HW#2

For a rare failure event in chemical nuclear vessels w/ a design failure likelihood of 10^{-4} failures/(vessel·year), calculate the frequency of occurence for:

a) 100 vessels in service

$$\frac{10^{-4}\ \text{failures}}{\text{vessel}\cdot\text{year}} \cdot 100\ \text{vessels} = \boxed{0.01\ \frac{\text{failures}}{\text{year}}} \quad 1a$$

b) 1000 vessels in service

$$\frac{10^{-4}}{\text{vessel}\cdot\text{year}} \cdot 1000\ \text{vessels} = \boxed{0.1\ \frac{\text{failures}}{\text{year}}} \quad 1b$$

For a LOCA likelihood of 10^{-5} [occurences/(reactor·year)], calculate the frequency of occurence for:

a) 97 reactors in service in the USA

$$\frac{10^{-5}\ \text{occurences}}{\text{reactor}\cdot\text{year}} \cdot 97\ \text{reactors} = \boxed{9.7e^{-4}\ \frac{\text{occurences}}{\text{year}}} \quad 2a$$

b) 448 reactors globally

$$\frac{10^{-5}\ \text{occurences}}{\text{reactor}\cdot\text{year}} \cdot 448\ \text{reactors} = \boxed{4.48e^{-3}\ \frac{\text{occurences}}{\text{year}}} \quad 2b$$