SAFETY ANALYSIS WORKING GROUP (SAWG)
CY-02 ANNUAL REPORT TO THE DIRECTORS
FEBRUARY 2003

Purpose

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, 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 subgroups includes representatives from EFCOG member companies representing most DOE sites, national laboratories, and contractors that support their work. Currently there are 31 members on the Steering Committee, representing 26 contractors at 17 DOE sites. In addition, continuous communication with DOE-HQ personnel is facilitated through active participation on the Steering Committee, Subgroups, workshops, and training functions.

CY-02 Accomplishments

The SAWG conducts business through its SC and subgroups. The SC coordinates the subgroup 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 CY-02.

Annual Safety Analysis Workshop

The most significant SAWG activity each year is hosting the annual Safety Analysis Workshop (SAW). 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 most of the significant policy makers, line managers, analysts, trainers, reviewers and approvers of DOE safety basis-related activities, applications, and documentation. The 12th annual 2002 workshop was held in Oak Ridge and sponsored by UT-Battelle, BWXT Y-12, Bechtel Jacobs, and SAIC. Despite ever-tightening budgets, approximately 250 participants from the DOE, contractors, and DNFSB reported substantial benefits from the workshop and highly endorsed its value to resolve compliance issues and enhance applied safety. In the last few years, training has grown in significance and participation and has expanded to accommodate formal training, invited speakers, and multiple panel discussions. A total of fifteen formal classes, presented over three days, provided training for approximately 150 registrants saving member contractors nearly $50,000 in technical course fees. Invited speakers included Beverly A. Cook, DOE, EH-1, Harold Denton, formerly of the NRC, Congresswoman Ellen Tauscher, John Sullivan, Bruce M. Carnes, Dr. Raymond L. Orbach, Ronald A. Milner, Robert G. Card, Congressman Doc Hastings, Rick Mertens, Dr. John E. Mansfield, and Joseph S. Mahaley.

Issuance of the Interim 10 CFR 830, Subpart B, Safety Basis Requirements

A continuing significant development in 2002 was implementation strategy following the issuance by the DOE on January 10, 2001, of the Final regulation, 10 CFR 830, "Nuclear Safety Management," particularly the new Subpart B, "Safety Basis Requirements." This regulation codifies many of the authorization basis requirements contained in existing DOE Orders, plus added additional activities, such as onsite transportation, to the scope of these requirements.

The SAWG focus for this year has been primarily around issues/interpretations associated with compliance with this Rule. The annual 2003 January Safety Basis Workshop was designed specifically to address the issues with hazard categorization, administrative controls, Preliminary Documented Safety Analyses (PDSA), nuclear criticality safety, exemptions to the Rule requirements, and closure activities. The annual 2003 June SAWG theme is "Safety Analysis' Ultimate End Product: Getting Work Done Safely," and numerous papers, panels, and training sessions will focus on Rule issues.

CY-02 Subgroup Accomplishments and Planned Activities

The SAWG conducts the majority of its activities through its subgroups. The subgroups provide a forum via teleconferences, e-mail exchanges, workshops, and training to exchange information and lessons learned regarding the subgroup's specific areas of expertise. When significant issues are identified by the SAWG and/or the DOE, these are usually picked up through a subgroup and information/resolution planned and documented. In addition to their planned activities, meetings, and teleconferences, the Accident Analysis, Safety Basis, Controls Selection, and Unreviewed Safety Question (USQ) subgroups helped to develop and review proposed interpretations and guidance for many DOE directives and issues.

Foremost, the annual 2002 January Safety Basis Subgroup Workshop was held to address issues associated with criticality safety and transportation safety. This workshop, now in its 6th year, was originally designed and organized as a working meeting to address common DOE related safety analysis application and compliance issues. The workshop has come to serve as a working forum for national safety analysis issue identification and resolution, and is attended by over 100 DOE, contractor, and DNFSB personnel. Many ideas, interpretations, and common questions realized in this workshop are presented as either completed, or work in progress, papers, panels, and discussions at the annual June SAW meeting.

