references the Question 3 response. This letter completely supersedes the above referenced submittal.

This submittal contains no new regulatory commitments.

If you have any questions regarding this submittal, please contact Mr. Dan Westcott, Superintendent, Licensing and Regulatory Programs at (352) 563-4796.

Sincerely,

James W. Holt
Plant General Manager
Crystal River Nuclear Plant

Enclosure

xc: USNRC Document Control Desk
USNRC Resident Inspector – Crystal River Unit 3
NRR Project Manager – Crystal River Unit 3
USNRC Regional Administrator – Region II
Ralph Andersen, Nuclear Energy Institute

AOD
NRR

FLORIDA POWER CORPORATION

CRYSTAL RIVER – UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

ENCLOSURE

**GROUNDWATER PROTECTION – DATA COLLECTION
QUESTIONNAIRE**

Groundwater Protection – Data Collection Questionnaire

- 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.**
 - Crystal River Unit 3 has programs and procedures in place to rapidly identify and correct leakage including those in outdoor areas. Operations personnel perform routine rounds of plant systems and structures daily. These rounds include the requirements to identify and report leaks and spills into the site work request system and/or the site corrective action program. Response to spills includes notification of Control Room and Radiation Protection personnel for assessment and cleanup.
 - Health Physics personnel perform dose rate and contamination surveys weekly within the Protected Area, including taking smears of areas around storm drains.
 - There are no underground tanks at this facility that contain radioactive materials. There are above ground tanks that are outside the immediate facility buildings that contain radioactive liquids. Potential leak sources and components have been identified.
 - The spent fuel pool system has a functional leak detection system. The tell-tale drains are monitored daily on Operator rounds and documented in site logs. It should be noted that the spent fuel pools do not sit on the bottom floor of the facility.
 - Engineers perform periodic walk downs of the systems for which they are responsible. These rounds include the requirements to identify and report leaks and spills into the site work request system and/or the site corrective action program. Response to spills includes notification of Control Room and Radiation Protection personnel for assessment and cleanup.
 - Leakage from components that result in an unplanned release are documented on a Nuclear Condition Report (NCR) and a determination of reportability is made by plant personnel, including notification of required agencies, if necessary.
- 2. Briefly describe the program and/or methods for monitoring onsite groundwater for the presence of radioactivity released from plant operations.**
 - Presently, there are no on-site groundwater monitoring stations utilized by the Radiological Environmental Monitoring Program (REMP). The closest groundwater monitoring well is 3.6 miles east of the facility. The well is sampled and analyzed for tritium and gamma radionuclides. There are three drinking water wells that are also sampled quarterly for the same parameters. The drinking water wells are located off-site: (1) ESE 7.4 miles from the facility, (2) ESE 6.0 miles from the facility, and (3) N 5.3 miles from the facility.

- Typical detection levels in pCi/l are as follows:

H-3	< 147
Mn-54	< 5
Fe-59	< 8
Co-58	< 5
Co-60	< 5
Zn-65	< 9
Zr-Nb-95	< 7
I-131	< 5
Cs-134	< 5
Cs-137	< 4
Ba-La-140	< 15

- Due to the direction of groundwater movement at the facility (toward the southwest and the Gulf of Mexico) and the coastal location of the facility, future sources of drinking water will not be impacted by facility operation. The groundwater at the facility proper is too saline for use as a potable water source. Hence, well locations east of the facility were chosen as sources of drinking water.

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).

- In December 1995, a leak was discovered in piping which forms part of the Crystal River Unit 3 (CR-3) Emergency Feedwater System. This piping provides a recirculation flow path from the Emergency Feedwater Pumps (EFP-1/2) to the Emergency Feedwater Tank (EFT-2), and provides a minimum flow path for pump protection during delivery of Emergency Feedwater. The leak was located in a buried section of carbon steel piping, approximately one hundred feet from EFT-2. The leak resulted from a through-wall flaw located on the exterior surface of the pipe. The cause of this flaw appeared to be corrosion through contact with the soil due to poor coating installation. The damaged section was replaced in 1996 and cathodic protection was installed. It is not known how much water could have potentially leaked out of this pipe and into the surrounding soil.
- An interior inspection of the Condensate Storage Tank (CDT-1) performed during August 1997, identified two small holes in the bottom of the tank. This event was documented in a CR-3 Corrective Action Program as Precursor Card (PC) # 3-C97-7254. The limestone underneath the tank was sampled and showed no contamination. It is not known how much water potentially leaked from this tank.
- On April 21, 1998, while performing a planned authorized discharge from the Station Drain Tank (SDT-1) to the evaporation/percolation pond, an unplanned release of effluent (water) occurred from an underground transfer pipe which was found to be leaking in the vicinity of a storm drain. It was estimated that approximately 900 gallons leaked into the storm drain and from there flowed into the site discharge canal. It is expected that some water was also released into the ground through the compacted limestone foundation of the west berm. This volume could not be determined, but was estimated to be less than 7650 gallons. This tank contained secondary plant water that contained tritium at a concentration of $3.6\text{E-}4$ $\mu\text{Ci/ml}$. No gamma emitters were identified. Additionally, as part of the repair efforts for this 1998 spill, the line from the tank that travelled underground behind CDT-1 and turned "under the berm", was hydrostatically

tested and found leaking and was abandoned in place. This line may have leaked for years and it is very possible there were previous leaks in the SDT-1 discharge line prior to the recognition of this 1998 leak. As such, it is difficult to determine how much water, being sent to the settling ponds, potentially leaked out of that line into the ground under the berm/fabri-form. This event was documented in PC #3-C98-2106 and was reported to the NRC by letter dated April 23, 1998 (Accession No. ML 9804290230). This event was also documented in the CR-3 1998 Radioactive Effluent Release Report.

- On October 2, 1999, during a secondary plant condensate release to the on-site percolation pond, a leak in the fiberglass wastewater line occurred that resulted in a small amount of water leaking onto the ground. The water contained low level tritium and secondary condensate corrosion control treatment chemicals. All affected soil was excavated. There was no groundwater contamination from this spill. This event was documented on precursor card (PC) 3-C99-3279.

4. If applicable, briefly summarize the circumstances associated with any onsite or offsite groundwater monitoring result indicating a concentration in groundwater of radioactivity released from plant operations that exceeds the maximum contaminant level (MCL) established by the USEPA for drinking water.

- There have been no instances of groundwater contamination that remotely challenged the MCL 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.

- There was one instance (reference Bullet 4 of the response to Question 3 above) of remediation of a leaking pipe on a secondary plant discharge pipe to the site percolation pond that resulted in a small amount of secondary plant water containing low levels of tritium leaking into the soil. The liquid did not reach the groundwater and all affected soil material was excavated, as necessary, and disposed of.