

“The Proposed National Construction Safety team Act”

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Introduction. When disaster strikes we, as a nation, have learned to mobilize emergency response teams to effect search and rescue and to mitigate the immediate consequences. If criminal wrongdoing is suspected, the FBI and/or the BATF spring into action. If an accident occurs involving interstate commerce, the National Transportation Safety Board (NTSB) takes jurisdiction and conducts a thorough investigation to determine the probable cause, derive lessons learned and to forward its recommendations to the Department of Transportation. However, when a major building collapses, a major fire or industrial incident or natural disaster occurs, or a terrorist attack occurs such as on September 11, 2001, there is no “NTSB”-like responsibility. No one has the responsibility, the technical competencies or resources dedicated, to:

1. Conduct **an** investigation to determine probable technical cause, and review it in the context of current practice and codes and standards,
2. Derive the lessons learned,
3. Produce the technical basis for needed changes or improvements to practice or standards and codes.
4. Maintain a repository of data on such incidents and lessons derived therefrom, and
5. Issue advisories to appropriate public- and private-sector bodies to reduce the future **risks** of such events.

This paper discusses some actions taken since September 11, 2001, to address this need.

Background. Immediately following 9/11, we at the Building and Fire Research Laboratory (BFRL) and the National Institute of Standards and Technology (NIST), like everyone else, put our heads together to determine our response to the obvious question, “what can we do?” National attention, as you recall initially was riveted on the rescue and recovery efforts.

Security was at an all time high. Access to the sites in New York and Washington, DC, were tightly restricted. Due to the initial military and FBI presence, even the Federal Emergency Management Agency (FEMA) staff had a difficult time getting access to the site for anything other than the immediate needs associated with rescue and recovery. FEMA was in charge of the recovery. Also, based on its mitigation efforts over the years, FEMA has evolved a protocol known as the Building Performance Assessment for moving in following a natural disaster – earthquake, hurricane, tornado, flood - to derive lessons and gather information relevant to their responsibilities for recovery and mitigation. Thus, following initial discussions, which began on 9/11 between FEMA and American Society of Civil Engineers (ASCE), a Building Performance Assessment Team was established. It was sponsored by FEMA and the Structural Engineering Institute of ASCE and a large number of organizations. A number of you here and at NIST, either participated in or otherwise assisted with the resulting studies. The 26-member team

initiated field activity early in October, nearly a month after the event, and presented its final report at a Congressional Hearing in May of 2002.

This team did a magnificent job considering the circumstances under which they had to operate – very limited funding, authority, and time. Their report entitled, *World Trade Center Building Performance Study: Data Collection, Preliminary Observations and Recommendations*, is a highly valuable resource. “It presents observations, findings, and recommendations regarding the performance of buildings affected by the September 11 attacks on the WTC Towers in New York City.” It also “describes the structural and fire features of the affected buildings and their performance in response to the terrorist attacks.” However, the title says it all, it is *apreliminary* report. The team was not empowered with the time, resources or authority to answer the many questions raised. Consequently, the team was unable to offer recommendations to changes in practice, standards or codes. They lacked the resources and authorities necessary to examine or analyze all of the steel, to explore the rubble, or to study the design, construction, operation and maintenance of the WTC buildings, to interview survivors or families of victims regarding the evacuation and rescue efforts, to study the performance of the building systems, etc., and many other details that need to be examined to come up with definitive findings and recommendations.

Following the Kansas City Skywalk collapse in 1981 and the subsequent NIST-led investigation, Congress amended the NIST Organic Act with section 7 as follows:

Structural Failures [P.L. 99-73, Sec. 7; 15 U.S.C. 281a]

“The National Institute of Standards and Technology, on its own initiative **but only after consultation with local authorities**, may initiate and conduct investigations to determine the causes of structural failures in structures which are used or occupied by the general public. **No part of any report resulting from such investigation shall be submitted as evidence or used in any suit or action for damages arising out of any matter mentioned in the report.**”

Note the sections in **bold** say in essence, NIST can go in only when invited, and its report cannot be used in litigation. Unfortunately, this provision carried with it no resources; it was an “unfunded mandate.” Thus, even though section 7 appears to give NIST authority to carry out a WTC investigation, the accepted practice of FEMA BPATs, and NIST resource constraints effectively blocked, at least initially, any attempt on our part to launch such an investigation on our own.