Major activities of the working group:

- Host the annual Safety Basis Workshop.
- Provide support, information, and review of DOE issues and directives.
- Provide input and assist the DOE in resolution of issues associated with DNFSB.
- Conduct in-depth training in Documented Safety Analysis (DSA), Technical Safety Requirement (TSR), and USQ processes, including hazards analysis, source term analysis, and chemical and radiological dispersion/consequence analysis.

Accident Analysis Subgroup

Purpose

The purpose of the EFCOG Accident Analysis Subgroup, part of the SAWG, is to provide methodology recommendations and guidance, and promote consistency in the performance of accident and consequence analyses supporting safety documentation for the DOE facilities. Our major stakeholders include the DOE and DOE contractor safety analysts, regulatory staff, independent review, and oversight personnel. Activities and deliverables of the subgroup are conducted to promote safety analyses at individual DOE sites that are conservative, appropriate for the hazard level of the facility, and cost effective, while meeting the DOE and other applicable regulatory standards. Additionally, the subgroup seeks to integrate the recommendations of the DNFSB, and other independent oversight bodies into its programs and overall activities. The following are accomplishments for CY-02:

- Assisted in final phase of review and distribution of the Accident Analysis Guidebook (AAG). The draft DOE AAG was revised and distributed as a February 2002 revision during the DOE/EM - Paul Gubanc meetings in April 2002. Subject matter experts from the Accident Analysis Subgroup reviewed the document during the year. The project was shifted to DOE/EH in September and is now under the direction of Richard Englehart, DOE/EH-53. Chapter-wide review and distribution is planned to begin CY-03.
- Identified computer code candidates for Safety Analysis toolbox and provided interim guidance on use for supporting 10 CFR 830 DSAs. A code selection basis technical report, *Selection of Computer Codes for DOE Safety Analysis Application*, was finalized for the National Nuclear Security Administration, project sponsor, in May 2002. To provide guidance to contractors in use of several of the toolbox codes, three guidance reports for MACCS/MACCS2, ALOHA, and CFAST were completed. Given that the toolbox codes do not have SQA programs consistent with today's standards, the documents provide safety

contractors the appropriate regimes of applicability and approaches for using MACCS, ALOHA, and CFAST for radiological dispersion/consequence, chemical dispersion, and fire analysis, respectively.

- Provided training in source term analysis, and chemical and radiological dispersion/consequence analysis. The Accident Analysis Subgroup conducted training courses in accident and consequence analysis, as part of the 12th annual SAWG Workshop in Oak Ridge, TN. Curricula, training materials, and class presentations were made to over one hundred participants during the 2002 June workshop. Courses included the following:
  - CONTAIN and Leak Path Factor Analysis
  - Chemical Dispersion and Consequence Assessment (Overview and Practicum)
  - Radiological Dispersion/Consequence Assessment
  - Fire Source Term Modeling
  - MACCS2 Overview and Practicum
  - HGSYSTEM
  - Radiological Safety Analysis Code (RSAC-6) for WINDOWS©
  - Temporary Emergency Exposure Limits (TEELs) and Chemical Mixture Methodology
  - Introduction To Plutonium Metallurgy
- Continued strategic planning between the SAWG and the American Nuclear Society (ANS) and its Nuclear Installation Safety Division (NISD). The Accident Analysis Subgroup facilitated plans for an upper-level management meeting between ANS NISD and the EFCOG Directors during CY-03. The objectives of this session would be to identify common objectives between organizations, explore lessons learned from the Embedded Topical meeting in 2001 held in Milwaukee, WI, and formulate a path forward. The latter would include, potentially, planning additional collaborative efforts, including meetings, white paper development, and standing joint committees formed of ANS and EFCOG representatives.

Safety Basis Subgroup

- Hosted the January 2003 Safety Basis Workshop in Albuquerque, NM to develop strategies for complying with 10 CFR 830 Subpart B by improving the integration of nuclear criticality safety and transportation safety with facility safety. A full day was dedicated to each of these very important topics.
- Planned for the January 2003 Safety Basis Workshop in Albuquerque, NM to discuss and clarify rule-compliant strategies for hazard categorization and development of PDSA. In addition, DOE-HQ/EH requested assistance in responding to DNFSB Recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*. This topic was added to the workshop agenda.

