



## Risk-Deformed Regulation: What Went Wrong with NFPA 805

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### Abstract

National Fire Protection Association (NFPA) Standard 805 was incorporated into Title 10 of the U.S. Code of Federal Regulations to allow commercial nuclear plants to transition their existing, deterministic fire protection licensing bases to ones that are “performance-based and risk-informed.” Both the US Nuclear Regulatory Commission (NRC) and the commercial reactor industry championed this major leap forward in “risk-informed regulation.” However, hidden behind all the “success” are compromises and manipulations that were necessary to make this “work,” as revealed in this article. It is written by a former employee of the NRC (views do not nor ever did represent an official position), the first to receive a PhD on a thesis specifically related to fire probabilistic risk assessment (PRA) in nuclear plants, and later hired in 2003 as the expert in fire PRA for the Office of Nuclear Reactor Regulation (NRR). He participated in the NFPA-805 program from the start in 2005 until mid-2014. The perspectives here cover that time period, with some extended time specific to issues that the interested reader can find detailed in “Risk-Deformed Regulation: What Went Wrong with NFPA 805” <http://vixra.org/pdf/1805.0403> (access latest version of entry 1805.0403).

NFPA 805 will have been “successful” in that adopting plants are as safe as or safer than before, at a minimum having at least become more knowledgeable of potential safety weaknesses. Plants that made effective changes will be safer than before, although “effective” conveys that some changes only may have “seemingly” reduced risk. If such changes were prompted by questionable risk-reduction credits such as those cited later in this paper, then perhaps actual risk-reduction changes that could have been made were not. At worst, the plant merely missed an opportunity to become “safer,” a consequence of the problems with “risk-deformed regulation.”

*Keywords:* Fire Protection; Probabilistic Risk; Nuclear Power; Regulation.

### 1. Introduction

National Fire Protection Association (NFPA) Standard 805 [1] was incorporated into Title 10 of the U.S. Code of Federal Regulations to allow commercial nuclear power plants to transition their existing, deterministic fire protection licensing bases to ones that are “performance-based and risk-informed.” Both the US Nuclear Regulatory Commission (NRC) and the commercial reactor industry championed this major leap forward in “risk-informed regulation.” However, hidden behind all the “success” are compromises and manipulations that were necessary to make this “work,” as revealed in this article. It is written by a former employee of the NRC (views do not nor ever did represent an official position), the first to receive a PhD on a thesis specifically related to fire probabilistic risk assessment (PRA) in nuclear plants, and later hired in 2003 as the expert in fire PRA for the Office of Nuclear Reactor Regulation (NRR). [2, 3] He participated in the NFPA-805 program from the start in 2005 until mid-2014. The perspectives here cover that time period, with some extended time specific to issues that the interested reader can find detailed in reference [4].

NFPA 805 was written as a risk-informed, performance-based standard intended for use after a risk-informed, performance-based fire protection program had been established. There was more than just semantics to the commonly

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