Newsletter

2nd Quarter 2008

GENERAL DIVISION NEWS

SERAD IMECE 2007 Program & Dinner A Success!

We had another successful SERAD Program at IMECE 2007 in Seattle, Washington in November. The 2007 SERAD Program included both our annual Awards Dinner as well as the SERAD Technical Program portion of IMECE.

The SERAD Awards Dinner is held to recognize contributors to our Division activities and present the winners of the SERAD Student Safety Design Contest. This year's dinner was well attended by more than 30 individuals including authors, students, SERAD members and Executive Committee officers.

The SERAD Student Safety Design Contest is conducted every year with entries submitted in the form of reports on safety design efforts being conducted by students from throughout the world. The winners of the 2007 SERAD Student Safety Design Contest were two students from the Worcester Polytechnic Institute in Massachusetts; Michael Sheehan and Thomas Demasi. Their technical advisor was Dr. Jonathan R. Barnett. The winning design was "Thermal Response Modeling of Fusible Link Activation in Laboratory Simulated Wildfire Conditions." A summary of their winning paper is in the Technical Corner section later in this newsletter.

The second place winners of the SERAD Safety Design Contest were Kara Kranzusch, Zachary Krevor and Jarret Lafleur from the Georgia Institute of Technology. Their technical advisor was Dr. Vitali V. Volovoi. Their submittal was "Aerospace System Safety Processes: Apollo Human-Rating Certification GNC Subsystem Concentration."

Next we recognized Ward O Baun III, an Associate Fellow of Reliability Engineering at UTC Power for his leadership as the Chair of the ASME Safety Engineering and Risk Analysis Division from July 1, 2006 to June 30, 2007. Ward was presented this award in recognition for five years of participation in the SERAD Executive Committee serving as the Division secretary, treasurer and contributing to Divisions efforts. The SERAD Chair provides leadership to the Division in conjunction with other Executive Committee members and interfaces with the upper ASME Management Structure including the Engineering and Technologies Management Group. Ward was particularly instrumental in incorporating reliability engineering into SERAD.

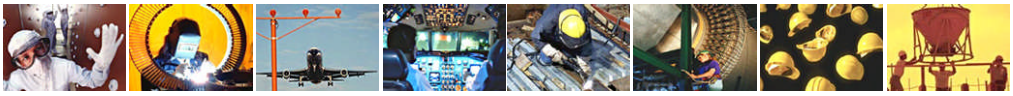
We also recognized Ward O Baun III as the SERAD Technical Program Representative to this year's 2007 International Mechanical Engineering Conference and Exposition (IMECE). Ward received a plaque for his efforts in interfacing with the IMECE Conference Committee and coordinating the organization of SERAD Topic/Symposium Sessions and Technical Sessions including Chairs and Co-Chairs.

SERAD also hosted a presentation of a Student Award by the Environmental Engineering Division (EED). Mr. Michael Hightower presented Mr. Soumitri Seshadri with an award for the best student paper from EED at the 2007 IMECE.

The SERAD Awards Dinner concluded with a presentation by Mr. Emmett Peter, the Director of Global Safety and Assurance at Walt Disney Parks and Resorts. Mr. Peter is a registered professional engineer, State of Florida and a long time ASME member with over 20 years experience involving all aspects of amusement ride engineering and safety. Mr. Peter gave a presentation about "Safety at the Walt Disney Corporation."

This year's SERAD Technical Program received over 40 technical abstracts that were reviewed, culminating in seven technical sessions and 28 papers being published in the IMECE Technical Proceedings. There were two Safety Engineering sessions, two Risk Analysis sessions, two Reliability Methods sessions and a session on Product and Process Safety. This year we also hosted a Panel Session on Software Tools for Risk Assessment.

Peter Prassinos
SERAD EC Chair, July 1, 2007 – June 30, 2008



UPCOMING EVENTS

IMECE 2008

IMECE 2008 is nearly here! Boston, Massachusetts will be the venue for the 2008 program, to be held from October 31 – November 6, 2008 at the Sheraton Boston Hotel on Dalton Street. The website for more information is located here:

2008 ASME International Mechanical Engineering Congress & Exposition (IMECE08)

As in recent years, the SERAD program at IMECE 2008 will focus on four main areas:

1) Safety Engineering – Presentation of methods, models, techniques, concepts and applications in system safety management, safety fault detection, safety assessment, hazard mitigation and safety verification. Area of interests includes aerospace, manufacturing, power, medical and nuclear industries.