Nonetheless, we persisted, and recognizing the ultimate need for a more thorough investigation and associated research to get to the bottom of the many questions raised by the attacks on the WTC Towers, we proceeded to develop what we have come to call the NIST Response Plan. This Plan was introduced publicly first at a Civil Engineering Research Foundation (CERF)-sponsored conference in October of 2001, and in subsequent months presented to over **40** audiences in the public and private sector.

The Response Plan was conceived as a four- to five-year, public-, private-sector effort that involves three largely simultaneous programs: a \$16 million, two-year long *Investigation* of the

WTC collapses, a four year *R&D* program and an ongoing *Dissemination and Technical Assistance* program. The purpose of the *Investigation* of the WTC disaster is to build on the excellent work done by the FEMA-sponsored Building Performance Assessment study to answer the many questions it raised, plus some others and to derive lessons learned for practice, standards and codes. The *R&D* program consists of some 11 projects in three main areas – structural fire response, human behavior and emergency response, and building vulnerability reduction. The purpose of this program is to develop the essential technical underpinnings for any proposed changes to standards, codes or practice resulting from the investigation. The *dissemination and technical assistance* program involves a number of leading national organizations in construction related fields to assure that the work done in the other two elements of the Plan are on target and that their results get effectively and efficiently into use. (A current version of the Plan is viewable at <http://wtc.nist.gov>)

In the fall and winter of 2001-2002, we had a series of briefings for Congressional staff on what we were thinking and doing about 9/11. In those meetings, the issue of investigative authority came up repeatedly and the analogy to the NTSB arose, prompting staff to request us to outline how such an entity might look. In the following weeks, we drafted a preliminary paper on the subject and simultaneously commissioned a former NTSB official to develop a more thorough white paper on the subject. These efforts led to hearings by the House Science Committee and subsequently to HR 4687, which was introduced by Chairman Sherwood Boehlert. This bill was passed overwhelmingly by the House on July 12, 2002. A similar bill introduced by Senator Clinton of New York awaits Senate action which is expected this month.

HR4687: National Construction Safety Team (NCST) Act. So what would HR4687 do and make possible?

Modeled after the National Transportation Safety Board, the NCST bill would give the Director of the National Institute of Standards and Technology responsibility to dispatch teams of experts within 48 hours after major building disasters. The legislation would give NIST a clear mandate to:

- Establish teams consisting of at least one NIST employee and other experts who are not NIST employees;
- Establish the likely technical cause(s) of the building failure;
- Evaluate technical aspects of evacuation and emergency response procedures;
- Recommend specific improvements to building codes, standards and practices;
- Recommend research and other appropriate actions needed to improve structural safety of buildings, and improve evacuation and emergency response procedures, based on findings of the investigation;
- Make final recommendations within 90 days of completing an investigation.

The bill would give **NIST** and the teams comprehensive investigative authorities similar to those of the NTSB, to:

- Access the site of a building disaster;
- Subpoena evidence;
- Access key pieces of evidence such as records and documents;

- Move and preserve evidence

The bill contains provisions to ensure that the NIST team investigations will not impede ongoing search and rescue efforts and will be coordinated with other agencies with authorities over the site, and that open and effective communications are maintained with the public and those affected by the failure. The bill would authorize the NIST Director to hold hearings to take testimony relevant to a team's investigation. The bill would require the establishment of a standing advisory committee to oversee implementation of the act **and** to evaluate the team's duties. The bill specifically would apply to the NIST investigation of the WTC disaster.

There are several aspects of this bill, which deserve note. First, is the question of what constitutes a "*building failure?*" The bill does not offer a specific definition. However, it is clear this legislation created as it was in the wake of September 11 is not intended to address every structural or mechanical failure in buildings or every construction accident. Rather it is intended to empower NIST to investigate failures of such consequence in terms of loss of life or risk of loss of life that changes to practice, standards or codes appear to be warranted. Looking back over the last twenty years or so, it appears that such events occur relatively infrequently, perhaps between one every one to two years.

