

**SAFETY ANALYSIS WORKING GROUP (SAWG)
ANNUAL REPORT TO THE DIRECTORS
(FY 2006)**

Introduction

The purpose of the Energy Facility Contractors Group (EFCOG) Safety Analysis Working Group (SAWG) is to promote excellence in safety analysis applications and programs throughout the Department of Energy (DOE) community. The SAWG provides a forum for accomplishing its purpose through its Steering Committee (SC), Subgroups (SGs), meetings, teleconferences, workshops, and training. The SAWG is actively involved and integrated with facility and DOE customers to accomplish the following:

- Establish initiatives and priorities.
- Facilitate initiatives through subgroups and task teams.
- Investigate safety analysis strategies, leverage experiences, and share lessons learned.
- Maintain safety analysis networking and interfaces using current technology.
- Provide a forum to effectively accomplish activities and conduct business.
- Train safety analysts, engineers, and managers.

The SAWG adheres to the following principles:

- Operate within the framework of the EFCOG charter.
- Ensure that planning and actions promote EFCOG objectives.
- Follow applicable DOE and contractor requirements.

Membership

The membership of the SAWG SC and its three current SGs includes representatives from EFCOG member companies representing most DOE Sites, national laboratories, and contractors that support their work. Currently there are 23 members on the SC, representing contractors at over 15 DOE sites (see attached roster). In addition, effective communication with DOE Headquarters (HQ) personnel is facilitated through their active participation on the SC, SGs, workshops and training functions. Relationships have also been developed with Environmental Protection Agency (EPA) and Nuclear Regulatory Commission (NRC) staff and with American Nuclear Society (ANS) organizations. During the year, approximately 200 people participated in SAWG activities. Each EFCOG member company is encouraged to provide a representative to the SC. All safety basis professionals are welcome to attend SAWG workshops and training and participate in SG initiatives. Recruiting has been specifically targeted this year to accident analysts and training representatives.

The working group is chaired by Paula Ostby of Idaho National Laboratory (INL), with Andrew Vincent of Washington Savannah River Site (WSRS) as vice-chair, Richard

Englehart of DOE-Health, Safety and Security (HSS) as the DOE Sponsor, and Pamela Horning of BWX Technologies (BWXT) as the EFCOG Sponsoring Director. Nominations for chair and vice-chair of the SC are accepted from SC members and elections are held annually on a CY basis.

Leadership of SAWG Steering Committee and Subgroups for FY 2006

Steering Committee Chairman	Paula Ostby, INL
Steering Committee Vice Chairman	Andrew Vincent, WSRC
DOE Sponsor	Dick Englehart, DOE-HSS
Accident Analysis Subgroup Chair (9/05 – 5/06)	Louis Restrepo, Omicron
Accident Analysis Subgroup Chair (5/06 – 9/06)	Mukesh Gupta, WSMS
Accident Analysis Subgroup Vice Chair (9/05 – 5/06)	Mukesh Gupta, WSMS
Safety Basis Subgroup Chair (9/05 – 7/06)	Brad Evans, Fluor Hanford
Safety Basis Subgroup Acting Chair (7/06 – 9/06)	Rob McKeehan, ORNL
Safety Basis Subgroup Vice Chair (9/05 – 7/06)	Rob McKeehan, ORNL
Training Subgroup Chair	Roland Gille, LANL
USQ Interest Group (5/06 – 9/06)	Mark Mitchell, LLNL/Bob Edwards BJC

Objectives and Achievements

The SAWG conducts business through its SC and SGs. The SC coordinates the SG actions, recommends changes, and establishes priorities. The SC also undertakes short-term activities through informal task teams or as a collective effort. The SAWG SC added several new members during FY 2006.

Steering Committee

- One of the most significant SAWG activities each year is hosting the annual Safety Analysis Workshop. The workshop provides training, technical presentations, and panel discussions as it encourages interaction among the entire DOE community. The workshop is unique in that it is the only national forum of its type, bringing together many significant policy makers, line managers, analysts, trainers, reviewers and approvers of DOE safety basis-related activities, applications, and documentation. The 16th Annual Safety Analysis Workshop was held in Atlanta, GA, April 30 – May 4, 2006 and was sponsored by Washington Savannah River Company (WSRC). There were approximately 200 participants from the DOE, contractors, and the Defense Nuclear Facilities Safety Board (DNFSB) who attended this workshop. The theme “A Study in Significance” continued the long-standing success the workshop has maintained by providing high quality training, outstanding

exchange of information, and a venue for DOE and contractors to discuss safety basis compliance issues.

- Ten different training courses were provided and over 100 DOE and DOE contractors attended one or more of these courses. The courses consisted of:
 - Criticality
 - Risk Analysis Fundamentals
 - Introduction to Plutonium Metallurgy
 - Control Selection Process
 - Technical Safety Requirements (TSR)
 - Unreviewed Safety Question (USQ) Refresher
 - Leak Path Factor
 - Safety and Design Integration
 - Operating Events
 - Fire Source Term Modeling

Two hands-on computer code courses were also offered in CFAST and MACCS2. American Board of Industrial Hygiene (ABIH) awarded Industrial Hygiene (IH) certification maintenance points for each course. These courses were offered to participants at no additional cost.

