SEMI-ANNUAL REPORT

RADIOACTIVE EFFLUENT RELEASES

January 1, 1987 through June 30, 1987

SEMIANNUAL RADIOACTIVE MATERIAL RELEASE REPORT 1987

LIQUID EFFLUENTS *

Nuclides Released	Unit	1st Quarter	2nd Quarter
strontium-89	Ci	0.00 E	0.00 E
strontium-90	Ci	0.00 E	0.00 E
cesium-134	Ci	0.00 E	0.00 E
cesium-137	Ci	0.00 E	0.00 E
iodine-131	Ci	0.00 E	0.00 E
cobalt-58	Ci	0.00 E	0.00 E
cobalt-60	Ci	0.00 E	0.00 E
iron-55	Ci	0.00 E	0.00 E
iron-59	Ci	0.00 E	0.00 E
zinc-65	Ci	0.00 E	0.00 E
manganese-54	Ci	0.00 E	0.00 E
chromium-51	Ci	0.00 E	0.00 E
zirconium-niobium-95	Ci	0.00 E	0.00 E
molybdenum-99	Ci	0.00 E	0.00 E
technetium-99m	Ci	0.00 E	0.00 E
barium-lanthanum-140	Ci	0.00 E	0.00 E
cerium-141	Ci	0.00 E	0.00 E
Other	Ci	0.00 E	0.00 E
	Ci	. E	. E
	Ci	. E	. E
	Ci	. E	. E
	Ci	. E	. E
Total for period	Ci	0.00 E	0.00 E
xenon-133	Ci	0.00 E	0.00 E
xenon-135	Ci	0.00 E	0.00 E

* No liquid release January 1 - June 30, 1987.

SEMIANNUAL RADIOACTIVE MATERIAL RELEASE REPORT 1987

GASEOUS EFFLUENTS

Nuclides Released	Unit	1st Quarter	2nd Quarter *
1. Fission gases			
krypton-85	Ci	0.0 E 0	0.0 E 0
krypton-85m	Ci	0.0 E 0	0.0 E 0
krypton-87	Ci	0.0 E 0	0.0 E 0
krypton-88	Ci	0.0 E 0	0.0 E 0
xenon-133	Ci	3.3 E-1	0.0 E 0
xenon-135	Ci	2.2 E 1	0.0 E 0
xenon-135m	Ci	1.8 E 0	0.0 E 0
xenon-138	Ci	1.1 E 1	0.0 E 0
Nitrogen-13	Ci	1.2 E-1	0.0 E 0
Tritium	Ci	4.7 E 0	2.8 E 0
Total for period	Ci	4.0 E 1	2.8 E 0
2. Iodines			
iodine-131	Ci	1.6 E-3	1.5 E -3
iodine-133	Ci	1.3 E-3	0.0 E 0
iodine-135	Ci	1.5 E-5	0.0 E 0
Total for period	Ci	2.9 E-3	1.5 E -3
3. Particulates			
strontium-89	Ci	5.9 E-6	7.4 E -7
strontium-90	Ci	1.1 E-7	2.0 E -7
cesium-134	Ci	0.0 E 0	0.0 E 0
cesium-137	Ci	0.0 E 0	0.0 E 0
barium-lanthanum-140	Ci	0.0 E 0	0.0 E 0
Others	Ci	0.0 E 0	0.0 E 0
Chromium-51	Ci	1.4 E-2	0.0 E 0
Manganese-54	Ci	2.5 E-3	4.8 E -3
Cobalt-58	Ci	9.1 E-4	6.0 E-4
Cobalt-60	Ci	1.0 E-2	7.6 E-3
Total for period	Ci	2.7 E-2	1.3 E-2

* Plant in refuel shutdown March - June, 1987.

FIRST QUARTER 1987

January 1, 1987 to March 31, 1987

IDENTITY OF PRINCIPAL NUCLIDES

Nuclide	Dewatered Resin Class A, Stable (Ci)	Dry Active Waste, Hot Trash Dewatered Resin, Absorbed Wet Trash Class A, Unstable (Ci)
Co-60	21.36	2.252E1
Cs-137	1.149	1.683E-1
H-3	1.98E-2	1.308E-2
Ni-63	5.762E-1	6.561E-1
Sr-90	2.18E-3	9.944E-3
C-14	5.916E-2	3.712E-3
Pu-241	4.83E-3	3.46E-2
Tc-99	4.23E-4	8.007E-3
I-129	7.31E-4	5.270E-3
TRUs	2.058E-4	2.48E-5
Np-237	N/A	6.72E-7
Pu-238	N/A	6.590E-4
Pu-239	N/A	2.094E-4
Am-241	N/A	7.816E-5
Cm-243	N/A	1.238E-4
Cm-242	5.33E-5	2.800E-4
Mn-54	6.854	3.352
Cr-51	1.391	2.120
Zn-65	3.159E-1	4.724E-1
Co-58	1.526	3.558E-1
Fe-59	2.574E-1	1.56E-2
Cs-134	N/A	5.6E-3
Ni-59	4.487E-2	1.383E-1
Sr-89	6.895E-2	2.944E-2
Pu-242	N/A	1.167E-4
Fe-55	1.453E1	3.895
Nb-94	3.99E-4	4.745E-5

