The Risk Committee

The Risk Committee, which evolved from the Risk and Lethality Commonality Team, is composed of primary and associate members, including personnel from the 30th and 45th Space Wings, NASA, Naval Air Systems Command, the Naval Air Warfare Center Weapons Division, the Pacific Missile Range Facility, the Reagan Test Site, and White Sands Missile Range. ACTA; 3D Research; Analysis, Planning, Test Research; Research Triangle Institute; SRS Technologies; System Test and Evaluation Planning Analysis Lab; and Tybrin provide technical support.

Changes to Original Risk Committee Objectives. The Risk Committee weekly teleconferences and quarterly meetings have resulted in several changes to the committee's original objectives. The new objectives—listed below—will be incorporated into Range Commanders Council (RCC) Standard 321-02, *Common Risk Criteria for National Test Ranges: Inert Debris* and the associated supplement.

- Establish casualty criteria for all flight safety hazards
- Revisit fatality criteria to include all flight safety hazards
- Update and/or develop analytical processes for all flight safety hazards
- Determine the applicability and understand the consequences of a conditioned risk analysis for real-time flight termination criteria
- Define top-level characteristics for risk analysis models, including guidelines for articulating uncertainty in risk estimates

Modifications to RCC Standard 321 and the Associated Supplement. The Risk Committee is actively working on RCC Standard 321- 02 and its associated supplement. To date, the group has selected an outline for the updated standard. The standard defines minimum acceptable requirements, including policy, risk criteria, and top-level flight safety processes. The supplement includes methodologies and examples of acceptable approaches for determining risk.

The first level of detail is described in Volume 1 of the standard and the second level of detail is incorporated in the supplement. The second level includes flow charts and checklists of considerations for each step in the risk assessment process. The committee has also concurred that the new standard should apply to expendable launch vehicles, missiles, and the launch phase of reusable launch vehicles.

Committee members are identifying options for defining risk criteria and developing a general policy statement for the development and selection of criteria. Sets of risk standards have been developed for committee review. The

flight safety risk management program, a section of the standard devoted to risk associated with the missile once it is in flight, will be patterned after the system safety process.

Uncertainty in Risk Assessments. The committee also determined that *uncertainty* in the risk models must be acknowledged in the updated standard and they are defining the optimum approach to address this issue. To assist in evaluating the factor of uncertainty in risk assessments, the committee studied a legal review of uncertainty in risk assessments and risk litigation and found that, according to the review, the Constitution charges government with protecting the public welfare. As a result, Congress enacts laws to regulate activities in the public interest. For example, businesses may not impose unreasonable risks on their workers or the public.

In risk litigation, the role of science along with its uncertainty, has become a key issue. The regulatory and scientific communities lean toward a conservative upper bounds in assessing risk while civil courts require plaintiffs to meet only the preponderance or “more likely than not” standard of the Federal Tort Claims Act. In other words, according to the legal review, if one were to challenge an agency’s action, one would have to prove that action either violated one of the agency’s statutes or previously adopted roles or was arbitrary and capricious.

The issue of *uncertainty*, along with flight safety and risk management, continues to be addressed at the weekly teleconferences and quarterly meetings as the Risk Committee pursues a comprehensive, updated version of RCC 321 and its supplement.