2) Risk Analysis – Presentation of methods and applications in risk assessment, risk management, and risk-informed design and decision making in various industries including aerospace, manufacturing, power, and medical

3) Reliability Methods – Presentation of methods, techniques and applications in reliability engineering. Areas of interest include reliability analysis, modeling, and/or prediction in any industry, with a primary focus on the link between these reliability engineering methods and safety or other risks associated with product or process unreliability.

4) Product or Process Safety – Presentation on the hazards and the hazard controls for consumer and industrial products and processes.

We look forward to seeing you at IMECE 2008 in Boston!

TECHNICAL CORNER

Updated Principles for Risk Analysis – Summary of Memorandum Issued Jointly by Office of Management and Budget / Office of Science and Technology Policy

Article Submitted by: Curtis Smith

Introduction

On September 19th, 2007, the Office of Management and Budget (OMB) with the Office of Science and Technology Policy (OSTP), issued a memorandum outlining key principles of risk analysis principles to assist governmental policymakers in evaluating, using, and describing approaches to address a variety of safety and risk approaches. While the memorandum may be found in its entirety at the link given at the end of this article, this article will first summarize the memorandum and second discuss some of the more interesting points/issues found in the memorandum.

The goal of the OMB/OSTP memorandum is to bring rigor to risk analysis by improving its "quality, objectivity, and utility." To improve the risk analysis, the guidance uses several general principles in order to suggest how risk analyses are to be performed. This guidance is categorized into five parts:

1. General principles
2. Principles for risk assessment
3. Principles for risk management
4. Principles for risk communication
5. Priority setting

For each of these categories, we will briefly describe the guidance and discuss key elements.

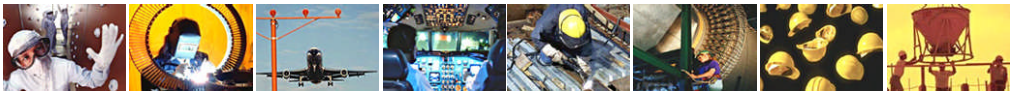
1. General Principles

The general principles indicate that risk analysis is an important tool in modern regulatory approaches. While not the only tool, risk analysis provides a structured, but flexible, framework to evaluate policies, requirements, goal-settings, and prioritization. The explicit responsibility outlined as a general principle is that each federal agency needs to actively reduce risks to the public and environment, commensurate to the "nature and significance of the decision." As a part of the process of risk analysis, the distinct parts of the process should be identified and actively managed, including risk categorization, modeling, quantification, and mitigation.

2. Principles for Risk Assessment

In defining the key principles for risk assessment, the OMB/OSTP outline what can be considered to be "best practices" when performing risk assessment. These practices are addressed in six principles:

1. Use the best information that is reasonably possible for the risk being evaluated.
2. Risk analysis employs both qualitative and quantitative elements, but the evaluation should be informed enough to characterize the types of risks considered.
3. Modeling assumptions and uncertainties need to be described and justified.
4. Hazards yielding risk should be extensively considered, including hazards to both sub- and large-populations.
5. Risk analyses should be peer reviewed. (See Reference 1 for additional information)
6. Across federal agencies, consistent risk analysis approaches should be used to help prevent inconsistencies in risk management approaches.



3. Principles for Risk Management

Once the risk analysis is conducted using the principles described in the previous section, use of the analysis for decision making is a logical procession of the process. In order to effectively manage risk, principles to making decisions using risk insights and results are outlined – these principles address the "why" we use (or should use) risk analysis to help make decisions. First, the efficacy of decisions should be considered by evaluating trade-offs between positive impacts (e.g., reduced regulation, reduced risks, reduced costs) from negative impacts (e.g., increased regulation, increased risks, increased costs). Like item #3 in the previous section, these impacts need to be described, including the basis of assumptions and uncertainties. When deciding amongst possible alternatives, societal efficacy is to be considered and, in a sense, attempted to be maximized.

4. Principles for Risk Communication

The memorandum acknowledges that not only performing "good" risk assessment and management is sufficient – these processes need to be explained to stakeholders. Consequently, risk communication is an important part of using risk analysis. To facilitate communication with stakeholders, the technical basis (assumptions, data, models, sources, uncertainties, etc.) of evaluations should be provided in a clear and timely fashion.