- Continuous dialogue with the DOE field and HQ personnel, and participation of the DOE personnel on both the Safety Basis Subgroup and SAWG SC facilitate informal DOE requests for review and comment.

Nuclear Criticality Safety Interest Group

In February 2002, a liaison function was established between the DOE Nuclear Criticality Safety Managers End User Group and the EFCOG SAWG Steering Group. This function is responsible for increased communication and understanding between the NCS Community and the EFCOG SAWG, and to improve coordination with the American Nuclear Society (ANS) NCS Division. In addition to participation on monthly teleconferences by an NCS representative, during CY-02 the following activities occurred:

- During the annual 2002 June workshop in Oak Ridge, TN a half-day Special Interest Group session on Nuclear Criticality Safety was held. In attendance were professionals from both the Facility Safety and Nuclear Criticality disciplines, both contractor and the DOE. That group concluded, there was a need for further coordination between the two disciplines including increased joint activities with the ANS NCS Division; however, a new EFCOG SAWG Subgroup was not needed. Rather, leverage off existing EFCOG and ANS activities and structure. The SC requested the NCS Liaison to pursue a follow-on workshop in conjunction with the 2002 November ANS meeting.
- On November 16, 2002, a daylong workshop was held in Washington, DC the Saturday prior to the Winter ANS Conference. The ANS NCS Division arranged meeting space at the Omni Sheraton (ANS Conference Hotel) and the workshop was attended by both NCS professionals and Facility Safety professionals tasked with preparing 10 CFR 830 complaint DSAs. DOE including DOE-HQ EH-53 participated as well. The goals of increased communication between NCS and FS professionals, and better coordination with ANS was well received. Conclusion of the workshop was ongoing exchange of information on NCS and DSA processes is needed and recommended additional CY-02 activities be conducted.
- The planned CY-03 activities include: (1) update on direction and NCS activities at the 2003 January AB Workshop in Albuquerque, NM, (2) in conjunction with the ANS 2003 June Conference in San Diego, CA a walkthrough tutorial on the DSA process highlighting needed NCS interface points will be conducted, (3) in conjunction with the EFCOG SAWG 2003 June Conference in Salt Lake City, UT a half-day session on Nuclear Criticality Safety will be held emphasizing lessons learned from current 10 CFR 830 efforts as well as the ANS activities conducted earlier in the month.

Deactivation and Decommissioning (D&D) Interest Group

A D&D Interest Group was formed based on recommendations by participants at the 2002 June SAWG meeting. At the request of the DOE, the group performed a review of DOE-STD-1120, which is a 10 CFR 830 safe harbor standard that is approaching the five-year DOE "sunset review". Suggestions were provided on DSA preparation for long-term surveillance and maintenance and decommissioning activities. The group's recommendations helped form the basis for DOE program guidance that was issued by the Assistant Secretary for Environmental Management in December 2002.

A meeting was held at the annual 2002 June workshop in Oak Ridge, TN and several teleconferences were conducted in CY-02. The D&D Interest Group developed a white paper for DOE-HQ/EH. Feedback was provided to reactivate the D&D Interest Group and to support a name change to "Closure Subgroup" in CY-03 to cover the full spectrum of issues. A session is planned for the annual 2003 SAW. The group will discuss, prioritize, and find paths forward for the issues identified in the annual 2002 June workshop in CY-03.

Controls Selection Subgroup

- Established initial contacts with both Transportation and the Nuclear Criticality Safety Interest Group outside of the EFCOG organization to offer assistance in new 10 CFR 830 Rule requirements.
- Maintained a list of primary contacts.
- Held meeting at the annual 2002 June workshop in Oak Ridge, TN.

Training Subgroup

- Solicited additional membership in the Training Subgroup.
- Reviewed a draft update to the Safety Analysis Training Plan.
- Reviewed the Safety Analysis Training Vendor Course List for currency.
- Expand the membership of the Training Subgroup.
- Assist the 2003 Annual Workshop Chairperson with the planning and execution of workshop training.
- Update and expand the Safety Analyst Training Vendor Course List.
- Update the Safety Analysis Training Plan.
- Update and expand the Training Subgroup Web Page.
- Assist sites in developing training plans and guidelines for qualifying safety analysts.

