STEAM GENERATOR REPAIR PROGRAM

FOR THE SURRY POWER STATION

UNIT NOS. 1 AND 2

REVISION 7

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STEAM GENERATOR REPAIR PROGRAM

FOR THE

SURRY POWER STATION

UNIT NOS. 1 AND 2

Docket Nos. 50-280
50-281

License Nos. DPR-32
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VIRGINIA ELECTRIC AND POWER COMPANY

A.4. Estimate the quantity of laundry and general decontamination wastes that will be generated during the repair program. Describe the sampling program for this waste and identify which isotopes will be specifically assayed. If beta emitters such as Fe-55 and Ni-63 are not measured, provide justification for not analyzing for these and other beta emitters which could be present.

RESPONSE:

An estimate of the quantity of laundry waste water and other potential sources of contaminated liquid waste is provided in the response to question A.5.

The sampling program for this waste will be that which is required to implement the requirements of the Technical Specifications and 10 CFR 20. Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light Water Cooled Nuclear Power Plants" serves as a basic guide for establishing specific isotopes to be reported. The sampling program will be the same as that which is presently in use at the stations. This program and identification of the specific isotopes reported has been submitted in the Annual Reports.

It is presently not planned to measure such beta emitters as Fe-55 and Ni-63. The basis for not measuring these isotopes is that: 6

1. The gross beta activity is reported. A breakdown by isotope only further qualifies the data required.
2. The techniques required to determine isotope composition beta emitters is complex and its benefit is not commensurate with its cost.
3. Existing regulations can be satisfied by current practice.

Sampling for Fe-55 has been addressed in the Standard Technical Specifications For the Implementation of Appendix I, NUREG 0472, May 1978. The Surry Standard Technical Specifications For the Implementation of Appendix I, are scheduled to be submitted on November 11, 1978. 6

TABLE A.5-1

ESTIMATED QUANTITIES AND SPECIFIC ACTIVITIES
OF LAUNDRY WASTE WATER

Isotope	Specific Activity(1) (uCi/cc)	Total(2) Activity (Ci)
Co-58	3.2×10^{-6}	2.66×10^{-2}
Co-60	2.5×10^{-6}	2.085×10^{-2}
Cs-137	7.79×10^{-7}	6.65×10^{-3}
Cs-134	3.65×10^{-7}	3.04×10^{-3}
Mn-54	2.28×10^{-7}	1.9×10^{-3}
I-131	2.2×10^{-7}	1.84×10^{-3}
Cr-51	1.4×10^{-6}	1.16×10^{-2}
	TOTAL	7.25×10^{-2}

6

(1) Based on Surry Power Station data

(2) 2,203,200 gallons of laundry water based on 12,240 gallons/day for 6 months

(3) All numbers are "per unit"

TABLE A.5-3

TOTAL ESTIMATED LIQUID EFFLUENTS

Source	Total Volume (Gallons)	Total Activity (Ci)
Laundry Wastes	2,203,200	6.131
Steam Generator Secondary side water	80,400	0.22
Local Decontamination Solutions	18,000	0.051
TOTAL	2.3×10^6 gallons	6.402 Ci
Total 1977 liquid Wastes	1.4×10^8 gallons	67.67 Ci

The contamination levels for the secondary system components should be less than 1 uCi/cm^2 and would result in insignificant releases.

b. The airborne levels in occupied areas of the containment during the replacement activities are expected to be similar to those normally experienced during a refueling outage. Following the movement of the fuel, airborne levels are expected to decrease significantly. Typical specific airborne activities for a refueling outage are listed in Table A.8-1.

c. The total effluents from a unit during the replacement activities are shown in table A.8-2. These effluents will be much less than that normally experienced during routine operation as can be seen in Table A.8-2. Therefore, the maximum individual doses are population doses will be much less than those during routine operation. The doses for routine operation have been presented in "Appendix I analysis, Surry Power Station Unit Nos. 1 and 2", dated June 1977, submitted June 17, 1977.

d. It is presently planned to install a temporary containment ventilation system that will be equipped with a HEPA and charcoal filter. The capacity of the ventilation system will be 30,000 CFM. The efficiency of the filter has been conservatively assumed to be at least 95 percent for the purpose of these evaluations, although they will be purchased to a specification which requires them to be 99.97 percent efficient.

TABLE A.9-1

SOLID WASTE ESTIMATE
(all values per unit)

Description	Weight (lbs)	Volume (ft^3)	Estimated Activity (Ci)
Feedwater pipe	540	37.71	<0.03
Main Steam Pipe	2,400	63.81	<0.03
Primary Moisture Separator	66,000	3,520.5	<0.03
Feedwater Ring	6,300	94.5	<0.03
Thermal Sleeve	600	8.4	<0.03
Telescoping Deck Plate	9,000	652.2	<0.03
Downcomer Guard Assembly	102,000	7,182	<0.03
Feedwater Nozzle	2,100	19.2	<0.03
55 gal. drums (compacted waste)	416,000	7,644	6.5
Steam Generator Insulation	14,900	966	<0.03
Concrete Blocks(2)	193,050	1,350	<0.03
Rebarred Concrete	14,125	94.5	<0.01
Upper Steam Generator Support rings	29,400	60	<0.03
Support Ring Keys	3,400	7.0	<0.03
TOTAL	878,165	26,236	6.9

(1) 1040 drums of compacted waste, includes trash, disposable protective equipment, rags, etc.

(2) Biological shield wall

C.3. If decontamination is necessary, demonstrate that the methods and the decontamination solutions will not degrade or adversely affect the reactor coolant piping or components which are part of the primary system pressure boundary. Further show that the decontamination solutions will not have deleterious latent effects in subsequent plant operations.

RESPONSE:

At the present time it is only planned to decontaminate the removed portions of reactor coolant pipe for reuse. The method of decontamination to be used will be electropolishing.

Electropolishing has been widely used in the chemical industry to clean and prefinish chemical piping and process systems. The techniques for electropolishing are over 30 years old and have been tried and proven to be technically sound. The wastes created by this process consist of two (2) 55 gallon drums of solid wastes and 300 gallons of water. The electrolyte or decontamination solution will be removed from the site by the decontamination contractor for reuse. 6