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February 28, 1994

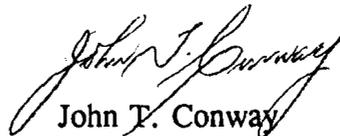
The Honorable Victor H. Reis
Assistant Secretary for
Defense Programs
Department of Energy
Washington, D.C. 20585

Dear Dr. Reis:

Enclosed for your consideration and action are the observations concerning the environmental monitoring of liquid and gaseous effluents at the Oak Ridge Y-12 Plant. These observations were developed by our technical staff during a visit December 1-3, 1993. The effluent monitoring program, in particular the monitoring of liquid effluents, is well organized and appears to reflect sound engineering and safety practices. However, a matter of particular note is the continued lack of good radiation control practices. Consistent with past observations, the technical staff noted poor radiation control practices during facility tours.

If you need further information, please let me know.

Sincerely,


John T. Conway
Chairman

c:
The Honorable Tara O'Toole, EH-1
Mr. Mark Whitaker, Acting EH-6
Mr. Joe LaGrone, Manager, Oak Ridge Operations Office

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 22, 1994

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: Steven Stokes, Senior Systems Engineer

SUBJECT: Report on Liquid and Gaseous Effluent at the Y-12 Plant,
December 1-3, 1993.

- 1. Purpose:** This report documents the DNFSB staff visit to the Oak Ridge Y-12 Plant to review liquid and gaseous effluent programs. The review familiarized the staff with Department of Energy (DOE) and Martin Marietta Energy Systems (MMES) management of these two program areas. Technical staff representatives participating in the review were Steven Stokes, Monique Helfrich and J. Timothy Arcano.
- 2. Summary:** The liquid and gaseous effluent monitoring programs appear to be well managed and in compliance with applicable DOE Orders related to radiological controls for effluents; however, management attention placed on non-compliances with DOE Orders lags behind that placed upon non-compliances with environmental regulations. Poor conduct of operations and radiological control practices were repeatedly noted during tours of the Analytical Services buildings; these observations are consistent with those noted on previous technical staff visits to the Y-12 Plant.
- 3. Background:** The Y-12 Plant has had a history of significant environmental releases, most notably releases of mercury to the neighboring groundwater. Because surface waters move through the site, the site is close to the neighboring community, and the radionuclide inventory at the site is of sufficient magnitude, there is the potential for significant public health and safety issues associated with radioactive releases to the environment. This potential merits on-site review of the liquid and gaseous effluent programs by the DNFSB technical staff.

4. Discussion/Observations:

a. Liquid and Gaseous Effluent:

(1) Liquid Effluent. The Y-12 site has an extensive program to monitor the quality of surface waters at the site for chemical contamination. Currently, all industrial wastewaters entering the East Fork Poplar Creek (which runs through the site) are monitored as required by the existing National Pollutant Discharge Elimination System (NPDES) Permit. This has resulted in roughly 11,000 data points in calendar year 1992, and will result in a similar amount in 1993. Noncompliance with permit requirements has been minor, and the number is decreasing over time (42 in 1992 and 13 so far in 1993). Although radiation monitoring is not specifically required by the NPDES permit (the Clean Water Act does not specify radiation monitoring requirements), the permit does require completion of a radiation monitoring plan. Y-12 has developed the required plan and is monitoring surface waters to ensure compliance with DOE Order 5400.5, *Radiation Protection of the Public and Environment*. Currently, all liquid effluent discharges are below DOE Order 5400.5 requirements.

(a) Discharge of Enriched Uranium to the Sanitary Sewer. In May 1991, DOE issued a moratorium on the shipment of wastes originating in radiologically controlled areas (RCAs) to commercial facilities that had not been licensed by the NRC or an agreement state. At the same time, questions were raised about control of sanitary waste which had originated in an RCA and subsequently was sent to an off-site landfill or publicly owned treatment works. As a result of these questions, Y-12 personnel conducted a study (completed in September 1991) to evaluate discharges of uranium to the sanitary sewer system. As a result of this study, all applicable DOE and Federal/state regulations concerning the discharge of uranium are being met.

(b) Drain Surveys and Determination of Wastewater Treatment Effectiveness. Review of the configuration control program revealed that a systematic approach to control of liquid effluent is in place at the Y-12 Plant. A significant effort was initiated in 1989 to verify all engineering drawings related to the sanitary and stormwater discharge systems, and correct any noted deficiencies. To date, approximately 160 process/office/utilities buildings have been surveyed in order to validate all water sources and their discharge destination. Work remaining is restricted to non-radiation/industrial areas and those not believed to have water sources. Additional work also remains to be completed on verification of the

stormwater system access from stormwater runoff (i.e. access from outside process buildings, parking lots, etc.). Though this effort has lagged behind the other efforts, a similar systematic approach appears to be taken.