5. Principles for Priority Setting Using Risk Analysis

Lastly, the memorandum acknowledges that risk analysis is a method to assist in setting priorities related to government action. For example, the approach of comparing different risk in order to priorities those activities that provide the largest overall improvement (as compared to other actions) should be considered. This prioritization guidance is tempered by acknowledging that prioritization must consider qualitative issues such as preferences, quality of life, and long-term benefits/costs.

Overall, the "risk analysis principles" memorandum provides numerous insightful considerations for performing and using elements of risk analysis and should serve to promote risk analysis methods to a wider community of decision makers.

http://www.whitehouse.gov/omb/memoranda/fy2007/m07-24.pdf

Reference 1 Office of Management and Budget, Final Information Quality Bulletin for Peer Review, 2004:

http://www.whitehouse.gov/omb/inforeg/peer2004/peer_bulletin.pdf

Summary of Winning 2007 SERAD Student Safety Contest Paper – "Thermal Response Modeling of Fusible Link Activation in Laboratory Simulated Wildfire Conditions."

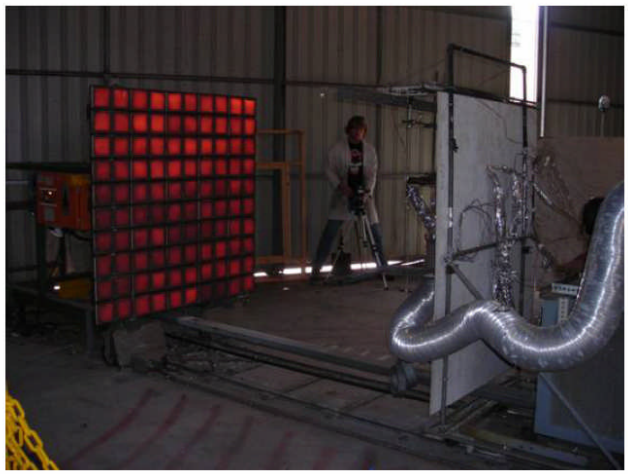
Article Submitted By: Michael Sheehan & Thomas DeMasi
Fire Protection Engineering Department – WPI

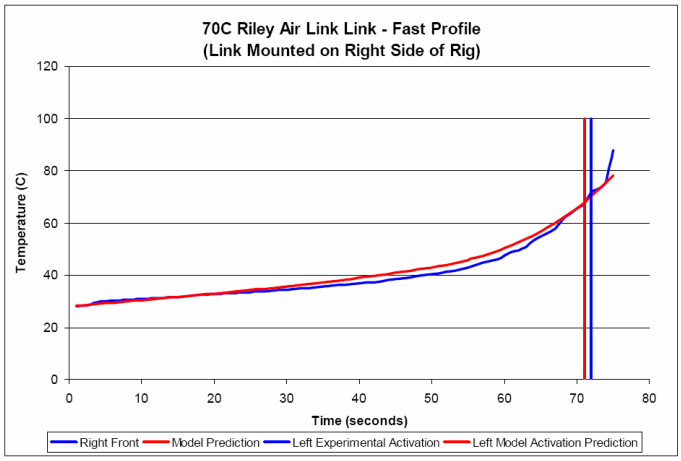
Wildfires threaten many people's homes and businesses. Although many buildings and homes meet the prescribed construction levels, there continues to be a need for additional research into alternative solutions which increase the protection from fire. The goal of the project was to develop a means of automatically closing an exterior fire door or shutter, which would barrier failure of a window exposed to a wildfire.

Through the design process the most viable solution that was found was the use of fusible links. These links would essentially hold open the fire door which would be pulled closed by a counter weight-pulley system when the fusible link activated. The intended use of the fusible links for this application goes beyond manufacturer activation guarantees because fusible links are designed for scenarios which do not include radiation exposures provided by wildfires. Experimental testing was necessary to test the fusible links to ensure that the fusible links would be applicable for this design specification.

