BROWNS FERRY Questions app B

ONSITE GROUND/SURFACE WATER MONITORING QUESTIONNAIRE

Onsite Radiological Effluent/REMP Monitoring Program

Phase I (Near term response)

			Yes	No	
	1.	Does the licensee have radioactive groundwater monitoring wells onsite?	☒	☐	
		If YES: How many wells: **Browns Ferry has a total of 20 on-site wells.**			
		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	☒	☐	See Note 1.
		(b.) within the Radiologically Restricted Area	☐	☒	
		(c.) within the Owner-Controlled Area	☒	☐	See Note 2.
		(d.) at what frequency does the licensee sample/analyze the wells	See Notes 1 and 2.		
		(e.) for what radionuclides does the licensee monitor			
		Gamma emitters (gamma Spec)	☒	☐	
		If Yes – at what MDA	**5 pCi/l**		
		Tritium	☒	☐	
		If Yes – at what MDA	**300 pCi/l**		
		Gross Beta	☒	☐	
		If Yes – at what MDA	**1.9 pCi/l**		
		Other: _____	☐	☐	**N/A**
		If Yes – at what MDA	_____		
	2.	If the licensee does NOT have an onsite radioactive groundwater monitoring program:			
		(a.) Does the licensee plan to implement a groundwater monitoring program?.	☐	☐	**N/A**
		If Yes, when and to what extent: _____			
		(b.) Does the licensee plan to take other measures to assure they can identify radioactive groundwater contamination	☐	☐	**N/A**
	3.	Does the licensee have a french drain system surrounding the main reactor facility and auxiliary structures?	☐	☒	See Note 3.
		(a.) is the system analyzed for radionuclides?	☐	☐	**N/A**
		(b.) at what frequency does the licensee sample/analyze the wells		**N/A**	
		(c.) for what radionuclides does the licensee monitor		**N/A**	

5-16

		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	☐	☒	
	6.	Does the licensee's radioactive liquid discharge line traverse any non-licensee owned areas (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: **Wells R-1, R-2, R-3 are sampled quarterly. See Note 4**			
	Phase II (Longer Term Response)				
			Yes	**No**	
	8.	Historical Onsite Radioactive Contamination:			
		(a.) Does the licensee have any history of radioactive spills and/or leaks outside of buildings/structures?	☒	☐	See Note 5.
		Are they documented in 10 CFR 50.75g file?	☒	☐	See Note 5.
		(b.) Has the licensee identified onsite radioactive groundwater contamination?	☒	☐	

		If YES: Ø When was it identified - IF known: Dates: **See Note 6.** LER/Abnormal Event Report/Condition Report Nos: **See Notes 6 & 7.** (If available) Ø To what extent - IF known [square footage, estimated ground depth of the contamination, estimated quantity (volume / concentration), etc.] **See Note 6.**			
		Ø Has the contamination moved outside the Restricted Area or the owner-controlled area	☐	☒	See Note 7.

9. Comments:

Note 1: There are 4 wells (Well 6 and Wells R-1, R-2, R-3) within the Protected Area. See Figure 1. Well 6 is the only REMP on-site groundwater monitoring location. Well 6 is sampled by an automatic sampler (a composite of daily aliquots with samples taken for analysis every 4 weeks). This monthly sample is analyzed by gamma spectroscopy and a quarterly composite is prepared and analyzed for tritium. Samples from Wells R-1, R-2, and R-3 are collected quarterly and analyzed for tritium and gamma emitters.

Note 2: There are 16 wells (Wells 1,2,3,4,5 and Wells L8 through L18) located outside of the Protected Area but within the Owner-Controlled Area. See Figure 2. Wells L8 through L18 (which are located surrounding the Low Level Radwaste (LLRW) Storage Area on the east side of the Owner-Controlled Area) are sampled annually and are analyzed for tritium, gross beta, and gamma emitters. Wells 1,2,3,4,5 are not routinely sampled.

