

May 11, 2005

Edith:

This is in response to your question: what is the breakdown of the stack releases for Oyster Creek that we report in our monthlys ? The breakdown of the potential radionuclides released through the stack is as follows:

Fission and Activation Gases	Iodines	Particulates	Particulates (continued)
Kr-85	I-131	Na-22	Sn-113
Kr-85m	I-132	Na-24	Sb-124
Kr-87	I-133	K-40	Te-132
Kr-88	I-135	Cr-51	Cs-134
Xe-133		Mn-54	Cs-137
Xe-135		Co-56	Cs-139
Xe-135m		Co-57	BaLa-140 ¹
Xe-138		Co-58	Ba-140
		Fe-59	La-140
		Co-60	Ce-141
		Zn-65	Ce-143
		Sr-85	Ce-144
		Sr-90	Pa-133
		Sr-91	Np-239
		Zr-95	Ru-103
		Nb-95	Ru-106
		Mo-99	Ag-110m
		Tc-99m	

¹ Ba-140 and La-140 were counted together as one in 1972, 1973, 1974, 1976

Isotopic breakdowns like this are found in the licensee's Annual Effluent Release Reports, available to the public through the Ocean County Library System.

As I mentioned to you yesterday, we'll be responding to the rest of your questions in writing as a normal referral. You can anticipate our response in 30 days.

June 9, 2005

Dear Ms. Gbur:

Thank you for your e-mail of May 4, 2005 regarding your concerns about the Oyster Creek Nuclear Generating Station (OCNGS). Your questions about the "breakdown of stack releases" and whether "particulates are released from the stack" were responded to an earlier email I sent you on May 11, 2005. Your other questions are addressed below:

(1) Is there an explanation for the extreme readings from month to month in the attached?

We have noted the fluctuations in effluent data for fission gases and are investigating the reasons for these fluctuations with the OCNGS. We will get back to you in a separate email response.

(2) Are there errors in effluent readings in the November 2004 DEP monthly report and the March 2005 bulletin?

We have researched the data and no found no discrepancies in the effluent data provided in our monthly reports for November 2004 and March 2005.

(3) How does the DEP monitor AmerGen's stack program/readings?

The DEP monitors releases from the stack on a monthly basis and compares them to historic releases. The utility provides the DEP with these results and they are included in the Department's monthly reports. The reported effluents include gaseous, total iodine, total particulate and tritium released to the atmosphere. As you know, the OCNGS does not release activity in liquids to the environment. Releases to the atmosphere at Oyster Creek are from the 112-meter stack and/or various monitored building vents.

(4) What are the differences in how AmerGen and the DEP monitor Oyster Creek Generating Station?

The DEP operates an environmental surveillance program in the environs of the OCNGS that includes a Radiological Environmental Monitoring Program (REMP), Continuous Radiological Environmental Surveillance and Telemetry (CREST) system and Thermoluminescent Dosimetry (TLD) monitoring.

- REMP

The DEP collects around 250 air samples, 200 water samples, 50 milk samples and 50 biological (fish, vegetables) and other environmental samples annually from both nuclear plant sites (Artificial Island and the OCNGS). Samples are analyzed through an independent certified contract laboratory. The DEP's air sampling network around the OCNGS consists of six sites as well as a background location at Brendan T. Byrne State Forest (formerly Lebanon State

Forest), about 20 miles from the OCNGS site. Air particulate samples are collected biweekly and analyzed for gross beta and composited quarterly and analyzed for gamma emitters and strontium-89/90. Air charcoal samples are collected biweekly and analyzed for iodine-131.

- CREST

The DEP operates and maintains the CREST system which is a direct gamma radiation surveillance and monitoring system. The Oyster Creek network consists of sixteen CREST station system locations which monitor readings minute by minute, 24 hours a day, every day of the year. Each CREST site consists of meteorological sensors, and a pressurized ionization chamber. CREST can detect from background radiation levels up to radiation levels that might be encountered during an emergency.

Routine monitoring with CREST provides the DEP with an independent assessment of radiological releases from the OCNGS. The average ambient radiation levels obtained through CREST are provided in the DEP's monthly reports.

