# LOG OF MEETING

## DIRECTORATE FOR ENGINEERING SCIENCES

**SUBJECT:** Home Smoke Alarm Test Project Kick-off Meeting

**DATE OF MEETING:** June 6, 2000

**DATE OF LOG ENTRY:** June 12, 2000

**SOURCE OF LOG ENTRY:** Arthur Lee, ESEE

**LOCATION:** National Institute of Standards and Technology (NIST)
Bldg. 224, 10:00 am

**CPSC ATTENDEES:** Arthur Lee, ESEE
Margaret Neily, ESME
Terry Van Houten, ESHF
Linda Smith, Epidemiology
David Walden, Engineering
Treye Thomas, Health Sciences

**NON-CPSC ATTENDEES:** See Attachment 1.

**SUMMARY OF MEETING:** Richard Bukowski (NIST) gave a presentation listing the project logistics, steering committee members, objectives, work plan, and schedule. Attachment 2 is the slides presented at the meeting.

Attachment (1)

# ATTENDANCE

**Performance Evaluation of Residential Fire Alarms**
**SPONSORS'S ORGANIZATIONAL MEETING**
**June 6, 2000**

| NAME | COMPANY | PHONE NUMBER |
|---|---|---|
| Margaret Neily | CPSC/Engineering | (301) 504-0508, x1293 |
| Pauline Harvey | Centers for Disease Control | (770) 488-4592 |
| Isaac Papier | Underwriters Laboratories | 847.272.8800 X42686 |
| David Walden | CPSC / Engineering | 30-504-050A x1290 |
| Terry VanHouten | CPSC/ Human Factors | 301-504-0468 x1285 |
| Linda Smith | CPSC/ Epidemiology | 301-504-0470 x1275 |
| John Hall | NFPA | 617-984-7460 |
| Doug Walton | NIST | 301 975 6872 |
| Trayle Thomas | CPSC/ Health Sciences | 301 504-0994 x1204 |
| JOHN OTTOSON | US FIRE ADMINISTRATION | 301-447-1272 |
| DAN MADRZYKOWSKI | NIST | 301-975-6677 |
| Ellen Taylor | HUD/ Healthy Homes | 202-755-1785 x116 |
| ARTHUR Lee | CPSC / Engineering | 301504-0508 x1393 |
| JIM MILKE | UMD | 301-405-3995 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Attachment (2)

# Home Smoke Alarm Tests
# Project Kick-off Meeting

June 6, 2000

## Project Steering Committee

- Help guide the project to meet objectives, interpretation of results, advance review of reports to aid understanding (comments are officially non-binding on NIST).
  - Richard Bukowski, Chair (NIST)
  - Pauline Marvay (CDC)
  - Ellen Taylor (HUD Healthy Homes)
  - John Ottesen (US Fire Administration)
  - Margaret Nelly (CPSC)
  - Paul Reilly (Underwriters Laboratories)
  - John Hall (NFPA)
  - James Milke (U of Maryland)
  - J. Russell Thomas (National Research Council of Canada???)

## Project Logistics

- Funding
  - $200k from each participant; $100k now, $100k at the start of year 2.
  - CPSC, CDC, and USFA through CPSC, HUD and UL direct to NIST.
  - NFPA (In-kind), U of MD (BFRL Grant)
  - Inter Agency Agreements (UL needs?)
- Reporting
  - Quarterly progress reports
  - Semi-annual briefings (NIST or test site?)
  - Site visits
  - Final technical report, summary report, data access

## Project Objectives (1)

- *Evaluate the performance of current smoke alarm technology.* Smoke alarms of both the ionization and photoelectric type representative of current product sold will be evaluated with regard to the quantity of escape time provided when installed in actual one- and two-story residential arrangements. In addition, resistance to common nuisance alarm sources will be evaluated.

