North Anna

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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: 3 (1 Environmental, 2 ISFSI)		
	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	1 quarterly, 2 annually	
	(e.) for what radionuclides does the licensee monitor		
	Gamma emitters (gamma Spec)	☒	☐
	If Yes – at what MDA	10 to 60 pCi/L	
	Tritium	☒	☐
	If Yes – at what MDA	2000 pCi/L	
	Gross Beta	☐	☒
	If Yes – at what MDA		
	Other: _____	☐	☒
	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 ?	☒	☐
	(a.) is the system analyzed for radionuclides?	☒	☐
	(b.) at what frequency does the licensee sample/analyze the wells	quarterly	
	(c.) for what radionuclides does the licensee monitor		

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Gamma emitters (gamma Spec)		☒	☐
	If Yes – at what MDA	10 to 300 pCi/l	
Tritium		☒	☐
	If Yes – at what MDA	~ 3000 pCi/l	
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? ☒ ☐ OPERATOR ROUNDS
   (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 ☐ ☒ NOT ON SITE

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: _____

	Yes	No
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?	☐	☒

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.]
  _____

Jeff Griffis reviewed contents of 50.75g file and determined no spills/leaks of significance had occurred.

MG 3/21/06

➢ Has the contamination moved outside the Restricted Area or the owner-controlled area ☐ ☐

9. Comments: _____

_____

_____

ONSITE GROUND/SURFACE WATER MONITORING QUESTIONNAIRE RESPONSES

1. Does the licensee have radioactive groundwater monitoring wells onsite?

Yes. 3 (three) wells are monitored on site:

Environmental Station 01A is located at NAPS biology Lab, 0.64 mile from centerline of U-1 Containment in the SE environmental sector.
ISFSI is located about 0.51 mile from centerline of U-1 Containment in the SSW environmental sector

(a) None
(b) 1 (one) well at the ISFSI is located within the ISFSI Restricted Area
(c) 1 (one) well at the ISFSI is located within the owner-controlled area. 1 (one) well at Environmental Station 01A is located within the owner-controlled area.
(d) Station 01A is monitored quarterly and annually in the second quarter. The ISFSI wells are monitored annually
(e) Station 01A is monitored quarterly for H-3 and gamma emitters and annually in the second quarter for Sr-89/-90. The ISFSI wells are monitored annually for H-3, gamma emitters, and Sr-89/-90.

NUCLIDE	REQUIRED LLD (pCi/L)	MDA (SAMPLE L-5636) (pCi/L)
H-3	2000	~1200
Mn-54	15	~5
Fe-59	30	~8
Co-58,60	15	~4
Zn-65	30	~13
Zr-95	30	~6
Nb-95	15	~5
I-131	10	~9
Cs-134	15	~5
Cs-137	18	~4
Ba-140	60	~8
La-140	15	~9
Sr-89	N/A	~8
Sr-90	N/A	~1.5

2. If the licensee does **NOT** have an onsite radioactive groundwater monitoring program:
   (a) Not applicable
   (b) Not Applicable

3. Does the licensee have a french drain system surrounding the main reactor facility and auxiliary structures?

   Yes. Subsurface drains, e.g., Containment Mat sumps and 3 (three) storm drain out falls

   (a) Yes
   (b) Subsurface drains/storm drain out falls are monitored on a quarterly basis
   (c) H-3 and gamma emitters

NUCLIDE	REQUIRED LLD (pCi/L)	TYPICAL MDA (pCi/L)
H-3	10000	3000
Mn-54	500	10
Fe-59	500	20
Co-58	500	15
Co-60	500	15
Zn-65	500	25
Mo-99	500	100
I-131	1000	20
Cs-134	500	10
Cs-137	500	20
Ce-141	500	50
Ce-144	500	300

4. Does the licensee have a surveillance program to periodically:

   (a) No formal program exists, as inspection for leaks is considered part of operator rounds.

   (b) No

5. Does the licensee perform any other onsite monitoring (e.g. soil sampling) to identify unexpected radioactive releases?

   No program exists specifically for this purpose. However, soil excavated inside the radiological restricted area is monitored prior to removal from the area for gamma emitters. Also once per 3 (three) years soil samples are analyzed for gamma emitters and Sr-89/90 at one environmental station in the owner-controlled area and two environmental stations at the owner-controlled area boundary.

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.

   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

   No

8. Historical Onsite Radioactive Contamination:

   (a) Yes
   Yes
   (b) No

scheduled basis to obtain even wear. Following installation of spare parts or piping modifications, visual inspections are conducted to confirm normal operation of the system.

9.2.2.8 Instrumentation Application

The system is monitored from the main control room by indicators that display the following data:

1. Pump discharge pressure.
2. Temperature and flow in the supply headers from the component cooling heat exchangers.
3. Temperature in the return headers from the residual heat removal heat exchangers.
4. Flow from the reactor coolant pump thermal barriers.
5. Temperature in the return headers at the pump suction.
6. Radioactivity in the component cooling water heat exchanger constant-flow vents.

Local indicators for pressure, temperature, level, and flow are provided on a general basis. Certain selected temperatures are sensed by thermocouples whose output signals are fed into the computer system, thus providing full-time scanning and alarming.

Air-operated trip or motor-operated valves are installed on the outlet headers from those components served in the reactor containment. A check valve or air-operated trip valve is installed in the inlet header at the containment for the components served in the reactor containment.

9.2.3 Water Supply and Treatment Systems

9.2.3.1 Domestic Water System

The domestic water system consists of ground wells dug at various locations on site. Periodic samples are collected at the discharge of each well pump to ensure that the wells provide a safe and approved water supply to the station facilities.

Each well has its own structure, hydropneumatic tank, pump, and compressor. Pressure is sustained in the system by maintaining the proper water to air ratio in the individual hydropneumatic tank via pressure and level controllers. Well pumps are sized to provide adequate make-up to the system without excessive draw down to its respective well. As an added protection, well level is ensured via level switches, to mitigate the chances of pumping a well dry and damaging the submersible pump. Water is supplied from each well to its respective hydropneumatic tank, which acts as a surge volume and pressure source for the header. Each hydropneumatic tank discharges to a common header. For maintenance evolutions, each hydropneumatic tank is isolable and bypassable to allow service directly from the well pump. The common underground piping is regionally isolable to allow for isolation of any well house from the system without isolating water supply to the facilities in that area.