Note 3: Browns Ferry does not have a French-drain type system. However, Browns Ferry has used a dewatering system in which the groundwater near the building structures was removed. This dewatering system has been abandoned in place and is no longer operated (and, therefore, is not monitored) due to concerns that, over a very long period of time, removing this water might adversely affect the building structures.

Note 4: Wells R-1, R-2, R-3 were installed in 2000 in response to a ANI concern based on industry operating experience regarding leaking radwaste discharge piping. These three shallow wells were installed in the vicinity of the radwaste discharge piping specifically to monitor any possible leakage.

Note 5: The extent of the current abnormal contamination issues at Browns Ferry are as follows: (1) the R-3 Well Tritium (Only) Contamination, (2) the Turbine Building-to-Intake Cable Tunnel Contamination and (3) the ADHR Soil Contamination. The need to document these per 10 CFR 50.75(g) has been identified in the site corrective action program (PERs 96105, 96242, 99273). The site corrective action program (called eCAP) is considered the site's 10 CFR 50.75(g) file.

Note 6: The R-3 Well Tritium Contamination is the only Browns Ferry radioactive groundwater contamination identified. Low-level tritium contamination was first identified in the R-3 Well in early 2001 following initial installation of these wells in September 2000. See Note 4. PER 96105 has been written due to this condition. This groundwater does not present an unmonitored pathway to a drinking water supply and the maximum tritium concentration result (792 pCi/l) is less than 5% of EPA drinking water standard (20,000 pCi/l) and is less than 0.01% of the 10CFR20 Appendix B limit (10 ECLs for tritium is 1.0E-02 uCi/ml or 1.0E+07 pCi/l). The R-3 Well is considered a shallow well and is approximately 18 feet deep. An accurate estimate of the extent of the area or volume of soil affected is not known. The last sample obtained from the R-3 Well (on 02/24/06), the tritium concentration was < MDA (< 300 pCi/l).

Note 7: FSAR Section 2.4.2.1.2, Hydrology - Site Area, states "Natural ground water movement in the area is from the plant site to the Tennessee River." Related to the R-3 Well, the groundwater movement would likely be to the forebay, into the CCWPs and discharged to the river or would follow the CCW conduits (externally) to the river. The first downstream drinking water river intake is monitored through the BFN REMP. (The nearest river water intake for drinking water is approximately 7 miles downstream.)

		Note 7: (continued) **The Annual Land Use Survey indicates there are no private groundwater wells located within one mile of the site perimeter (on the north side of the river). Public water supplies are used in these locations.** **For the R-3 Well, the radwaste discharge piping appears to be the most likely source since, in general, the tritium tends to trend with whether liquid radwaste discharges are occurring or not (i.e. generally decreasing from 2001 to mid-2003 with no liquid radwaste discharges and generally increasing since resumption of liquid radwaste discharges from mid-2003 until present). Given the most likely source is from Radwaste (possibly from the BF-2/3 radwaste discharge lines into the CCW), at this time, the present condition is not considered reportable since any tritium released from Radwaste has been accounted for and reported in ODCM monitored and approved releases. The apparent leakage is delayed (slower) in its discharge to river than that calculated for Radwaste radioactive releases and are, therefore, considered bounded by the current ODCM radwaste release methodology.**			
			Yes	**No**	
	1.	Does the licensee have radioactive groundwater monitoring wells onsite?	☒	☐	
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		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	☒	☐	See Note 1.
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		(d.) at what frequency does the licensee sample/analyze the wells	See Notes 1 and 2.		
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	2.	If the licensee does NOT have an onsite radioactive groundwater monitoring program:			
		(a.) Does the licensee plan to implement a groundwater monitoring program?.	☐	☐	N/A
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		(a.) is the system analyzed for radionuclides?	☐	☐	N/A
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	5.	Does the licensee perform any other onsite monitoring (e.g. soil sampling) to identify unexpected radioactive releases	☐	☒	
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