Corrigendum

HARRY F. MARTZ, Jr., "On the Correct Use of the Bayesian Method for Reactor Core Melt Frequency," *Nucl. Sci. Eng.*, **72**, 368 (1979).

As pointed out by Apostolakis and Mosleh,[1] the decomposition of the likelihood in the Apostolakis and Mosleh paper[2] given by Martz[3] is incorrect, due to an arithmetic error. The likelihood, given in Eq. (1) of Martz,[3] can be correctly decomposed as the product of a Poisson distribution, in which $x = 0$ and $T = 6641.18$, and a gamma *prior* distribution, in which $\alpha_0 = 2$ and $\beta_0 = 25.82$. The resulting combined prior gamma distribution, in which $\alpha_0 = 2$ and $\beta_0 = 6667$, is analyzed in Table I of Martz.[3] After incorporating the Poisson sampling data (0 meltdowns in 310 reactor years of operation), the posterior distribution is again gamma with $\alpha'' = 2 + 0 = 2$ and $\beta'' = 6667 + 310 = 6977$. The 5th, 50th, and 95th percentiles are computed to be 5.1×10^{-5}, 2.4×10^{-4}, and 6.8×10^{-4}, respectively, while the mean and mode are 2.9×10^{-4} and 1.4×10^{-4}. These results are uniformly larger than the corresponding posterior results of Apostolakis and Mosleh.[2] The 5th percentile estimate is 410% larger than their posterior estimate, the median estimate is 100% larger than theirs, and the 95th percentile estimate is 36% larger.

[1]G. APOSTOLAKIS and A. MOSLEH, *Nucl. Sci. Eng.*, **72**, 369 (1979).
[2]G. APOSTOLAKIS and A. MOSLEH, *Nucl. Sci. Eng.*, **70**, 135 (1979).
[3]H. MARTZ, *Nucl. Sci. Eng.*, **72**, 368 (1979).