

## Awarded Contracts for External Experts to Support the NIST World Trade Center (WTC) Disaster Investigation

<b>Contract No.</b>	<b>Awarded to</b>	<b>Date Awarded</b>
SB1341-03-W-0783 (Area 5)	Dr. Daniele Veneziano and Dr. Jozef Van Dyck	6/25/2003

### **OUTSIDE EXPERTS FOR BASELINE STRUCTURAL PERFORMANCE, IMPACT ANALYSIS, STRUCTURAL RESPONSE TO FIRE, COLLAPSE, ETC.**

Under solicitation number SB1341-03-Q-0322, firm fixed-price purchase orders have been awarded to experts in five technical areas for their experience and judgment at the most senior professional level to provide expert technical assistance as follows:

#### **Area 5: Assessment of Most Probable Structural Collapse Sequences**

One purchase order for Area 5 has been awarded to the team of Dr. Daniele Veneziano and Dr. Jozef Van Dyck as independent consultants to provide technical expertise and assistance for the formal probabilistic assessment approach that will be developed and implemented to support the determination of the most likely sequence of events leading to the structural collapse of WTC 1, 2, and 7. The analysis will integrate multiple disciplines effectively and discern which input and analysis parameters significantly influence the analysis methods used to simulate these events. Several methods shall be considered:

- Probabilistic and statistical methods, particularly event tree and Monte Carlo methods, Bayesian updating, stochastic modeling, and uncertainty quantification in complex systems.
- Application of probability and statistical methods to structural systems; structural reliability analysis; structural load modeling and analysis of combinations of loads; probabilistic risk assessment of engineered facilities.

Dr. Veneziano and Dr. Van Dyck have worked as a team for over 18 years on a large number of projects worldwide, involving probabilistic modeling of structural loads, engineering risk and reliability assessment, statistical data analysis, and uncertainty propagation. These projects often involve the use of sensitivity analysis, Monte Carlo simulations, and event-tree uncertainty propagation and Bayesian updating.

Dr. Veneziano has a doctorate in civil engineering and is an internationally recognized expert with numerous published papers in the fields of probabilistic modeling of structural loads, engineering risk and reliability assessment, statistical data analysis, and uncertainty propagation and Bayesian updating techniques. He has over 28 years of consulting experience in a broad range of fields, including analysis of seismic risk, hazard assessment, and Bayesian uncertainty updating, uncertainty quantification and decision in nuclear repositories for 69 sites in the eastern US, structural safety reliability of the Leaning Tower of Pisa, Italy based upon past field measurements, and a reliability analysis of the proposed Messina suspension bridge between Italy and Sicily for different failure modes. Dr. Veneziano holds a position of Professor of Civil and Environmental Engineering at the Massachusetts Institute of Technology in Cambridge, Massachusetts.

Dr. Van Dyck has a doctorate in civil engineering and is the Director of Probabilitas N.V., a Belgian company that specializes in engineering risk, probabilistic modeling, statistical analysis, and uncertainty

management. He is a part-time professor at the University of Leuven, Belgium, where he teaches probabilistic and statistical methods in engineering. He has over 18 years of experience and has published numerous papers in engineering risk, probabilistic modeling and statistical analysis, and uncertainty management.