Russell H. Shearer, Principal Deputy Assistant Secretary of Energy for Environment, Safety & Health (EH-1) , provided a keynote address on “DOE O 413.3 Revision and DOE-STD-1189-2006 Development - ES& QA Requirements, Expectations, and Guidance for Integration of Safety into Design Projects.”

Dr. Patricia R. Worthington, Director of Environment, Safety & Health Evaluation within the Office of Independent Oversight within the Office of Security and Safety Performance Assurance with DOE, also spoke on “Independent Oversight Perspective from Evaluations across the DOE Complex.”

H. Chris Alverson, Savannah River Site, Fire Department , provided a luncheon presentation on the “Graniteville, South Carolina Train Derailment.”

- The SC met with its DOE Sponsor and other key DOE-HQ representatives in November 2005 to develop short- and long-term strategic initiatives for the SAWG. Seven initiatives were identified to be addressed by SAWG during FY 2006. Significant progress or completion was achieved on all but one initiative which was delayed due to the magnitude of effort expended on the highest priority initiative, integration of safety into the design process.
- The SAWG and Engineering Practices Working Group (EPWOG) were the major contractor participants with DOE-HQ (EH, EM, NE, NNSA) in the development of the new DOE-STD-1189, *Integration of Safety Into the Design Process*.

A joint meeting of SAWG and DOE-HQ in November 2005 which identified facility design issues as a major challenge within DOE, and a related public meeting of the DNFSB in December 2005 resulted in DOE initiating this Standard and requesting EFCOG participation.

The first meeting of the “Safety in Design Integration Team” (SDIT) occurred at the Nevada Operations Office in March 2006; the second was in Atlanta during the May 2006 annual Safety Analysis Workshop; the third was held in Germantown at the Offices of DOE-EH; the fourth at the CH2M Hill Offices in Denver occurred coincident with the July 2006 DNFSB 2nd Public Meeting on this topic; and the fifth, that largely completed the major elements of the Standard, was held at the Energy Training Center in Albuquerque with additional participation by National Nuclear Security Administration (NNSA) and the Office of Science.

The current schedule is for the Standard to be placed into the formal DOE review process by the end of October 2006 (this schedule has since been extended). It is likely that DOE will request EFCOG’s continuing support during FY 2007 for comment resolution, revision of the Standard, and recommendations for subsequent implementation. The issues of implementation and training on the new Standard are relevant topics for upcoming EFCOG workshops.

- At the request of DOE-EH, the SAWG, along with the EPWOG, and the Project Management Working Group (PMWG), developed an EFCOG paper, “Safety Integration Into Early Phases of Design,” issued by the EFCOG Chairman to DOE in July 2006.
- SAWG and the Security Working Group (SWG) issued an EFCOG topical report on “Security and Safety Integration” in August 2006 at the request of DOE-HQ.
- The SAWG issued a white paper on use of the Justification for Continued Operation (JCO) in July 2006. The first and only discussion of JCOs in the DOE directives system was added to the USQ Implementation Guide, DOE G 424.1-1, based on the white paper.

Subgroup/Task Group Objectives and Achievements

Accident Analysis Subgroup

The overall objective of the Accident Analysis (AA) subgroup is to improve nuclear safety, manage operational risk, and achieve a better and more consistent understanding of the residual risk of nuclear operations through consistent implementation of accident analysis. These objectives are pursued in a prioritized, cost/effective manner.

- The AA SG supported the development of draft DOE-STD-1189 with input on the role of accident analysis on the design process and format/content guide for safety basis documentation for design activities.
- Members of the AA SG prepared and issued a Los Alamos National Laboratory (LANL) paper on “The Role of Active Ventilation at DOE Nuclear Facilities” (LA-UR-06-2109) to address major concerns with DNFSB Recommendation 2004-2 on active confinement systems.
- Members of the AA SG continue to support and co-lead the development of a new DOE Standard for the “Preparation of Safety Basis Documentation for Transuranic (TRU) Waste Facilities.”
- A comparison of the use of EPIcode and ALOHA chemical dispersion codes was completed and the paper posted on the EFCOG website.

Safety Basis Subgroup

- The Safety Basis (SB) SG hosted the 2006 Safety Basis Workshop at the DOE Energy Training Center in Albuquerque, NM on February 14 and 15, 2006. Over 120 participants from DOE and contracting organizations were in attendance. The session topics were the USQ draft Implementation Guide, Safety and Security Integration, Categorical Exclusions in the USQ Process, Active Confinement, Decontamination and Decommissioning (D&D) Safety Bases, Nuclear Safety Research, Nuclear Safety Training, Use of Justification for Continued Operation (JCO), Safety and Design Integration, and DOE Risk Methodologies. The Workshop served to further the attendees’ knowledge on these topics and to stimulate further progress in several of these areas, particularly application of the JCO (which resulted in an EFCOG whitepaper), Safety and Security Integration, and Safety and Design Integration.
- A special USQ meeting of DOE and contractors was held on the day preceding the Safety Basis Workshop. This meeting, attended by over 20 people, allowed the sites to share status and lessons learned in application of the USQ process and to discuss application of the pending revision of the USQ Implementation Guide with DOE staff. This activity was helpful in fostering greater uniformity in application of the USQ process at the sites.
- Because of the interest and number of issues associated with the USQ process this year, a USQ Interest Group was initiated to facilitate addressing those issues. This Group is being co-chaired by Mark Mitchell, Lawrence Livermore National Laboratory (LLNL), and Bob Edwards, Bechtel Jacobs Company (BJC).

