

## 8. INTERACTION WITH OTHER NUCLEAR FACILITIES

Three other nuclear facilities are operating or may operate in the immediate vicinity of the Savannah River Plant. The proposed Alvin W. Vogtle Nuclear Plant (VNP) of the Georgia Power Company would be located to the west, across the Savannah River at Hancock Landing. The Barnwell Nuclear Fuel Plant (BNFP), under construction by Allied-General Nuclear Services, and a waste burial facility being operated by Chem-Nuclear Services, Inc., adjoin each other at the eastern border of the Savannah River Plant.

Information contained in descriptions of the Vogtle<sup>32</sup> and Barnwell<sup>93</sup> plants indicates that interaction with SRP should be considered, with respect to radioactivity discharged to the river from VNP and to the atmosphere from VNP and BNFP. No significant effects are expected from thermal discharges to the river from VNP or from thermal or radioactive discharges to Lower Three Runs from BNFP. No effluents are expected from Chem-Nuclear Services.

The Vogtle Nuclear Plant, as proposed, would have up to four power reactors with an initial output of 1100 MW(e) each, starting up in successive years\* Annual projected discharges to the river are listed in Table III-32 for those nuclides that are expected to reach 0.01 Ci per year or more from VNP. SRP discharges of these same nuclides are given for comparison; SRP discharges of all nuclides in 1975 are given in Table III-1.

The effect of VNP releases on the population of about 70,000 that utilizes the Savannah River for drinking water is calculated to be 0.24 man-rem per year.<sup>32</sup> Total dose from ingestion of activity in fish, mollusks, and crustaceans is calculated to contribute 0.8 man-rem per year.<sup>32</sup> For comparison, the dose from SRP operations is calculated to be 15.5 man-rem per year to the population that drinks Savannah River water, with virtually all the dose due to tritium releases (Section III).

Vogtle and Barnwell must both be considered with respect to atmospheric releases. Projected atmospheric releases are shown in Table III-33 for the various plants. Population doses (Table III-34) have been calculated for a 60-mile (100 km) radius for SRP, and a 50-mile radius for the other two facilities. Displacement of the centers makes the three essentially additive within the radius assumed for SRP calculations. However, the different sites use different assumptions for dose calculations for a given release and use somewhat different population distributions so that the calculated doses are not directly comparable.

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\* Present plans call for a maximum of 2 units of 1100 MW(e) each.

TABLE III-32

Comparison of Releases to Savannah River,  
Ci/yr

<u>Isotope</u>	<u>VNP, Anticipated (4 Units)<sup>32</sup></u>	<u>SRP, 1975</u>
<sup>91</sup> Y	0.02	0.14
<sup>99</sup> Mo	0.29	-
<sup>99m</sup> Tc	0.34	-
<sup>131</sup> I	0.52	-
<sup>132</sup> I	0.02	-
<sup>133</sup> I	0.29	-
<sup>135</sup> I	0.05	-
<sup>134</sup> Cs	0.05	0.18
<sup>137</sup> Cs	0.04	0.76
<sup>137m</sup> Ba	0.03	-
<sup>3</sup> H	1400	55,700

TABLE III-33

Comparison of Atmospheric Releases, Ci/yr

<i>Nuclide</i>	<i>VNP, Estimated (4 units)<sup>32</sup></i>	<i>BNFP, Estimated<sup>33</sup></i>	<i>SRP, 1975</i>
<sup>14</sup> C		<i>a</i>	66
<sup>41</sup> Ar			65,000
<sup>83m</sup> Kr	8		
<sup>85m</sup> Kr	40		370
<sup>85</sup> Kr	3920	16,000,000	520,000
<sup>87</sup> Kr	28		1,200
<sup>88</sup> Kr	76		860
<sup>131m</sup> Xe	52		6
<sup>133</sup> Xe	1100		1,100
<sup>133m</sup> Xe	24		
<sup>135</sup> Xe	92		730
<sup>135m</sup> Xe	8		
<sup>137</sup> Xe	18		
<sup>138</sup> Xe	20		
<sup>129</sup> I		0.5 <sup>a</sup>	0.14
<sup>131</sup> I	0.16	0.05 <sup>a</sup>	0.012
<sup>3</sup> H	0.12	700,000	488,000

*a.* Revisions are in preparation but are not documented.

TABLE III-34

Comparison of Calculated Whole Body Population Doses from Atmospheric Releases (man-rem/yr)

<i>VNP<sup>a</sup></i>	<i>BNFP<sup>b</sup></i>	<i>SRP, 1975<sup>c</sup></i>
0.14	116	115

*a.* VNP calculations based on 1977 projected population.<sup>32</sup>

*b.* BNFP calculations based on 1980 projected population.<sup>33</sup>

*c.* SRP calculations described in Appendix F and Appendix G.

The Vogtle Nuclear Plant, with up to four units of 1100 MW(e) each, would have virtually no thermal effect on the Savannah River; cooling towers are to be provided, and the calculated average river temperature rise would be 0.045°F.<sup>32</sup>

The Barnwell Plant will send no heated effluents to the river. Cooling water will be discharged through a conditioning pond, and water temperature will be fixed by ambient weather conditions before it is sent to Lower Three Runs on the Savannah River Plant.

## 9. INTERACTION WITH OTHER NON-NUCLEAR FACILITIES

Nonradioactive emissions from the Savannah River Plant are similar to those from other industrial plants. Effects of these releases are compared to South Carolina standards in Section III.A.7.

SRP releases to the atmosphere (principally SO<sub>2</sub>, NO<sub>x</sub>, H<sub>2</sub>S, and fly ash) are not expected to interact or result in combined effects with releases from other plants. The nearest large industrial plant is about 12 air miles northwest of the SRP boundary. The only nearby commercial power plant is also 12 miles northwest and is about equal in thermal power to the total of the SRP powerhouses.

SRP releases to the Savannah River (principally sulfates, chlorides, nitrates, and phosphates) add only a small fraction to the total river load of these chemicals. This is illustrated in Table III-27 for nitrates and phosphates, chemicals that influence algae growth and thus affect the general condition of the river.