Document: **Abstract**
Meeting: **Annual Technical Symposium (ATS)**
Date: **May 17, 3013**
Organization: **American Institute of Aeronautics and Astronautics (AIAA)**
Location: **Houston, Texas**

Title: **PRA and Conceptual Design**
Authors: **Diana DeMott, Bryan Fuqua, Paul Wilson**

Once a project obtains approval, decision makers have to consider a variety of alternative paths for completing the project and meeting the project objectives. How decisions are made involves a variety of elements including: cost, experience, current technology, ideologies, politics, future needs and desires, capabilities, manpower, timing, available information, and for many ventures management needs to assess the elements of risk versus reward.

The use of high level Probabilistic Risk Assessment (PRA) Models during conceptual design phases provides management with additional information during the decision making process regarding the risk potential for proposed operations and design prototypes. The methodology can be used as a tool to: 1) allow trade studies to compare alternatives based on risk, 2) determine which elements (equipment, process or operational parameters) drives the risk, and 3) provide information to mitigate or eliminate risks early in the conceptual design to lower costs. Creating system models using conceptual design proposals and generic key systems based on what is known today can provide an understanding of the magnitudes of proposed systems and operational risks and facilitates trade study comparisons early in the decision making process.

Identifying the “best” way to achieve the desired results is difficult, and generally occurs based on limited information. PRA provides a tool for decision makers to explore how some decisions will affect risk before the project is committed to that path, which can ultimately save time and money.