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DUKE POWER

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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: McGuire Nuclear Station
Docket Nos: 50-369 and 370

Dear Sir:

In 1992 McGuire identified leaking tubes in the 2B Containment Spray (NS) Heat Exchanger. These tube leaks allow for minimal concentrations of radioactive water to be introduced to the Nuclear Service (RN) water system, and subsequently to the Standby Nuclear Service Water Pond (SNSWP). Since the 2B NS Heat Exchanger leaks have been identified, the associated RN train has not been aligned to the SNSWP. After careful review of the radioactive concentrations in the RN water that would be introduced to the SNSWP, it is McGuire's intention to establish the RN to SNSWP alignment during the upcoming Units 1 and 2 Refueling Outages. This alignment will be necessary in order to comply with the Cs-137 LLD value requirements during the draining of the condensers (via the WWCB) for outage maintenance. The Unit 1 Refueling Outage began today. Prior to the alignment of the RN train to the SNSWP, McGuire determined that the NRC should be made aware of the circumstances surrounding the RN alignment and of the planned leak rate determination and isotopic sampling analysis criteria that will be performed during this alignment. The circumstances surrounding this alignment were discussed with the NRC in a conference call on March 2, 1993. Attachment #1 provides the specific leak rate determination and isotopic sample analysis frequency for the water sources and outfalls associated with this alignment.

If there are any questions or comments regarding this issue please contact Robert Sharpe at (704) 875-4447 or Steve Mooneyhan at (704) 875-4646.

Very truly yours,

T. C. McMeekin

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2B NS HEAT EXCHANGER LEAKAGE SUMMARY

At the present time only the 'B' train of the RN system is utilized to provide the water necessary for the SNSWP overflow. Due to problems identified with the operability of the Auxiliary Feedwater System (CA) assured makeup from RN, the alignment of 'A' train RN to the SNSWP now results in limited CA system operability.

The RN system provides cooling to the Containment Spray (NS) Heat Exchangers. At the present time the 2B NS Heat Exchanger has some identified tube leakage which allows small quantities of radioactive water into the RN side of the NS Heat Exchanger. The outlet isolation valve for the RN side of the 2B NS Heat Exchanger also has a minimal leak rate (Presently 4.36 gph) that allows this radioactive water to enter the main RN system. This small amount of radioactivity in the RN system is being released and accounted for in the Condenser Circulating Water system (RC). The RC system is an approved discharge pathway. In August of 1992 Eddy Current testing and subsequent tube plugging was performed on the 2B NS Heat Exchanger. After completion of this inspection no signs of radioactivity were seen in the RN side of the 2B NS Heat Exchanger. In September of 1992 leakage of radioactive water was again discovered in the RN side of 2B NS Heat Exchanger. Based on the problems associated with this tube leakage the 2B NS Heat Exchanger is scheduled to be replaced during the next scheduled Unit 2 refueling outage (July 1993).

Until the 2B NS Heat Exchanger can be replaced, anytime that the 'B' train of the RN system is aligned to the SNSWP the site would be discharging very slight amounts of radioactive water to the SNSWP via the RN system. Based on the previous amount of activity identified in the RN side of the NS Heat Exchanger, expected concentrations of the various isotopes that would be seen in the SNSWP have been estimated and are included on pages 3 - 9 of this attachment. These estimates are based on the highest activity seen for each of the isotopes for all of the RN samples that have been analyzed. The dilution factor utilized is based on the total SNSWP volume (1.85 E8 Gallons). The activity estimates have also been performed for varying amounts of time that the RN system would be aligned to the SNSWP. In all cases the amount of activity that is calculated to be present in the SNSWP would be well below the Lower Limit of Detection (LLD) capability of the isotopic analysis equipment in use at McGuire.

McGuire has not aligned the 2B RN train to the SNSWP since the leaks in the 2B NS Heat Exchanger have been discovered. While the SNSWP does discharge to an approved discharge pathway ,WWCB, additional actions are planned for the time periods that the RN alignment is made. Preliminary plans for alignment of the 2B RN train to the SNSWP include the following actions:

Prior to the overflow alignment, the RN side of the heat exchanger would be sampled to determine the level of radioactivity. (This is already being done twice a month) The sampling of the RN side of the heat exchanger would then be performed on a weekly basis for as long as the overflow alignment is maintained.

The leak rate passed the RN outlet isolation valve for the NS Heat Exchanger would be verified prior to the RN alignment. The leak rate would then be checked monthly for as long as the overflow alignment is maintained.

The SNSWP would be sampled for isotopic analysis prior to the alignment and then on a daily basis for as long as the overflow alignment is maintained.

As there are already effluent release procedures in place to account for any radioactivity that is discharged via the WWCB no additional dose calculations are planned.