- (c) Surface Water Hydrological Information Support System (SWHISS). Y-12 has installed twelve real time monitoring stations (SWHISS stations) throughout the plant. The SWHISS monitoring system was designed to monitor and record various surface water parameters (such as pH, temperature, conductivity, dissolved oxygen, and flow with plans for real time uranium monitoring) to aid in water quality determination, spill tracking, and storm drain tracking. Currently, both formal alarm procedures and training on operation of the SWHISS do not exist. Y-12 Plant personnel did, however, say that these procedures and a training program are currently being developed (expected completion date in early 1994).
 - (d) Quality Assurance/Quality Control (QA/QC) and Contractor Self-Assessment Programs. The quality control program is in compliance with industry standards; i.e., laboratory certification, the Environmental Protection Agency Certified Laboratory Program (CLP), American Industrial Hygiene Association Laboratory Certification, and Tennessee Drinking Water Certification. Quality control samples taken during field collection of samples are routinely collected and analyzed. Currently, the quality assurance (QA) program is focused on NQA-1 requirements; however, the QA program is being revised to reflect DOE Order 5700.6C, *Quality Assurance Program*. Contractor self-assessment activities are focused almost exclusively on non-compliance with environmental regulations. The DNFSB staff believes that a non-compliance with DOE Orders is not addressed with the same rigor as is a non-compliance with environmental regulations, both at the senior management and plant levels.
- (2) Gaseous Effluent. Monitoring of gaseous effluent is mandated by requirements of the Clean Air Act and DOE Orders 5400.5 and 5400.1, *General Environmental Protection Program*. Y-12 is required to monitor 216 exhaust stacks or vents serving processing areas. The estimated dose equivalent (EDE) for 1992 was 1.4 mrem (14 percent of the standard). This program appears to be well managed and systematically applied, and satisfies the DOE and Federal requirements.

b. Observations Related to Other Program Areas.

- (1) Environmental Coordinators. The environmental program at Y-12 depends heavily upon the interaction between plant personnel and environmental program managers. MMES has created the position of environmental coordinator to act as an interface between plant and environmental personnel, and requires one for each plant division. These individuals interact almost daily with their respective management chain and the environmental program management. Currently, training and qualifications programs for these individuals are not formalized. Procedures governing environmental coordinator responsibilities are general in nature and describe duties rather than how to carry out specific activities. Interviews revealed that very little effort appears to be focused on ensuring compliance with operational procedures during daily activities.
- (2) Radiation Control/Conduct of Operations. During tours of the Analytical Services Building (9995) the Staff made the following observations concerning conduct of operations and radiation control:
 - (a) Several personnel outside RCAs were observed reaching over boundary chains into the controlled area and transferring equipment in both directions across the boundary. Personnel within the RCA were also observed reaching over the boundary chain and transferring equipment.
 - (b) Equipment was stored beneath the radiologically control boundary chains (half in, half out), making it difficult to determine if the equipment was within the controlled area or not.
 - (c) Radioactive material is stored outside in steel drums, which are unprotected from precipitation and which lack control of subsequent runoff. Some of these steel drums were placed under the radiation boundary chain with parts protruding beyond the boundary.
 - (d) Low Level Waste from Analytical Services consisting primarily of soiled protective clothing is stored outside in a trash dumpster. Each bag of waste is double bagged prior to placement in the dumpster; it is not, however, surveyed for exterior contamination before leaving the radiation zone and being placed in the dumpster. The dumpster is not located in a radiation area, and it is not protected from precipitation; subsequent runoff of precipitation is not controlled.

(e) Procedures describing cleaning of radiation contaminated glassware prior to placement in a dishwasher which drains waste water directly to the sanitary sewer system do not exist. Common laboratory practice is to triple rinse the glassware prior to sending it to the dishwasher. Validation of this practice's effectiveness has not occurred (i.e., surveying of glassware after rinsing to establish radiation contamination levels). Dishwasher effluent has been monitored, but this monitoring was not done in a systematic manner.

5. **Future Staff Actions:** Review of waste operation practices for the management of low level and mixed hazardous radioactive wastes is warranted based upon the poor conduct of operation practices noted. This review should focus on the control of wastes from the point of generation to disposal.