- TLD

DEP deploys 23 TLD's covering all of the compass sectors surrounding the OCNGS. The TLDs are co-located with the DEP's BNE's CREST system radiation monitors. Most of the TLDs are located within 1 to 2 miles of the OCNGS reactor.

The difference in how Amergen monitors and how the DEP monitors is that AmerGen has no CREST sites.

(5) Which of the following 3 monitoring programs are also used by AmerGen?

- REMP

Amergen operates a REMP program. Samples are split with the DEP. Media tested includes air particulate/air iodine, well water, surface water, sediment, clams, fish, crabs, vegetables. Sample locations follow NRC's NUREG-1302 (Offsite dose calculations manual guidance: standard radiological effluent controls for BWR's.) Sampling intervals vary with media type. Sampling locations and results can be obtained from the licensee's Annual Radiological Environmental Monitoring Reports, available in the local library system.

- CREST

Amergen has no CREST system. They do not monitor using pressurized ionization chambers.

- TLD

Amergen has 49 TLD sites (2 TLDs at each site). TLD site locations and data can be obtained from the licensee's Annual Radiological Environmental Monitoring Report, available in the local library system.

I hope that this addresses all of your questions. Thank you for sharing your concerns with me.

Karen Tuccillo

C: Kent Tosch, Manager

July 7, 2005

Dear Ms. Gbur:

Thank you for your email of June 15, 2005 regarding stack emissions and monitoring devices at Oyster Creek Nuclear Generating Station. I have responded to your specific questions below.

1. Does the DEP track the stack results independently or does the DEP depend upon OCNCS to monitor itself?

The Department of Environmental Protection (DEP) monitors releases from the stack on a monthly basis based on data provided to the DEP by the Oyster Creek Nuclear Generating Station (OCNCS). The data is compared to historic releases. Elevated readings or data fluctuations are investigated with utility staff.

In addition, the Nuclear Regulatory Commission (NRC) performs Radioactive Gaseous and Liquid Effluent Treatment and Monitoring System (RETS) inspections of each nuclear facility. Part of that inspection includes a walkdown of the plant's effluent monitoring system. Bureau of Nuclear Engineering staff participate in these inspections. Results of NRC's inspections are posted on their website address at http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/OC/oc_chart.html#insp_section

2. What kind of device is used to track the stack emissions?

The stack monitor utilizes an isokinetic probe. A continuous sample is drawn off from the stack and analyzed. Actual readings can be read directly off the monitor (analog and digital) as well as remotely in the control room, and on the internal plant computer system. The stack monitor comes with alarms that are preset to adhere to limits in the plant's Offsite Dose Calculation Manual / Radiological Effluent Technical Specifications. Iodine and Particulate samples can be remotely analyzed through an automated process of pulling an air cartridge from the in-line system, along with a complete isotopic breakdown. Due to the complexity of the isotopic analysis, a sample requires several hours to complete.

3. What are the specifications of every radiation detector that is being used?

The DEP monitors the environment surrounding New Jersey's nuclear power plants with a remote monitoring system called the Continuous Radiological Environmental Surveillance Telemetry (CREST). Each CREST site includes meteorological sensors (wind speed and wind direction) and a pressurized ionization chamber radiation detector (PIC). Years ago each site also contained a remotely activated air sampler. The remote activation was not achievable, therefore the DEP is in the process of removing these monitors from each CREST site.

The PIC's mentioned above are Reuter Stokes 1012's, 1013's and the newest state-of-the-art model, RSS-131's since replacement parts are no longer available for the earlier

model units. The Department is in the process of upgrading all of its CREST sites to model RSS-131's and has completed 100% percent of that upgrade at Artificial Island and 40% of the upgrade at Oyster Creek to date. The DEP is also in the process of purchasing an additional 10 RSS-131's that will allow for the completion of the upgrade at the OCGNS. Meanwhile, some of these sites are covered by earlier version 1012 or 1013 models which are just as reliable.