Expert participation. The authority to engage private as well as public sector experts is viewed **as** essential so that those who know most about the issues at hand can be a part of the investigation team. Note, the legislation says only one member of each team must be a NIST employee. The intent here, as with NTSB, is to be able to get participation from the most qualified experts.

The matter **of subpoena authority** has raised some concern. It certainly did with me when it first came up. It would be nice to think that we could simply ask for information and get what we need. I suspect in many cases that may be sufficient. Yet, we have learned from our visits with the NTSB that very often a company's lawyers won't allow information to be given out unless there is a specific request, and a subpoena is the kind of request that they wish to have. That way the Corporation's Board of Directors won't be second-guessing why management provided information.

NIST has a long and trusted relationship with those it serves in industry and in the public sector. NIST impartiality and objectivity are viewed **as** among its most valued assets. **NIST** has no regulatory authority or police powers and most of us at **NIST** would like it to stay that way. The important thing about having subpoena power is how to use it. My sense is that as long as **we** use these new powers judiciously, and don't, as **NIST**, get caught up in policing those who don't respond, but leave that to the Justice Department, we'll be **ok**.

Probably the most significant aspect of the bill is that it will result in *the general and technical publics learning much more from failures/disasters* than would otherwise be possible. Many of you in this room remember the Dupont Plaza Hotel fire in San Juan, Puerto Rico in 1986. Bud Nelson led our internal study of that fire. In fact, it was the first significant application parts of Hazard 1 and what later became Bud's FPE tool. With these tools we were able to demonstrate how the fire grew so quickly and fast up the stairs from the ballroom, where it was started in

some temporarily stored furniture, and flashed through the casino fatally catching a large number of gamblers there totally by surprise. This work contributed to the support for what subsequently became the Hotel/Motel Fire Sprinkler Retrofit Act, which has led to sprinkling of most hotels and motels in the Nation. Yet, a few years later, Rolf Jensen pulled me aside one day and said, “there are a number of things about that fire that you folks did not get right, and sadly the main lessons to be learned won’t be because they came up in litigation and consequently, due to the terms of the settlements, will forever remain under lock and key.” That is the main value of this bill. It will unlock much of the information that heretofore never reached the light of day, yet is central to improving on the state of the ~~act~~, and saving lives. That is what the NTSB has done for transportation, and that is what we foresee as the main “value add” from this legislation.

Relevance to the WTC Investigation. It is not yet clear just how important this legislation will be for the planned WTC investigation. *So* far most of the organizations we have approached for data and information regarding the events of 9/11 and the background information we seek have been forthcoming in providing what we ask. Obviously, it would have made a great deal of difference to have been in a position to initiate the investigation in October of 2001, rather than in August of 2002. More steel would have been available to us as well as other physical artifacts **from** ground zero. The minds of those we would have interviewed then may have been clearer regarding their personal observations than now nearly a year later and their recall may be confused by the many new things they have read or heard subsequently.

So, what is the relevance of this bill to SFPE and to you its members? I see several aspects of value to SFPE. The bill will raise the public knowledge and understanding of fire and its complexity through the reports and coverage of the investigations and in bringing the relevance of them to the public. I think this will be good for SFPE. It will showcase the modern tools and techniques of fire protection engineering in the context of high visibility investigations which can only help to build understanding of what you do and the valuable contributions you make.

What about you as individuals? What value will this act be for you? First it will engage some of you directly in the investigations. Secondly, it will raise the bar or the level of common knowledge on which to base decisions and actions resulting from disasters, Thirdly, for those of you who are active personally in litigation, it will give you a much better informed point of departure in serving your clients.

Summary. The NCST bill would be good for the industry and for the public, enabling more effective flow of critical information and broader knowledge for the technical and lay publics for their decision-making. It should contribute to removing historic barriers to the improvement of building and fire safety standards, codes and practices. It would be good for SFPE and you individually as members.