

UNITED STATES OF AMERICA
 NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
ENTERGY NUCLEAR GENERATION)	
COMPANY AND ENTERGY NUCLEAR)	Docket No. 50-293-LR
OPERATIONS, INC.)	
)	
(Pilgrim Nuclear Power Station))	

NRC STAFF REBUTTAL TESTIMONY OF S. TINA GHOSH
 CONCERNING PILGRIM WATCH’S APPLICATION OF NUREG-1150 AND NUREG-1465

Q1. Please state your name, occupation, and by whom you are employed.

A1. My name is S. Tina Ghosh. I am a senior program manager employed by the U.S. Nuclear Regulatory Commission (NRC). I have been employed by the NRC for over six years. A statement of my professional qualifications was attached to the “NRC Staff Testimony of Nathan E. Bixler and S. Tina Ghosh Concerning the Impact of Alternative Meteorological Models on the Severe Accident Mitigation Alternatives Analysis” filed January 3, 2011 as Exhibit NRC000012.

Q2. What is the purpose of this testimony?

A2. The purpose of this rebuttal testimony is to address Pilgrim Watch’s references to NUREG-1150 and NUREG-1465, in the Pilgrim Watch submission dated January 3, 2011.

Q3. In its discussion of how the source term to be used for each computation of radioactivity dispersion and deposition is determined, Pilgrim Watch references NUREG-1150 and NUREG-1465. Pilgrim Watch SAMA Remand Pre-Filed Testimony at 43-44. Are you familiar with these documents?

A3. Yes. NUREG-1150 is titled “Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants” and addresses risks assessed from severe accidents in five nuclear

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power plants in terms of core damage frequency, performance of containment structures, potential radionuclide releases and offsite consequences, and the overall risk. NU-REG-1465 is titled "Accident Source Terms For Light-Water Nuclear Power Plants" and addresses source term release in the containment of a reactor.

Q4. Do you agree with Pilgrim Watch's use of NUREG-1150 and NUREG-1465?

A4. No, I do not agree. It would not be appropriate to use NUREG-1465 source terms for Entergy's SAMA analysis. As is explained in Chapter 5 of NUREG-1465, there are numerous mechanisms that remove fission products from the containment atmosphere which result in a smaller source term that is available for potential release from containment, compared to the NUREG-1465 source terms. Examples of removal mechanisms include engineered safety features such as containment atmosphere sprays and suppression pools in boiling water reactors (such as the Pilgrim Nuclear Power Station [PNPS]) that trap and contain fission products in water, and natural processes such as aerosol deposition (where fission products become stuck on structural surfaces inside containment, for example). As explained in Chapter 5, NUREG-1465 does not provide numerical estimates of the containment source terms *after* the effect of these fission product removal mechanisms, but rather points readers to reference documents and approaches that could help with the calculation. Hence using the source terms provided in NUREG-1465 for a SAMA analysis would result in a gross over-estimate and is inappropriate where a plant-specific source term analysis is available.

Similarly, it would not be appropriate to use NUREG-1150 source terms for Entergy's SAMA analysis. The NUREG-1150 study, completed 21 years ago, summarized an assessment of the risks from severe accidents at five commercial nuclear power plants in the United States. PNPS was not one of these five plants. Severe accident source terms depend on many plant design features and operational practices, and hence are plant-specific. In addition, the state of the art for source term analysis has evolved and improved in the

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intervening 21 years since NUREG-1150 was published. Where there is a more recent, plant-specific source term analysis, as was available and used for the PNPS SAMA analysis, it is inappropriate to refer to source terms from NUREG-1150.

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AFFIDAVIT OF S. TINA GHOSH

I, S. Tina Ghosh, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my prior statement of professional qualifications are true and correct to the best of my knowledge and belief.

Executed in Accord with 10 CFR 2.304(d).
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