Sensor range for the PICS vary from 0.0 to 0.1 R/hour or 10 R/hour. All PICS have a set point for acceptable releases, above ambient levels, but well within regulatory limits. When this set point is exceeded, the system automatically dials a list of phone numbers, transmitting an audio alarm message to the Bureau's offices. During non-working hours, the call is transmitted to the staff person on duty. Once contact has been established, the person notified is responsible for taking appropriate action. This system operates 24 hours a day, 365 days a year. I have attached a copy of a factsheet for an RSS-131 in PDF format for additional information on specifications.

4. How frequently are these detectors calibrated?

The PICS are verified with a check source (Ra-226) every year. They are taken down from the telephone poles on which they're installed and sent to the manufacturer for calibration every other year.

5. What is their failure rate?

The RSS-131's installed by DEP staff have proven very reliable. We have not experienced any failures of the pressurized ion chambers. When "failures" do occur, they are in the electronic portion of the unit. Failed detectors are replaced with spare detectors and the failed units returned to the vendor for repair.

5. How does the DEP know when a detector fails and what does the DEP do about it.

DEP staff review daily printouts of data that are transmitted to BNE headquarters 24/7 from all CREST sites. Detector failures result in no data being transmitted. The cause is investigated and resolved either by deploying field staff to correct equipment problems or by contacting the telephone company to repair their lines and equipment.

7. Is the DEP capable of turning the detectors off? locally and remotely?

The DEP operates its pressurized ionization chambers 24/7. The agency can disable each site's polling ability remotely but would have no reason to do. Under the New Jersey Accident Response Act (N.J.S.A. 26:2D-43.g.), the DEP must maintain a comprehensive monitoring strategy which includes the daily monitoring of levels of radioactivity in the environment.

Detectors can be disabled locally. But this would require the use of an aerial lift truck since all of the monitors are installed 20 feet up on telephone poles. Any disabling would

cause an immediate end to data being transmitted to BNE headquarters. As mentioned previously, this data is monitored daily and action is taken for data transmission failures.

8. If so, what are the procedural requirements to guarantee that the detector is continually functional 24/7 ?

The BNE's "procedural requirements" are its legislative mandate described in the response to question 7.

9. Please provide the meteorological criteria for the location of each detector.

BNE detectors are located in all sixteen (16) compass directions surrounding the station. Most monitors are within two (2) miles of the reactor/stack based on the fact that on average, the potential elevated plume from the stack reaches the ground within two miles. Therefore, during any weather condition, a potential release will be detected by the monitoring network.

In an earlier email you had also asked the following question:

10. Is there an explanation for the "extreme readings" from month to month in the attached ? (you had attached your compilation of New Jersey's monthly reports on plant effluents)

The fluctuations in monthly effluent readings (i.e., Noble gases) are somewhat (but not always directly) related to the availability of the OCNGS's Augmented Offgas Building (AOG). The purpose of the AOG is to delay the release of the noble gases so they can decay prior to their release up the stack. In the months in which noble gases were seen to increase, the availability of the AOG decreased.

It is important to note that these monthly effluent readings are orders of magnitude below the plant's allowable limits on radiological effluent release. Additional information on effluent limits can be found in the licensees' Annual Radiological Effluent Report obtainable at the local library in Toms River, New Jersey.

Last of all, during our teleconference call on July 5, 2005 you asked the following:

11. What are the insights into the radioactive constituents for the nobles gases being reported in the plant effluent reports (i.e., what does Xenon decay into and so on?)

Berkeley National Laboratory has a website specifically designed to explore the "Periodic Table of Isotopes". This website allows you to chose an element, learn about its isotopes and track its decay scheme. This electronic table of isotopes is available at the following internet address: <http://ie.lbl.gov/education/isotopes.htm>

As previously mentioned, isotopic breakdowns of plant effluent can be found in the licensee's Annual Effluent Release Reports, available to the public through the Ocean

County Library System. So that you can familiarize yourself with this document, I have mailed you a copy of Oyster Creek's most recent Annual Effluent Release Report.

I hope that this addresses all of your concerns. Should you require additional information, please feel free to contact me.

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Bureau of Nuclear Engineering