Oconee Questionnaire

4 Pages

Response from Oconee Nuclear Station

ONSITE GROUND/SURFACE WATER MONITORING QUESTIONNAIRE

Onsite Radiological Effluent/REMP Monitoring Program

Phase 1 (Near Term Response)

		Yes	No
1.	Does the licensee have radioactive groundwater monitoring wells onsite?	☒	☐

If YES: How many wells: **Oconee has twenty three (23) onsite groundwater monitoring wells. See Note 1**

Where are they located (e.g., distributed around/throughout the site, in a particular region of the site and/or near particular buildings/structures, etc.)

(a)	within the Protected Area	☒	☐
(b)	within the Radiologically Restricted Area	☐	☒
(c)	within the owner-controlled area	☒	☐

(d) at what frequency does the licensee sample/analyze the wells **Groundwater wells are sampled/analyzed either quarterly, semi-annually, or annually, as scheduled.**

(e) for what radionuclides does the licensee monitor

Gamma emitters (Gamma Spec)	☒	☐
If Yes - at what MDA	**See below.**	
Tritium	☒	☐
If Yes - at what MDA	**See below.**	
Gross Beta	☒	☐
If Yes - at what MDA	**See below.**	
Other:_____	☐	☒
If Yes - at what MDA	_____	

Nuclide	Typical Minimum Detectable Activity (MDA) (pCi/l)
Gross Beta	**4**
Tritium	**250**
Mn-54	**6**
Fe-59	**17**
Co-58, Co-60	**9**
Zn-65	**4**
Zr-95	**8**
Nb-95	**3**
I-131	**6**
Cs-134	**6**
Cs-137	**9**
Ba/La-140	**11**

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	Yes	No
2. If the licensee does NOT have an onsite radioactive groundwater monitoring program:		
(a) Does the licensee plan to implement a groundwater monitoring program?	☐	☐
If Yes, when and to what extent: _____		
(b) Does the licensee plan to take other measures to assure they can identify radioactive groundwater contamination?	☐	☐
3. Does the licensee have a french drain system surrounding the main reactor facility and auxiliary structures?	☐	☒
(a) is the system analyzed for radionuclides?	☐	☐
(b) at what frequency does the licensee sample/analyze the wells _____		
(c) for what radionuclides does the licensee monitor		
Gamma emitters (Gamma Spec)	☐	☐
If Yes - at what MDA _____		
Tritium	☐	☐
If Yes - at what MDA _____		
Gross Beta	☐	☐
If Yes - at what MDA _____		
4. Does the licensee have a surveillance program to periodically:		
(a) walkdown outside areas around the site to look for potential leaks and spills?	☒	☐
(b) pressurize buried radwaste lines to evaluate structural integrity and evaluate potential for leaks and spills?	☐	☒
5. Does the licensee perform any other onsite monitoring (e.g., soil sampling) to identify unexpected radioactive releases **See Note 2**	☒	☐
6. Does the licensee's radioactive liquid discharge line traverse any non-licensee owned property (e.g., it is on a right-of-way surrounded by private properties)?	☐	☒

	Yes	No
7. If the licensee has a discharge pipe that runs underground or any underground piping that carries radioactive liquids, does the licensee perform monitoring along the discharge pathway to identify potential leakage.	☐	☒

If YES,

How frequently is the sampling performed: _____

Phase II (Longer Term Response)

8. Historical Onsite Radioactive Contamination:

(a)	Does the licensee have any history of radioactive spills and/or leaks outside of buildings/structures?	☒	☐
	Are they documented in 10 CFR 50.75g file?	☒	☐
(b)	Has the licensee identified onsite radioactive groundwater contamination?	☐	☐ See Note 3

If Yes:

⇒ When was it identified - If known:
Dates:_____

LER/Abnormal Event Report/Condition Report Nos:
_____ (If available)

⇒ To what extent - If known [square footage, estimated ground depth of the contamination, estimated quantity (volume / concentration), etc.]._____

	Yes	No
⇒ Has the contamination moved outside the Restricted area or the owner-controlled area	☐	☐

9. Comments:_____

Notes

(1) Approximately half of the groundwater monitoring wells are located around the Chemical Treatment Ponds. The remaining wells are located at various locations throughout the site.

(2) Infrequent limited sampling has been performed (*i.e.*, soil and sediment sampling).

(3) Tritium is a naturally occurring radioactive isotope of hydrogen. It has the same chemical properties as hydrogen so it exists primarily in the form of water or water vapor in the air. When present in the environment, it does not pose an external radiation hazard but is an internal hazard because it can be ingested or inhaled. However, due to its low-energy beta particle and its quick clearance from the body, it must be ingested in very large quantities to pose any significant health risk.

The State of South Carolina has established groundwater standards and has defined "contamination" as levels exceeding these established standards. For tritium the relevant standard is the Maximum Contaminant Level of 20,000 pC/l, which has been established as a level of consumption considered protective of human health which would equate to a radiation dose of 4 mrem if an individual were to drink 1/2 gallon of the water every day for a year. The radiation dose limit of 4 mrem is equivalent to about half of the dose received from a chest x-ray. Based on South Carolina's definition of "contamination", Oconee has not "identified onsite radioactive groundwater contamination".

Oconee has, however, detected tritium in the groundwater onsite. The levels at which tritium has been detected has always been below the MCL. However, for purposes of completeness, the occurrence is described below. Tritium has been identified in ground water wells near the Chemical Treatment Ponds at Oconee. Chemical leakage was identified from the ponds in 1985. Tritium leakage was identified in 1992. Monitoring around the ponds was initiated as a result of American Nuclear Insurers (ANI) recommendation 85-1. The maximum tritium concentration detected in the groundwater was 1.4E-5 μCi/ml (14,000 pCi/l). This was detected in well A1 in 1992. During 2005, this well had a typical concentration of 5.0E-06 μCi/ml (5,000 pCi/l). The tritium sample results were communicated to the South Carolina Division of Health and Environmental Control (SC DHEC) on several occasions in 1994 and 1995. The Chemical analyses from the wells around the Chemical Treatment Ponds are reported to the State semi-annually. We have no indication that the tritium has moved outside the owner-controlled area. The effect on the groundwater from the ponds is being monitored.