NS HEAT EXCHANGER LEAKAGE INFORMATION

	H-3	Co-60	Cs-134	Cs-137	Xe-133	Xe-135
RN Activity (uCi/ml)	6.93E-04	1.50E-07	1.10E-07	3.13E-07	2.00E-06	1.90E-07
RN Activity (uCi/gal)	2.62E+00	5.68E-04	4.16E-04	1.18E-03	7.57E-03	7.19E-04

Hours Aligned To SNSWP	Total Gallons Sent To SNSWP	Est. SNSWP H-3 (uCi/ml)	Est. SNSWP C0-60 (uCi/ml)	Est. SNSWP Cs-134 (uCi/ml)	Est. SNSWP Cs-137 (uCi/ml)	Est. SNSWP Xe-133 (uCi/ml)	Est. SNSWP Xe-135 (uCi/ml)
5	21.80	8.17E-11	1.77E-14	1.30E-14	3.69E-14	2.36E-13	2.24E-14
10	43.60	1.63E-10	3.54E-14	2.59E-14	7.38E-14	4.71E-13	4.48E-14
20	87.20	3.27E-10	7.07E-14	5.18E-14	1.48E-13	9.43E-13	8.96E-14
50	218.00	8.17E-10	1.77E-13	1.30E-13	3.69E-13	2.36E-12	2.24E-13
100	436.00	1.63E-09	3.54E-13	2.59E-13	7.38E-13	4.71E-12	4.48E-13
150	654.00	2.45E-09	5.30E-13	3.89E-13	1.11E-12	7.07E-12	6.72E-13
200	872.00	3.27E-09	7.07E-13	5.18E-13	1.48E-12	9.43E-12	8.96E-13
300	1308.00	4.90E-09	1.06E-12	7.78E-13	2.21E-12	1.41E-11	1.34E-12
400	1744.00	6.53E-09	1.41E-12	1.04E-12	2.95E-12	1.89E-11	1.79E-12
500	2180.00	8.17E-09	1.77E-12	1.30E-12	3.69E-12	2.36E-11	2.24E-12
600	2616.00	9.80E-09	2.12E-12	1.56E-12	4.43E-12	2.83E-11	2.69E-12
700	3052.00	1.14E-08	2.47E-12	1.81E-12	5.16E-12	3.30E-11	3.13E-12
800	3488.00	1.31E-08	2.83E-12	2.07E-12	5.90E-12	3.77E-11	3.58E-12
900	3924.00	1.47E-08	3.18E-12	2.33E-12	6.64E-12	4.24E-11	4.03E-12
1000	4360.00	1.63E-08	3.54E-12	2.59E-12	7.38E-12	4.71E-11	4.48E-12
1100	4796.00	1.80E-08	3.89E-12	2.85E-12	8.11E-12	5.18E-11	4.93E-12
1200	5232.00	1.96E-08	4.24E-12	3.11E-12	8.85E-12	5.66E-11	5.37E-12

NS HEAT EXCHANGER LEAKAGE INFORMATION

	H-3
RN Activity (uCi/ml)	6.93E-04
RN Activity (uCi/gal)	2.62E+00

Hours Aligned To SNSWP	Total Gallons Sent To SNSWP	Total Concentration (uCi)	With SNSWP Dilutuion uCi/gal	Estimated SNSWP Concentration uCi/ml
5	21.80	57.18	3.09E-07	8.17E-11
10	43.60	114.36	6.18E-07	1.63E-10
20	87.20	228.73	1.24E-06	3.27E-10
50	218.00	571.82	3.09E-06	8.17E-10
100	436.00	1143.63	6.18E-06	1.63E-09
150	654.00	1715.45	9.27E-06	2.45E-09
200	872.00	2287.26	1.24E-05	3.27E-09
300	1308.00	3430.89	1.85E-05	4.90E-09
400	1744.00	4574.52	2.47E-05	6.53E-09
500	2180.00	5718.15	3.09E-05	8.17E-09
600	2616.00	6861.78	3.71E-05	9.80E-09
700	3052.00	8005.41	4.33E-05	1.14E-08
800	3488.00	9149.04	4.95E-05	1.31E-08
900	3924.00	10292.67	5.56E-05	1.47E-08
1000	4360.00	11436.30	6.18E-05	1.63E-08
1100	4796.00	12579.93	6.80E-05	1.80E-08
1200	5232.00	13723.56	7.42E-05	1.96E-08

NS HEAT EXCHANGER LEAKAGE INFORMATION

	C0-60
RN Activity (uCi/ml)	1.50E-07
RN Activity (uCi/gal)	5.68E-04

Hours Aligned To SNSWP	Total Gallons Sent To SNSWP	Total Concentration (uCi)	With SNSWP Dilutuion uCi/gal	Estimated SNSWP Concentration uCi/ml
5	21.80	0.01	6.69E-11	1.77E-14
10	43.60	0.02	1.34E-10	3.54E-14
20	87.20	0.05	2.68E-10	7.07E-14
50	218.00	0.12	6.69E-10	1.77E-13
100	436.00	0.25	1.34E-09	3.54E-13
150	654.00	0.37	2.01E-09	5.30E-13
200	872.00	0.50	2.68E-09	7.07E-13
300	1308.00	0.74	4.01E-09	1.06E-12
400	1744.00	0.99	5.35E-09	1.41E-12
500	2180.00	1.24	6.69E-09	1.77E-12
600	2616.00	1.49	8.03E-09	2.12E-12
700	3052.00	1.73	9.37E-09	2.47E-12
800	3488.00	1.98	1.07E-08	2.83E-12
900	3924.00	2.23	1.20E-08	3.18E-12
1000	4360.00	2.48	1.34E-08	3.54E-12
1100	4796.00	2.72	1.47E-08	3.89E-12
1200	5232.00	2.97	1.61E-08	4.24E-12

