TABLE 11.1-1

CORE ACTIVITIES

Isotope	Core Inventory curies/MWt
CO-58	2.553E+02
CO-60	1.953E+02
KR-85	3.056E+02
KR-85M	7.222E+03
KR-87	1.306E+04
KR-88	1.861E+04
RB-86	1.496E+01
SR-89	2.844E+04
SR-90	1.535E+03
SR-91	3.656E+04
SR-92	3.805E+04
Y-90	1.647E+03
Y-91	3.465E+04
Y-92	3.819E+04
Y-93	4.320E+04
ZR-95	4.377E+04
ZR-97	4.562E+04
NB-95	4.138E+04
MO-99	4.830E+04
TC-99M	4.169E+04
RU-103	3.598E+04
RU-105	2.340E+04
RU-106	8.175E+03
RH-105	1.621E+04
SB-127	2.208E+03
SB-129	7.820E+03
TE-127	2.132E+03
TE-127M	2.823E+02
TE-129	7.341E+03
TE-129M	1.935E+03

Isotope	Core Inventory curies/MWt
TE-131M	3.707E+03
TE-132	3.690E+04
I-131	2.750E+04
I-132	3.889E+04
I-133	5.556E+04
I-134	6.111E+04
I-135	5.278E+04
XE-133	5.556E+04
XE-135	1.389E+04
CS-134	3.425E+03
CS-136	1.042E+03
CS-137	1.915E+03
BA-139	4.976E+04
BA-140	4.924E+04
LA-140	5.032E+04
LA-141	4.615E+04
LA-142	4.449E+04
CE-141	4.476E+04
CE-143	4.352E+04
CE-144	2.697E+04
PR-143	4.273E+04
ND-147	1.911E+04
NP-239	5.120E+05
PU-238	2.902E+01
PU-239	6.545E+00
PU-240	8.254E+00
PU-241	1.390E+03
AM-241	9.181E-01
CM-242	3.514E+02
CM-244	2.056E+01

The LOCA dose analysis (Section 15.4.1) is based on these 60 isotope activities, which are from the RADTRAD default file. A core thermal power of 3632 MWt (=3459 x 1.05) was used. Aerosol inventory is multiplied by 1.10 to make the RADTRAD default file conservative with respect to the SNGS plant-specific ORIGEN inventory file.

TABLE 11.1-2

THIS TABLE HAS BEEN DELETED

TABLE 11.1-3

THIS TABLE HAS BEEN DELETED

TABLE 11.1-4

THIS TABLE HAS BEEN DELETED

TABLE 11.1-5

THIS TABLE HAS BEEN DELETED

TABLE 11.1-6

THIS TABLE HAS BEEN DELETED

TABLE 11.1-7

PARAMETERS USED IN THE CALCULATION OF REACTOR COOLANT FISSION PRODUCT ACTIVITIES[1]

1.	Core thermal power, max. calculated, MWt	3600
2.	Fraction of fuel containing clad defects	0.01
3.	Reactor coolant liquid volume, ft^3	10,892 [2]
4.	Reactor coolant average temperature, °F	568
5.	Purification flow rate (normal), gpm	77
6.	Effective cation demineralizer flow, gpm	7.5
7.	Volume control tank volumes	
	a. Vapor, ft^3	200
	b. Liquid, ft^3	200
8.	Fission product escape rate coefficients:	
	a. Noble gas isotopes, sec^{-1}	6.5×10^{-8}
	b. Br, I, and Cs isotopes, sec^{-1}	1.3×10^{-8}
	c. Te isotopes, sec^{-1}	1.0×10^{-9}
	d. Mo isotopes, sec^{-1}	2.0×10^{-9}
	e. Sr and Ba isotopes, sec^{-1}	1.0×10^{-11}
	f. Y, La, Ce, Pr isotopes, sec^{-1}	1.6×10^{-12}
9.	Mixed bed demineralizer decontamination factors:	
	a. Noble gases and Cs-134, 136, 137, Y-90, 91 and Mo-99	1.0
	b. All other isotopes	10.0
10.	Cation bed demineralizer decontamination factor for CS-134, 236, 237, Y-90, 91, and Mo-99	10.0

(1) The RCS volume was increased by the introduction of new Unit 2 AREVA NP Model 61/19T steam generators. However, the prior analysis remains conservative, therefore, the prior volumes and activities have not been adjusted.