SECOND QUARTER 1987

April 1, 1987 to June 30, 1987

IDENTITY OF PRINCIPAL NUCLIDES

Nuclide	Dewatered Resin Class A, Stable (Ci)	Dry Active Waste, Hot Trash Dewatered Resin, Absorbed Wet Trash Class A, Unstable (Ci)
Co-60	1.621E1	5.287
Cs-137	2.813E-1	9.5498E-2
H-3	9.9E-3	6.54E-3
Ni-63	4.381E-1	6.503E-1
Sr-90	5.39E-4	2.36E-2
C-14	2.958E-2	3.401E-2
Pu-241	1.17E-3	8.567E-2
Tc-99	1.03E-4	2.136E-2
I-129	1.76E-4	1.390E-2
TRUs	5.14E-5	1.235E-5
Pu-242	N/A	3.146E-4
Pu-238	N/A	1.76019E-3
Pu-239	N/A	5.301E-4
Am-241	N/A	1.925E-4
Cm-243	N/A	3.309E-4
Cm-242	1.29E-5	6.951E-4
Mn-54	1.335E1	3.431E-1
Cr-51	1.12E-1	8.8316E-2
Zn-65	4.298E-1	6.933E-2
Co-58	2.872	8.509E-2
Fe-59	3.317E-1	N/A
Cs-134	N/A	3.02E-3
La-140	4.39E-3	N/A
Ni-59	3.41E-2	3.155E-1
Sr-89	1.684E-2	2.972E-2
Fe-55	11.03	9.3268
Nb-94	9.8E-5	2.363E-5

SUMMARY

January 1 - June 30, 1987

	BARNWELL, SC	RICHLAND, WA	TOTAL
SOLIDIFIED RESIN			
° No. of Shipments	0	0	0
° Volume (ft^3)	0	0	0
° Activity (Ci)	0	0	0
DEWATERED RESIN (RADLOK 100)			
° No. of Shipments	9	0	9
° Volume (ft^3)	1467	0	1467
° Activity (Ci)	93.33	0	93.33
DEWATERED RESIN (HN-100)			
° No. of Shipment	6	0	6
° Volume (ft^3)	1062	0	1062
° Activity (Ci)	3.119	0	3.119
DRY ACTIVE WASTE			
° No. of Shipments	0	9	9
Compactible			
°° Volume (ft^3)	0	5336	5336
°° Activity (Ci)	0	11.968	11.968
° Non-Compactible			
°° Volume (ft^3)	0	1380	1380
°° Activity (Ci)	0	1.8257	1.8257
ABSORBED WET TRASH			
° No. of Shipments	0	0	0
° Volume (ft^3)	0	2592	2592
° Activity (Ci)	0	6.285	6.285
ABSORBED LIQUIDS			
° No. of Shipments	0	0	0
° Volume (ft^3)	0	0	0
° Activity (Ci)	0	0	0
HOT TRASH			
° No. of Shipments	0	* 1	1
Volume (ft^3)	0	202.5	202.5
Activity (Ci)	0	27.11	27.11

S U M M A R Y

January 1 - June 30, 1987

	BARNWELL, SC	RICHLAND, WA	TOTAL
TOTAL			
° No. of Shipments	15	10	25
° Volume (ft^3)	2529	9510.5	12039.5
° Activity (Ci)	96.449	47.1887	143.6377

* Absorbed Wet Trash and Hot Trash shipped with Dry Activity Waste Shipments

SUMMARY OF CHANGES TO

THE OFFSITE DOSE ASSESSMENT MANUAL

During the period of January 1, 1987, through June 30, 1987, the Offsite Dose Assessment Manual has been revised in six (6) areas. The changes are as follows:

1. The reference meteorological conditions are from the annual 1986 data. This replaces the previously used composite from 1971, 1974, and 1975. See page 1 - last footnote.

2. The Figure 3-1, "Gaseous Radioactive Waste Flow Diagram", was updated to include the newly constructed LLRPSF (Low Level Radwaste Processing and Storage Facility). See page 42.

3. The Table 3-1, "Atmospheric Gaseous Release Points at the Duane Arnold Energy Center", was updated to include the LLRPSF. See page 45.

4. The environmental sample station 72 was changed from milk to groundwater. The farmer sold his milk cows. See page 64.

5. The page numbers on pages A-41 and A-42 were switched to their proper order.

6. The Table A.4-3 was completed by the addition of page A-43, which includes the nuclides of interest from I-135 through Np-239 for "Vegetation Pathway Factors". Previously, this page was omitted. See page A-43.