In order to predict link activation times a transient heat transfer model was created. The model was constructed using basic heat transfer concepts in combination with experimentally determined parameters for the incident radiation, change of phase (CHP) and conductance (C'). This model was verified with experimental results measured at the CSIRO Fire Science and Technology site located in Highett, Victoria, Australia. Experimental testing was done on the fusible links using a radiant panel array and test rig which was capable of simulating actual wildfire conditions. Wildfire conditions and radiation exposures used in the experimental testing were derived from an evaluation of the International Crown Fire Modeling Experiment.

From the experimental testing and model results it was determined that the use of fusible links in fire door assemblies exposed to wildfire scenarios is largely dependent on the particular link. It was observed that for those tested, unaltered links activated after the time of window barrier failure. However, when the links' were painted black they activated well before window failure. Based on this finding it is recommended that links potentially used in fire-door assembles exposed to wildfires be painted black.





Envision your article here next issue!!

For future issues, we want to hear from you! Please submit articles of technical interest to the editors for consideration for publication in this section. These articles can be examples of applications of Safety Engineering, Risk Assessment, Reliability engineering techniques in your field, or can be examples of novel approaches in these areas.

Submit your ideas and articles to either of our co-editors, Ward Baun at ward.baun@utcpower.com, or David Weeks at daweeks@rmeltd.com

THANKING SERAD CONTRIBUTORS!

In our last issue, we failed to recognize two long-time sponsors of the SERAD Student Safety Design Contest – **Glasgow Products, Inc.** and **American Hazard Control Consultants, Inc.** We would like to take this opportunity to apologize for our oversight, and to extend a special thank you to both companies for their continued support of the SERAD Student Safety Design Contest.

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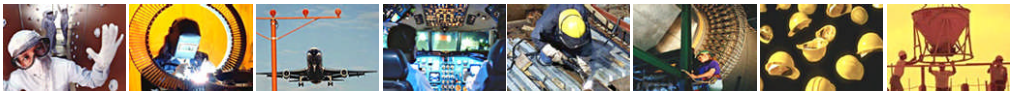


SERAD VOLUNTEER OPPORTUNITIES

SERAD Newsletter: Assistance with all aspects of the development and publication of this newsletter. This may include review of technical articles submitted, interviewing of experts, editing articles, concept development. If interested, contact Ward Baun at (860) 727-7234 or at ward.baun@utcpower.com

SERAD Awards Dinner Committee: Organization of the annual SERAD Awards dinner, typically held at ASME IMECE in November. Duties would include finding a guest speaker, arranging for a banquet room, selection of dinner menu, sending invitations. Contact any of the SERAD Executive Committee members listed in the Contacts section of this newsletter.

SERAD Technical Paper Reviewers: Peer review technical papers for SERAD sessions at future conferences. There are immediate needs for reviewers for abstracts / papers submitted for IMECE 2008, from March through July 2008. If you are interested, please contact one of the topic chairs listed below:

Safety Engineering: Chinh Bui, 860-654-3028, chinh.bui@hs.utc.com

Risk Analysis: Peter Prassinos, 202-358-1246 Peter.G.Prassinos@nasa.gov

Reliability Methods: Ward Baun, 860-727-7234 ward.baun@utcpower.com

Product / Process Safety: John Etherton, 304-282-0723 jre@saferjobs.com

SERAD Website Maintenance: Assistance with all aspects of maintaining the SERAD website, updating content for the website. Contact any of the SERAD Executive Committee members listed in the Contacts section of this newsletter.

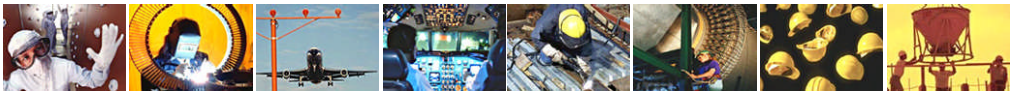
REMINDER

Remember that one of the benefits of being a SERAD member is the opportunity to purchase a subscription to the Elsevier journal, ***Reliability Engineering and System Safety***. Normally not available to individuals, as a SERAD member, you can purchase a year-long *(12 issue)* subscription to this valuable journal for $156. See the Important Website Links section below for a hyperlink to the order form on the SERAD website.

IMPORTANT WEBSITE LINKS

IMECE 2008:
http://www.asmeconferences.org/Congress08/index.cfm

Elsevier Journal, "Reliability Engineering and System Safety" SERAD Member Order Form:
http://divisions.asme.org/serad/publications/SERADRESSformformembers07.pdf



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