

JUN 12 1972

ENVIRON

Docket Nos. 50-289 and 50-320

G. K. Dicker, Chief, Projects Branch #2, L

REVIEW OF THREE-MILE ISLAND DRAFT DETAILED STATEMENT

RAB has reviewed the Draft Detailed Statement for the Three-Mile Island Nuclear Station, Units 1 and 2. We have made the minor changes indicated on the attached copy of Section D., Radiological Impact of Routine Operation.

Original signed by Jacob Kastner

Jacob Kastner, Chief
Radiological Assessment Branch, L

Enclosure:
As stated

cc: W. H. Regan, EP #2, w/encl.

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OFFICE	RA-L ^{FC}	RA-L			
SURNAME	FCongel:va	JKastner			
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conditions. The quantity of radioactivity that is released to the environment will be a small fraction of the limits set forth in 10 CFR Part 20 of the Commission's Regulations, and the amounts will be kept as low as practicable in accordance with 10 CFR Part 50.36a. These regulations apply to the combined releases from all systems connected with both Units 1 and 2. The Staff has made calculations of the radiation dose using the estimated release rates of radionuclides listed in Tables 4, 5 and 6 using stated assumptions relative to dilution, biological reconcentration in food chains, and use factors by people.

2. Radioactive Materials Released to the Atmosphere

The most significant radiation dose to the public will result from the radionuclides in the gaseous effluents from the plant. The radioactive materials released to the atmosphere are principally the fission-product noble gases, krypton and xenon. Nearly all of the dose received by persons living, working or using recreational facilities in the vicinity of the plant will result from radioactive krypton and xenon in the air surrounding the individual. The postulated gaseous effluents from the plant are listed in Tables 4 and 5. We have calculated the potential annual doses using averages for meteorological conditions and assuming releases of the listed isotopes at a constant rate.

During normal operation of the plant at full power, the maximum dose rate due to cloud immersion at the plant's exclusion boundary (2100 ft. ESE) where the $X/Q = 9.1 \times 10^{-6} \text{ sec/m}^3$, is calculated to be about ~~3~~ ^{0.04} mrem/yr while the dose at the nearest community (Goldsboro, 1-1/2 miles W) is less than ~~0.5~~ ^{0.04} mrem/yr. The annual dose (outside) at the nearest home (2340 ft. E, $X/Q = 4.8 \times 10^{-6} \text{ sec/m}^3$) is estimated to be ~~1.7~~ ^{0.13} mrem/yr. However, a higher dose of ~~2.6~~ ^{0.13} mrem/yr will be received at another home located 2460 ft. ESE, where a higher X/Q of $7.4 \times 10^{-6} \text{ sec/m}^3$ is calculated. Assuming an occupancy of 3 months annually, the total body dose to campers at Beach Island (2080 ft. SW) and Shelly's Island (2000 ft. W), both normally uninhabited, would be about ~~2.2~~ ^{0.2} mrem/yr and ~~0.2~~ ^{0.2} mrem/yr, respectively. The dose also based upon three months per year occupancy, at the proposed recreational area at the southern end of Three Mile Island will range from about ~~0.4~~ ^{0.04} mrem/yr at a point near York Haven Dam (3500 ft. S) to about ~~0.04~~ ^{0.04} mrem/yr at the southern tip of the Island (8500 ft. S). A fisherman, pleasure boater or sunbather who spends 500 hours per year just outside the exclusion line at the nearest point on Shelly's Island would receive less than ~~0.5~~ ^{0.13} mrem/yr due to gaseous effluents. Higher doses, of course, would be received by a fisherman, swimmer, or boater who inadvertently violated the plant exclusion circle. For example, at a shore on Three Mile Island nearest the plant (inside the exclusion circle 830 ft. SW, where the X/Q is as high as $1.4 \times 10^{-4} \text{ sec/m}^3$), a fisherman or boater spending 500 hours per year would receive less than ~~3~~ ^{0.13} mrem/yr from gaseous effluents.

Based on an annual release rate of 0.11 Ci/yr of iodine-131, the thyroid dose due to inhalation would be less than 0.5 mrem/yr at the exclusion line (2200 ft. ESE), less than 0.4 mrem/yr at the nearest home, 0.07 mrem/yr at the nearest town (Goldsboro) and 0.3 mrem/yr at the proposed recreation area (3500 ft. S).

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