

Nimitz, Ronald

From: Calvin.Taylor@exeloncorp.com
Sent: Tuesday, May 26, 2009 2:27 PM
To: Ronald Nimitz
Subject: Sample results for 2008

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken via grab sample methodology at two locations (33 and 94) on a monthly schedule. In addition, grab samples were collected semi-annually at two locations (23 and 24). Of these locations 23, 24, and 33, located downstream, could be affected by Oyster Creek's effluent releases. The following analyses were performed:

12

Tritium

Samples from all locations were analyzed for tritium activity (Table C-I.1, Appendix C). No tritium activity was detected. Data from this year indicates that surface water tritium concentrations remain very low and not significantly different from recent previous years.

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C-I.2, Appendix C). All nuclides were less than the MDC.

Surface water sampling began in 1966, and the samples were analyzed for tritium as well as other radioactivity. During this preoperational program, tritium was detected at an average concentration of $1.05E+3$ pCi/liter. At that time, counting instrumentation was not as sensitive as it now, and the minimum detectable concentration was $1E+3$ pCi/liter versus $2E+2$ pCi/liter used today. By comparing the 2008 sampling results to the decay corrected average preoperational concentration reported in the 2007 Annual Radiological Environmental Operating Report ($1.11E+2$ pCi/liter), it can be seen that the inventory of tritium in the environment is due to fallout from past atmospheric nuclear weapons testing and Chernobyl, and is decreasing with time.

2. Drinking water

Quarterly samples were composited from monthly grab samples from four drinking water wells (1, 37, 38, and 39). Station 1, because it is located on the OCGS site, could potentially be affected by radioactive releases from the plant. Station 38, the Ocean Township Municipal Utility Authority Well, could potentially be affected by effluent releases from the OCGS. Given its distance from the facility (1.6 miles) and depth (approximately 360 feet), however, the probability of any OCGS related impacts is very small. Stations 37 and 39, Lacey Township Municipal Utility Authority

wells, are not likely to be impacted by effluents from the OCGS. These wells are located generally up-gradient of the regional groundwater flow direction (southeast). In addition, because of their depth (> 200 feet) and distance from the site (2.2 and 3.5 miles respectively), they are unlikely to be affected by OCGS operations. The following analyses were performed:

13

Tritium

Quarterly samples from all locations were analyzed for tritium activity (Table C-II.1, Appendix C). No tritium activity was detected.

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C-II.2, Appendix C). All nuclides were less than the MDC.

Drinking water was sampled during the preoperational program and throughout the 38 years of the plant's operational program. Tritium sampling results during the preoperational years, yielded results all less than the minimum detectable concentration of $1\text{E}+3$ pCi/liter. 2008 results are all less than the current MDC of 200 pCi/liter.

3. Fish

Fish samples comprised of American eel and flounder (bottom feeder) and striped bass, bluefish, sea trout, and perch (predator) were collected at three locations (33, 93, and 94) semiannually. Locations 93 and 33 could be affected by Oyster Creek's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portions of fish samples from three locations were analyzed for gamma emitting nuclides (Table C-III.1, Appendix C). Naturally occurring potassium-40 was found at all stations and ranged from 3,080 to 5,340 pCi/kg wet and was consistent with levels detected in previous years. No fission or activation products were found.

No fish were sampled during the preoperational sampling program for OCGS.

4. Clams and Crabs

Clams were collected at three locations (23, 24, and 94) semiannually. Crabs were collected at one location (93) annually. Locations 23, 24, and 93 could be affected by Oyster Creek's effluent releases. The following analysis was performed:

14

Gamma Spectrometry

The edible portions of clam samples from all three locations were analyzed for gamma emitting nuclides (Table C-III.2, Appendix C). Naturally occurring potassium-40 was found at all stations and ranged from 1,610 to 2,320 pCi/kg wet and was consistent with levels detected in previous years. No fission or activation products were found. Historical levels of Co-60 in clams are shown in Figure C-1, Appendix C.

Preoperational clam sample results for potassium-40 ranged from 600 to 9,800 pCi/kg wet, which are consistent with current sample

results.

The edible portions of crab samples from one location were analyzed for gamma emitting nuclides (Table C-III.2, Appendix C). Naturally occurring potassium-40 was found at a concentration of 2,730 pCi/kg wet and was consistent with levels detected in previous years. No fission or activation products were found. Crabs were not sampled during the preoperational years of the OCGS environmental monitoring program.

5. Sediment

Aquatic sediment samples were collected at four locations (23, 24, 33, and 94) semiannually. Of these locations, stations 23, 24, and 33 located downstream, could be affected by Oyster Creek's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from all four locations were analyzed for gamma emitting nuclides (Table C-IV.1, Appendix C). The only radionuclide detected was naturally occurring K-40.

Potassium-40 was found at all stations and ranged from 505 to 15,100 pCi/kg dry. No fission or activation products were found.

Figure C-3, Appendix C graphs Cs-137 concentrations in sediment from 1984 through 2008 and figure C-2, Appendix C graphs Co-60 concentrations in sediment from 1984 through 2008.

While aquatic sediment sampling was part of the preoperational program, samples were not analyzed for gamma emitting nuclides 15

until 1981.

In conclusion, the 2008 aquatic monitoring results for surface water, drinking water, fish, clams and crabs, and aquatic sediment showed only naturally occurring radioactivity and were consistent with levels measured prior to the operation of OCGS, and with levels measured in past years. No radioactivity attributable to activities at OCGS was detected in any aquatic samples during 2008 and no adverse long-term trends are shown in the aquatic monitoring data.

Calvin C. Taylor
Principal Regulatory Specialist
609.971.4031
TEAM Oyster Creek

Exelon

Nuclear

License Renewal - Our commitment to the Garden State



Please consider the environment before printing this e-mail

***** This e-mail and any of its attachments may contain Exelon Corporation proprietary information, which is privileged, confidential, or subject to copyright belonging to the Exelon Corporation family of Companies. This e-mail is intended solely for the use of the individual or entity to which it is addressed. If you are not the intended recipient of this e-mail, you are hereby notified that any dissemination, distribution, copying, or action taken in relation to the contents of and attachments to this e-mail is strictly prohibited and may be unlawful. If you have received this e-mail in error, please notify the sender immediately and permanently delete the original and any copy of this e-mail and any printout. Thank You. *****