(2) Conservatively bounds 20% tube plugging in Series 51 steam generator and 10% tube plugging in Model-F steam generator.

TABLE 11.1-7 (Cont.)

11. Volume control tank noble gas stripping fraction (closed system):

Isotope	Stripping Fraction
Kr-85	5.5×10^{-5}
Kr-85m	5.4×10^{-1}
Kr-87	8.0×10^{-1}
Kr-88	6.5×10^{-1}
Xe-133	2.9×10^{-2}
Xe-133m	6.7×10^{-2}
Xe-135	2.9×10^{-1}
Xe-135m	9.4×10^{-1}
Xe-138	9.4×10^{-1}

(No purge of VCT assumed in the calculation. Threfore, stripping fractions account only for radioactive decay.)

TABLE 11.1-8

REACTOR COOLANT EQUILIBRIUM FISSION AND CORROSION PRODUCT ACTIVITIES[1]

(Based on Parameters Given in Table 11.1-7)

Isotope	Activity µCi/gram	Isotope	Activity µCi/gram
Br-84	4.7×10^{-2}	Cs-136	2.9
Rb-88	4.8	Cs-137	1.5
Rb-89	2.1×10^{-1}	Cs-138	9.6×10^{-1}
Sr-89	4.3×10^{-3}	Ba-140	4.2×10^{-3}
Sr-90	1.2×10^{-4}	La-140	1.4×10^{-3}
Sr-91	6.2×10^{-3}	Ce-144	3.9×10^{-4}
Sr-92	1.3×10^{-3}	Pr-144	3.9×10^{-4}
Y-90	3.4×10^{-5}	Kr-85	8.2
Y-91	5.7×10^{-4}	Kr-85m	1.7
Y-92	1.2×10^{-3}	Kr-87	1.0
Zr-95	6.5×10^{-4}	Kr-88	3.0
Nb-95	6.5×10^{-4}	Xe-133	260
Mo-99	7.5×10^{-1}	Xe-133m	17.0
I-131	2.8	Xe-135	8.5
I-132	2.8	Xe-135m	4.9×10^{-1}
I-133	4.2	Xe-138	6.1×10^{-1}
I-134	5.7×10^{-1}	Mn-54	4.4×10^{-4}
I-135	2.3	Mn-56	2.0×10^{-2}
Te-132	2.9×10^{-1}	Co-58	1.5×10^{-2}
Te-134	3.0×10^{-2}	Co-60	1.9×10^{-3}
Cs-134	2.3	Fe-59	5.2×10^{-4}

(1) The RCS volume was increased by the introduction of new Unit 2 AREVA NP Model 61/19T steam generators. However, the prior analysis remains conservative, therefore, the prior volumes and activities have not been adjusted.

TABLE 11.1-9

TRITIUM PRODUCTION IN THE REACTOR COOLANT

Tritium Source	Total Produced	Released to the Coolant: Design Value	Released to the Coolant: Expected Value
Ternary Fissions	10,926	3240	107
Burnable Poison Rods (Initial Cycle)	973	287	10
Soluble Poison Boron (Initial Cycle)	397	397	397
(Equilibrium Cycle)	556	556	556
Li-7 Reaction	11	11	11
Li-6 Reaction	6	6	6
Deuterium Reaction	1	1	1
Totals Initial Cycle	12,314	3942	532
Totals Equilibrium Cycle	11,500	3814	685

(1) Weight of B_2O_3 = 221 (B^{10} = 13.58)