## Project Objectives (2)

- *Test conditions are representative of current, fatal residential fires.* Fire scenarios utilized, including ignition sources and fuel items, will be selected based on current NFIRS data on fatal residential fires to demonstrate the potential for mitigation. (John Hall)

## Project Objectives (3)

- *Tests evaluate the efficacy of current requirements for number and location of smoke alarms.* Smoke alarm locations will be consistent with current code requirements but will also examine whether more or different locations would result in cost effective improved performance.

## Project Objectives (4)

- *Develop the basis for standard nuisance sources.* Currently there are no agreed set of nuisance alarm sources for smoke alarms in any standard. Such a set will be developed and characterized for incorporation into existing test programs.

## Project Objectives (5)

- *Examine other fire detection technologies in combination with smoke alarms to provide data useful in establishing code requirements.* Residential heat detectors and sprinklers (without water to record activation times and conditions without affecting the test) will be included to develop useful data on their benefits when used with smoke alarms. Sprinklers discharging water may be used in the last test in any dwelling.

## Project Objectives (6)

- *Obtain data on the potential for improvements in performance by new technologies.* New technologies such as combined smoke and CO detectors and aspirated smoke detectors will be included to develop an understanding of their potential benefits for improved fire safety performance and reduced nuisance alarms. This project will provide the opportunity to evaluate the potential performance gains both for fire (smoke) and CO hazards detection and nuisance alarm reduction in actual dwelling configurations.

## Project Objectives (7)

- *Fuel items incorporate materials and constructions representative of current residential products.* Combustible items used will to the extent possible employ materials and constructions representative of current residential products. While, as in the earlier tests, used items may be employed, these will be selected to represent current practice.

## Project Objectives (8)

- *Fully characterize test detectors and alarms in a consistent manner to facilitate comparisons.* All detectors evaluated will be initially characterized in NIST's FE/DE apparatus and will be re-examined between each group of field tests to ensure that they continue to perform normally following fire exposure. Use of the FE/DE will allow all detectors to be characterized in a consistent way regardless of operating principle.

## Project Objectives (9)

- *Utilize fire models to extend the applicability of the test arrangements and maximize the test instrumentation.* Fire modeling techniques will be utilized with all test residences to plan effectively the fire scenarios and instrumentation. Modeling will also be used to extrapolate the limited number of test configurations to enhance data usefulness.

## Project Objectives (10)

- *Make all of the data collected as widely accessible as possible.* All data collected in the tests will be published and made available electronically in a common fire data format on the World Wide Web. This will include experimental measurements, modeling results, and photographic documentation.

## Project Objectives (11)

- *Use the project to enhance public education on the use of smoke alarms.* The project will provide opportunities to enhance public fire safety education, both from the dissemination of what is learned and by the development of video material during testing. Information to be developed includes the optimum use of smoke alarms alone and in conjunction with residential sprinklers, use of smoke alarms for the hearing impaired, and reinforcement of proper maintenance, testing, and replacement policies.

## Work Plan (1)

- Experimental Devices
  - Smoke alarms modified for analog output representative of all sensor designs
  - Mechanical heat detectors
  - Residential sprinklers (tell-tale)
  - CO, aspirated, other emerging technology as identified
- Instrumentation
  - Temperature
  - Smoke
  - Gasses (CO, $CO_2$, $O_2$, FTIR?)
  - Purser Tenability Criteria

## Work Plan (2)

- Test Sites
  - Donated homes (Orange Co, CA possible first)
  - Military bases?
  - Asked Fairfax CO Fire
  - Purchased manufactured home at NIST

## General Schedule

| Task | Schedule |
|---|---|
| 1 | Months 1-3 |
| 2 | Months 1-3 |
| 3 | Months 1-3 |
| 4 | Months 1-3 |
| 5 | Months 3-6 |
| 6 | Months 3-6 |
| 7 | Months 3-6 |
| 8 | Months 3-6 |
| 9 | Months 6-12 |
| 10 | Months 6-12 |
| 11 | Months 12-15 |
| 12 | Months 15-21 |
| 13 | Months 21-24 |
| 14 | Months 23-24 |
| 15 | Months 23-24 |