

February 5, 2001

MEMORANDUM TO: Thomas L. King, Director, DRAA/RES  
Michael E. Mayfield, Director, DET/RES  
Gary M. Holahan, Director, DSSA/NRR  
Michael F. Weber, Director, FCSS/NMSS

FROM: Mark A. Cunningham, Chief, PRAB/DRAA/RES /RA/

SUBJECT: SUMMARY OF JANUARY 16, 2001, FIRE RESEARCH COORDINATING  
COMMITTEE (FRCC) MEETING

On January 16, 2001, a meeting of the Fire Research Coordinating Committee (FRCC) was held with attendees from the Office of Nuclear Regulatory Research (RES), the Office of Nuclear Reactor Regulation (NRR), and the Office of Nuclear Material Safety and Safeguards (NMSS). A list of attendees and the meeting agenda are provided (Attachments 1 and 2, resp.). Mark Cunningham, PRAB/DRAA/RES, chaired the meeting.

John Hannon presented NRR's viewpoint regarding "user needs" letters as they relate to the tasks outlined in RES' draft "Fire Risk Research Plan: Fiscal Years 2001-2002." NRR wants RES to specify which of the tasks presented in the "Plan" are covered by NRR user needs letters, so that NRR can concur with those portions of the plan. NRR does not intend to imply their non-concurrence with the other tasks, but will make it clear that those tasks are at RES' initiative. NRR does not plan to write a new user needs letter to cover those other items.

In early November, 2000, RES requested comments on the proposed "NRC Fire Risk Research Plan: Fiscal Years 2001-2002." Nathan Siu discussed the comments that had been received, and their proposed resolution, as summarized in Attachment 3.

Mark Cunningham discussed fire research strategy and the upcoming Commission paper. He said that RES wants to settle which research is anticipatory, and which is covered by user needs letters. He said once this is determined, then the Commission paper will be written, and that hopefully it will be in time to be useful during the upcoming budget planning process for FYs 2002 and 2003. NRR representatives made it clear that NRR will not write a user needs letter to cover tests on fire resistant cables. [Consideration of such a letter was the first item of business at the previous FRCC meeting, October 31, 2000.]

CONTACT: Roy Woods, PRAB/DRAA/RES  
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Roy Woods discussed the industry-sponsored cable fire tests conducted the week of January 8, 2001, at Omega Point (near San Antonio, Texas), which he witnessed. The tests are to help resolve long-standing industry/NRC questions regarding conditions under which various types of short circuits may develop during a fire (e.g., shorts between a conductor and ground, shorts between separate conductors in a single cable, and shorts between cables), and the nature of such shorts (e.g., would the impedance of such "hot" short circuits be low enough to allow inadvertent operation of plant equipment such as pumps and motor operated valves). Several tests were successfully performed, and conditions were produced that caused indications of the types of short circuits under investigation. However, since neither the data processing and interpretation of the tests performed, nor the complete series of planned tests were completed, the detailed results will not be disseminated until the remainder of the tests and their data processing are conducted (the remaining tests were planned for the week of January 22, 2001). Mark Salley was scheduled to witness the tests run during that week, and it is hoped that he will provide an update at the next FRCC meeting.

Nathan Siu discussed the status of the fire data base being developed by SNL. A CD with the data will be available shortly, but it will contain only limited heat release rates for electrical cables. Nathan mentioned that the Committee of Nuclear Safety Installation (CNSI) is also currently in the process of developing a data base that will include heat release rates, and that he would provide a description of their effort (see Attachment 4).

Mark Salley briefly mentioned spreadsheet-based fire models he's developing for use by Regional Inspectors in their prioritization and characterization of fires. These models will not be added to NRC's fire research plan. Further discussion of the characteristics of these fire models is planned for the next FRCC meeting.

Nathan Siu provided an update of NRC activities regarding fire model characterization. Monideep Dey was in Palo Alto, CA (at the time of the FRCC meeting) participating in an international cooperative effort to characterize the uncertainties in the results or various fire models' applications to certain types of fires. Nathan stated that the effort is not aimed at developing the "best" fire model; rather, it's purpose is better described as identifying the strengths and weaknesses of various models' applications to certain types of fires.

John Hannon stated that NRR management wants the FRCC's charter to be rewritten to better define how different persons interact in the development and issuance of user needs letters. For that purpose, John provided a draft of the proposed revised charter (see Attachment 5). Comments were requested regarding acceptability of the revised charter within two weeks (i.e., by January 30, 2001).

Status of the fire data base under development by James Houghton (RES) was discussed. It was stated that validation was expected to be completed within one month, but it was not known when it would be issued. It has subsequently been learned, by conversation with Mr. Houghton, that validation is completed, and issuance of the "stand alone document" (i.e., the proprietary data base itself) is expected in about 3 months, assuming the issuance of a user needs letter currently under development by Daniel Frumkin and Mark Salley (SPLB/DSSA/NRR). Issuance of a non-proprietary NUREG report, giving information derived from the data, is expected in mid-summer, 2001.

