The International System Safety Society

Professionals Dedicated to the Safety of Systems, Products and Services

Tennessee Valley Chapter

Alabama -- Mississippi -- Tennessee

Greetings to all competitors entering the 2014 NASA Rover Challenge!

This year, the Tennessee Valley Chapter of the International System Safety Society will once again be judging for the best use of system safety in the System Safety Challenge. Two trophies will be awarded for the best application of System Safety Engineering -- one to a college/university team and one to a high school team.

System Safety is a formal discipline characterized by the application of engineering and management principles, criteria, and techniques to optimize safety within the constraints of operational effectiveness, time and cost throughout the system life cycle. System Safety has evolved as a distinct engineering discipline in the post-WWII era of increasingly complex systems whose accident risks are less and less tolerable to society. System Safety has been effectively applied in a wide variety of industries and programs, including spaceflight, military weapons, transportation, energy and chemical processing, to name but a few. More information on System Safety is readily available on a variety of internet sites, including the International System Safety Society's website, **www.system-safety.org.**

System Safety is most effective and economical when begun as early in system development as possible -- before details of the design are firm and when there is the most opportunity to influence the design. Safety needs to be designed in, rather than added as an afterthought. One of the most important System Safety activities is hazard analysis. A hazard is any real or potential condition that can result in death, injury or illness to personnel; damage to or loss of equipment or property; or damage to the environment. In a hazard analysis, the analyst identifies and characterizes the hazards posed by the system or its operation; assesses the risk associated with each hazard (in terms of severity of consequences and probability of occurrence); and identifies real or proposed means for eliminating the hazard or minimizing its risk. Results of the hazard analysis are usually compiled in a series of hazard reports or hazard logs, giving a thorough characterization of each hazard. These hazard data are used by the project team to manage risks and incorporate hazard control measures in a prioritized fashion.

The preferred order for controlling hazards is (1) eliminate the hazard by designing it out, (2) implement safety devices such as guards, interlocks or redundant systems, (3) provide warning devices such as lights, alarms, displays or signs, and (4) institute special procedures or training.

Participants in the NASA Rover Challenge may enter the System Safety Challenge by submitting a documentation package in a format of their choice that follows the submittal instructions on the attached sheet. In addition to stating where and how your package should be submitted, the attached sheet also provides a suggested content outline and judging criteria. Entries in the System Safety Challenge must be received by 5 p.m. CST on March 28, 2014. NOTE: Please get a receipt for your application from Don Swallom.

Good luck to all participants!

The System Safety Challenge

An optional award offered as part of
the NASA Rover Challenge 2014

Submission Instructions

Entries must be submitted electronically, by U.S. Mail, or by other delivery service to

Don Swallom
158 Equestrian Lane
Madison, AL 35758-4225

with confirmation requested. Entries submitted to anyone else will not be considered. The email address and phone number are swallom@isss-tvc.org, 256-658-5035

Entries must be received by 5 p.m. CST on March 28, 2014.

Submission Guidelines

To ensure the judges are able to fully evaluate your submittal, the following content is suggested:

- A preliminary hazard list, or PHL, identifying the general hazard types expected to be identified by analysis.
- Safety-related requirements that you determine, in advance, should be met by your system; explain how these requirements flow to the design implementation.
- A hazard analysis report, which should:
    - Describe your system and include its safety critical functions.
    - Explain how your hazard analysis was conducted.
    - Define terms, including any used to characterize hazards or safety risks posed.
    - State assumptions and/or limitations.
    - Document hazard data generated by analysis (no more than 10 hazard logs).
    - Identify design features that eliminate or control hazards or result in a robust design.

Judging Criteria

The judges' decisions are final. A panel of judges from the Tennessee Valley Chapter of the International System Safety Society will evaluate each participant's understanding and application of System Safety based on the following:

- Thoroughness, clarity and organization of hazard identification results as documented in the PHL and hazard logs.
- Description of safety critical functions.
- Adequacy and appropriate application of design features to eliminate or control hazards or result in a robust design.
- Traceability of safety-related requirements to design implementation.