NS HEAT EXCHANGER LEAKAGE INFORMATION

	Cs-134
RN Activity (uCi/ml)	1.10E-07
RN Activity (uCi/gal)	4.16E-04

Hours Aligned To SNSWP	Total Gallons Sent To SNSWP	Total Concentration (uCi)	With SNSWP Dilutuion uCi/gal	Estimated SNSWP Concentration uCi/ml
5	21.80	0.01	4.91E-11	1.30E-14
10	43.60	0.02	9.81E-11	2.59E-14
20	87.20	0.04	1.96E-10	5.18E-14
50	218.00	0.09	4.91E-10	1.30E-13
100	436.00	0.18	9.81E-10	2.59E-13
150	654.00	0.27	1.47E-09	3.89E-13
200	872.00	0.36	1.96E-09	5.18E-13
300	1308.00	0.54	2.94E-09	7.78E-13
400	1744.00	0.73	3.92E-09	1.04E-12
500	2180.00	0.91	4.91E-09	1.30E-12
600	2616.00	1.09	5.89E-09	1.56E-12
700	3052.00	1.27	6.87E-09	1.81E-12
800	3488.00	1.45	7.85E-09	2.07E-12
900	3924.00	1.63	8.83E-09	2.33E-12
1000	4360.00	1.82	9.81E-09	2.59E-12
1100	4796.00	2.00	1.08E-08	2.85E-12
1200	5232.00	2.18	1.18E-08	3.11E-12

NS HEAT EXCHANGER LEAKAGE INFORMATION

	Xe-133
RN Activity (uCi/ml)	2.00E-06
RN Activity (uCi/gal)	7.57E-03

Hours Aligned To SNSWP	Total Gallons Sent To SNSWP	Total Concentration (uCi)	With SNSWP Dilutuion uCi/gal	Estimated SNSWP Concentration uCi/ml
5	21.80	0.17	8.92E-10	2.36E-13
10	43.60	0.33	1.78E-09	4.71E-13
20	87.20	0.66	3.57E-09	9.43E-13
50	218.00	1.65	8.92E-09	2.36E-12
100	436.00	3.30	1.78E-08	4.71E-12
150	654.00	4.95	2.68E-08	7.07E-12
200	872.00	6.60	3.57E-08	9.43E-12
300	1308.00	9.90	5.35E-08	1.41E-11
400	1744.00	13.20	7.14E-08	1.89E-11
500	2180.00	16.50	8.92E-08	2.36E-11
600	2616.00	19.80	1.07E-07	2.83E-11
700	3052.00	23.10	1.25E-07	3.30E-11
800	3488.00	26.40	1.43E-07	3.77E-11
900	3924.00	29.70	1.61E-07	4.24E-11
1000	4360.00	33.01	1.78E-07	4.71E-11
1100	4796.00	36.31	1.96E-07	5.18E-11
1200	5232.00	39.61	2.14E-07	5.66E-11

NS HEAT EXCHANGER LEAKAGE INFORMATION

	Xe-135
RN Activity (uCi/ml)	1.90E-07
RN Activity (uCi/gal)	7.19E-04

Hours Aligned To SNSWP	Total Gallons Sent To SNSWP	Total Concentration (uCi)	With SNSWP Dilutuion uCi/gal	Estimated SNSWP Concentration uCi/ml
5	21.80	0.02	8.47E-11	2.24E-14
10	43.60	0.03	1.69E-10	4.48E-14
20	87.20	0.06	3.39E-10	8.96E-14
50	218.00	0.16	8.47E-10	2.24E-13
100	436.00	0.31	1.69E-09	4.48E-13
150	654.00	0.47	2.54E-09	6.72E-13
200	872.00	0.63	3.39E-09	8.96E-13
300	1308.00	0.94	5.08E-09	1.34E-12
400	1744.00	1.25	6.78E-09	1.79E-12
500	2180.00	1.57	8.47E-09	2.24E-12
600	2616.00	1.88	1.02E-08	2.69E-12
700	3052.00	2.19	1.19E-08	3.13E-12
800	3488.00	2.51	1.36E-08	3.58E-12
900	3924.00	2.82	1.53E-08	4.03E-12
1000	4360.00	3.14	1.69E-08	4.48E-12
1100	4796.00	3.45	1.86E-08	4.93E-12
1200	5232.00	3.76	2.03E-08	5.37E-12