The next FRCC meeting is scheduled for February 13, 2001, from 9:00 to 10:30, in O-11B2.  
Attachment 6 is the tentative draft agenda for that meeting.

Attachments: As stated

**DISTRIBUTION:**

Mark Cunningham  
John Hannon  
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Nathan Siu  
Monideep Dey  
Roy Woods  
FCoffman  
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Daniele Oudinot  
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NAME	*H. Woods		*N. Siu		M. Cunningham					
DATE	01/31/01		01/31/01		02/05 /01					

(RES File Code) RES -2C-1A

FIRE RISK COORDINATING COMMITTEE

January 16, 2001

ATTENDEES

Mark Cunningham  
Nathan Siu  
Roy Woods  
Frank Coffman  
John Hannon  
Ed Connell  
Mark Salley  
Dan Frumkin  
J. S. Hyslop  
Eric Leeds  
Sharon Steele

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FCLB/FCSS/NMSS

AGENDA

FIRE RISK COORDINATING COMMITTEE (FRCC) MEETING

JANUARY 16, 2000, 9:00 - 10:30  
0 -11B2

1. Fire Research Plan, proposed comment resolution (Nathan Siu)
2. Fire Research Strategy and Commission Paper (Mark Cunningham)
3. Industry Cable Tests (Roy Woods)
4. Status of SNL Fire Data Base (particularly heat release rates) & CNSI Activity (Nathan Siu)
5. Changes to FRCC Charter, Committee's Role in User Need Letters (Eric Weiss, John Hannon)
6. Other Committee Business as needed (All)

## **CSNI Fire Risk Analysis Data Collection**

### Objectives and expected products

- Fire risk analysis suffers from shortage of relevant data. On one hand there is a shortage of basic data on fire ignition and parameters prevailing in fire spreading models, on the other hand there is a lack of knowledge and experimental data on vulnerability of equipment of different sort - electronic, electrical and mechanical.
- The objective of the proposal is to set up an international consortium for collecting and combining fire data from several OECD countries.

### Scope /Justification

- There is a shortage of relevant data on fire event cases, fire development experiments, fire ignition of cables, printed circuit boards, and electronics cabinets but as well of the physical parameters for modelling of fire spreading on cables or other equipment.
- Further the data for analysing ignition thresholds of the target material, velocity of the flame front and rate of the heat energy released on cables, cable trains, cable tunnels, cable spreading rooms, cabinets, control room panels etc., are of importance in fire risk assessment.
- To analyse production and spreading of smoke, the respective fire data of experimental case studies and real cases, e.g., switch gear, printed circuit boards, habitability of main control room, etc., are of importance.
- Data for impact of smoke and heat on instrumentation electronics or electrical equipment are needed for analysing potential damages.

### Safety significance, use and users of the results

- Fire risk analysis has become an integral part of PSA and the fires have been recognised as one of the major contributors to risk of nuclear power plants.
- To respond this challenge CSNI/PWG5 has completed a task reviewing the present status and maturity of the fire risk analysis methods used in the context of PSA - "a state-of-the-art review of the most essential methods and practices vital to fire risk analysis."
- The PWG5 report recognised that the fire simulation methods pose an important role in fire risk analysis but are still largely questioned because of large uncertainties typically associated with the quantitative estimates of fire risks. The uncertainties are partly originating from the shortage of relevant fire data.

Schedule and milestones: First meeting to begin planning to be held in early 2001.

Lead organisation(s): WGRISK

Participants: All nuclear generating OECD countries are invited to participate in the activity.

Requested action:

- In order to provide a more robust fire database it would be worthwhile to set up a new fire data collection organisation in conjunction with CSNI to acquire relevant data for fire risk assessment purposes. The new organisation would be set up in a similar manner as was done with the ICDE project.
- Accordingly, we ask the WGRISK to support of establishing a new TG under the umbrella of OECD/NEA with the aim of collecting available international fire data among the interested Member countries.

PRG comments: The Working Group was asked to submit an amended CAPS at the next PRG meeting, incorporating the results of the first meeting.

CSNI Action: Approved at December 2000 Annual meeting.

DRAFT AGENDA FOR THE FEBRUARY 13, 2001 FRCC MEETING

9:00 - 10:30  
0-11B2

1. Further discussion of proposed FRCC Charter changes (John Hannon, Mark Cunningham, all)
2. Further discussion of Commission Paper (Mark Cunningham)
3. Discussion of additional user needs letters (in addition to the one related to the SDP developed by J.S. Hyslop) (John Hannon)
4. Status of resolution of comments on the Major Fire Events report (Nathan Siu)
5. Industry cable tests status (Mark Salley)
6. Further discussion of Fire Models for Regional Inspectors' use (Mark Salley)
7. Other Committee Business as needed (All)