- The SB SG continued to advocate and use the web-based, EFCOG Discussion Forum as a means to discuss and document issues of interest to the SG. The SB SG remains the most active participant in the Discussion Forum with over 20 topics addressed.
- The SB SG members participated in regular monthly telephone conferences to discuss new and pending developments of significance to the SB process and to offer lessons learned. Our DOE sponsor was a regular participant and was helpful in offering insights for application to SB issues.

Training Subgroup

- The SAWG Training Subgroup continued to focus on safety analyst training needs, Safety Basis Academy (SBA) progress, and the availability of safety basis courses presented across the DOE Complex. Existing courses were reviewed for possible inclusion in the Safety Basis Academy.
- SBA Phase I, Safety Analyst Training Program, development activities included completion of the development of training materials for the SBA Safety Basis Overview Course. A pilot class early in FY 2007 is planned for this overview course.
- Phase II of the SBA will address safety basis training of line managers. Training design specifications for facility personnel having operational responsibility for facility safety basis requirements were determined through a DOE Complex-wide interview and validation process. The results of this effort will be made available for use by DOE sites and facilities with safety basis requirements for potential incorporation into existing or new training and qualification plans for individuals who are directly responsible for implementing facility safety basis requirements.
- At the 2006 Safety Basis Workshop, the Training Subgroup invited James Szenasi (DOE Office of Security and Safety, Performance Assurance, National Training Center) to speak. Mr. Szenasi described training currently provided by the National Training Center (NTC) in Albuquerque, NM, and possible future definition of training qualifications for DOE nuclear safety professionals.

Planning for the Year Ahead

Steering Committee

- Idaho National Laboratory will host the 17th Annual Safety Analysis Workshop in Idaho Falls, ID, May 19 – 24, 2007. Training, subgroup meetings, technical paper presentations, panel discussions, and invited speakers will be featured.

Subgroup/Task Group Planning for the Year Ahead

Accident Analysis Subgroup

- The SG will continue to coordinate with DOE on Software Quality Assurance (QA) improvements per DNFSB Recommendation 2002-1 and DOE Toolbox codes.
- The SG will continue to recommend and review DOE safety research topics.
- The SG will issue a paper on use of computer codes to support evaluation of control effectiveness.
- The SG will support the QA evaluation of new versions of tool box codes (e.g., MELCOR)) and new computer codes to support accident analysis activities.

Safety Basis Subgroup

- Sandia National Laboratories will host the 2007 Safety Basis Workshop in Albuquerque, NM, on January 23 and 24, 2007. The sessions tentatively planned include:
 - STD-1189 (integration of safety into design) and its application
 - Safety basis assumptions – their quality and review
 - Current application of vital safety systems
 - Hazard categorization issues and solutions
 - STD-3007 (Criticality Safety Evaluations [CSEs]) relation to Documented Safety Analysis (DSA)
 - Potentially Inadequate Safety Analysis (PISA) initiations
 - SB training status
 - Safety/Security recommendations from the topical report issued by SAWG

The SG will subsequently evaluate these topics for further action of value.

- The SG will continue to hold monthly teleconferences to track progress, maintain awareness of DOE initiatives, and identify emerging issues.

Training Subgroup

- The SG will continue to monitor DOE qualification initiatives for possible contractor flow-down.
- The SG will continue to provide pertinent training information updates to the EFCOG Discussion Forum.

- The SG will provide updated status on the Safety Basis Academy Project to the SAWG steering committee.
- The SG will endeavor to increase membership in the subgroup and improve communication among SG members.
- The SG will finalize and release the SAWG Training Standard.

Lessons Learned

- The SAWG and its supporting member companies should continue to consider increasing the priority of safety basis training.
- The SAWG needs to intentionally enlist, train, and mentor younger participants in WG activities.
- SAWG has benefited by working with other EFCOG working groups on several efforts this year. The integration of input from several technical disciplines from the various working groups has improved the quality and usefulness of the final products. In addition, the sharing of information among the working groups has promoted a better understanding for all members of the magnitude of issues confronting DOE contractors and has established new working relationships among EFCOG members.

Effectiveness Evaluation

The SAWG continues to be a very effective working group as evidenced by its widespread base of participation and its direct contributions in support of new DOE standards and guides on integration of safety into the design process, unreviewed safety questions, and safety and security integration during FY 2006

Recommendations

The Safety Analysis Working Group should continue along with the Accident Analysis, Safety Basis, and Training Subgroups, and the USQ Interest Group.

**EFCOG SAWG
STEERING COMMITTEE & SUBGROUP CHAIRS**

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