(2) Initial boron (hot, full power, equilibrium xenon) = 860 ppm

(3) Initial boron (hot, full power, equilibrium xenon) = 1200 ppm

TABLE 11.1-10

TRITIUM SOURCES FROM THE REACTOR EMPLOYING Ag-In-Cd ABSORBER RODS

Basic Assumptions and Plant Parameters:

1.	Core thermal power	3558 MWt
2.	Plant load factor	0.8
3.	Core volume	1153 ft^3
4.	Core volume fractions	
	a. UO_2	0.3052
	b. Zr + SS	0.1000
	c. H_2O	0.5948
5.	Initial reactor coolant boron level	
	a. Initial cycle	840 ppm
	b. Equilibrium cycle	1100 ppm
6.	Reactor coolant volume	12,560 ft^3
7.	Reactor coolant transport times	
	a. In-core	0.77 sec
	b. Out-of-core	10.87 sec
8.	Reactor coolant peak steady state lithium level (99 pure Li^7)	3.5 ± 0.15 ppm
9.	Core averaged neutron fluxes:	n/cm^2-sec
	a. E > 6 Mev	2.91×10^{12}
	b. E > 5 Mev	7.90×10^{12}
	c. 3 Mev ≤ E ≤ 6 Mev	2.26×10^{13}
	d. 1 Mev ≤ E ≤ 5 Mev	5.31×10^{13}
	e. E < 0.625 ev	2.26×10^{13}
10.	Neutron reaction cross-sections	
	a. B^{10} (n, 2α) T: spectrum σ(1 Mev ≤ E ≤ 5 Mev) =	31.6 mb (spectrum weighted)
	σ(E > 5 Mev) =	> 5 mb
	b. Li^7 (n, nαV) T: σ(3 Mev ≤ E ≤ 6 Mev) =	39.1 mb (spectrum weighted)
	σ(E > 6 Mev) =	400 mb

TABLE 11.1-10 (Cont)

11.	Fraction of ternary tritium diffusing through zirconium cladding	
	a. Design value	0.30
	b. Expected value	0.01

Note: Although Unit 1 has Westinghouse Model-F and Unit 2 has AREVA NP Model 61/19T steam generators, the radioactivity values of Unit 1 and Unit 2 are bounded by the values in this Table. The values contained in this Table were based on the original Westinghouse Series 51 steam generators.

TABLE 11.1-11

VOLUME CONTROL TANK ACTIVITIES[1]

Assumptions are given previously under reactor coolant activity (Table 11.1-7)

Isotope	Total Activity (Curies)
Kr-83m	1.7×10^{1}
Kr-85	6.2×10^{1}
Kr-85m	1.0×10^{2}
Kr-87	2.7×10^{1}
Kr-88	1.4×10^{2}
Xe-131m	1.9×10^{2}
Xe-133	2.4×10^{4}
Xe-133m	1.5×10^{3}
Xe-135	6.6×10^{2}
Xe-135m	5.0×10^{1}
Xe-137	2.8×10^{-1}
Xe-138	3.4×10^{0}

(1) The RCS volume was increased by the introduction of new Unit 2 AREVA NP Model 61/19T steam generators. However, the prior analysis remains conservative; therefore, the prior volumes and activities have not been adjusted.

TABLE 11.1-12

GAS DECAY TANK ACTIVITY

Assumptions: Volume of the tank immaterial to this calculation.
Clad Defects in one percent of fuel rods.
Operation at 3600 MWt for 497 days.
Tank contains entire gaseous activity stripped off from the Reactor Coolant System.
Reactor Coolant System Volume is 12,446 ft^3.

Isotope	Total Activity Curies
Kr-85	1.5×10^3
Kr-85m	1.2×10^2
Kr-87	1.8×10^1
Kr-88	1.5×10^2
Xe-131m	2.9×10^2
Xe-133	3.5×10^4
Xe-133m	2.2×10^3
Xe-135	8.6×10^2

TABLE 11.1-13

This Table Has Been deleted

TABLE 11.1-14

This Table Has Been Deleted

TABLE 11.1-15

This Table Has Been deleted