Unreviewed Safety Question Determination Subgroup

- Assist DOE-HQ in the development and review of USQ related issues, including contractor interpretation of USQ process application.
- Maintained a list of primary USQ contacts.
- Presented USQ training at the 2002 SAW.
- Developed a white paper at the request of Paul Gubanc and EM-1 on "Accidents of a Different Type" to aid in interpretation and training.

Key Objectives, Goals, Processes, and Timelines, for CY-03

2003 Safety Analysis Workshop

The annual SAW is planned for June 21 - 26, 2003 in Salt Lake City, UT. This year the workshop is hosted by the Idaho National Engineering and Environmental Laboratory. Three full days of training are offered in advance of the technical sessions.

2003 Safety Basis Workshop

The 2003 January Safety Basis Workshop was held in Albuquerque, NM. The workshop focus this year was hazard categorization, administrative controls, PDSA, nuclear criticality safety, exemptions to the Rule requirements, and closure activities. Action items supporting development of papers and panel presentations on issues and resolution are being addressed for presentation at the annual 2003 June SAW.

Significant Issues

- Continue to implement 10 CFR 830 safety basis requirements for onsite transportation activities, integration of nuclear criticality safety, assessment of Rule compliance, and development of common implementation strategies. The SAWG continues to work with the DOE-HQ Program Offices, Operations and Field Offices, and contractors to share information and coordinate strategies to support cost-effective Rule implementation. This activity will proceed throughout CY-03.
- The DOE has a much broader range of chemical hazards in combination with radiological hazards than is found in commercial industry. As a result, treatment of chemical safety hazards in DOE facilities continues to challenge the DOE community due to their number and complexity. The SAWG, in tandem with the DOE Chemical Safety Topical Committee, is attacking specific issues and supporting the development of new information about DOE chemical hazards. This is judged to be a continuing issue throughout CY-03.

Subgroups' Status

The Accident Analysis, Chemical Safety, Control Selection, Safety Basis, Training, and USQ Subgroups are all currently active (2003). The Control Selection, Training, and USQ Subgroups were all re-activated in early 2002, having been moved to "inactive" for CY-01. Interest in re-activation of the Facility Disposition Subgroup, and establishment of a Transportation Subgroup and Nuclear Criticality Safety Subgroup has been identified and were evaluated at planned interest sessions during the annual 2002 June SAWG Workshop. Currently, there is no plan to establish a subgroup for Transportation. An interest group for Nuclear Criticality Safety continues to be very active.

Lessons Learned

Over the past several years, the working group has tried to work closely with DOE/EH, EM, and NNSA, the program offices who are our primary customers. In addition, we have increasingly

involved field office representatives in our activities. This combination of HQ and field involvement in process development, training, and workshop activities has significantly increased the effectiveness and value of our activities. We will strive to increase field office presence in SAWG functions.

Funding of activities is a primary problem. While significant issues continue to challenge the DOE community in the area of both applied and compliant facility safety, via safety basis requirements, and methods for performing safety analyses, it is increasingly difficult to fund activities that may provide long-term benefit. Fewer and fewer DOE sites have specifically identified funding for EFCOG activities.

Recommendations

- EFCOG should provide facilities for each working group to hold a face-to-face meeting in Washington, DC coincident with one of the planned semi-annual Working Group Chairs meeting. This would provide a means for each working group to interact with their EFCOG and DOE-HQ sponsor while in Washington, DC and save travel expenses for the Chairs by allowing them to combine these activities.
- The working group should be maintained, as it continues to provide cost-effective service to our contractors and DOE customers in issue identification and resolution, formal safety related training, development and review of DOE directives and guidance, and ongoing-shared experiences and lessons learned. In particular, the SAWG has actively facilitated complex-wide communication in meetings, workshops, and all manner of information gathering relative to pursuing efficient implementation of 10 CFR 830.