

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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R-386c

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Forwarded to:

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SAFETY RECOMMENDATION(S)

R-81-118

The National Transportation Safety Board recently completed the final report of a special investigation of eight subway train fires on the New York City Transit Authority (NYCTA) with evacuation of passengers (NTSB-SIR-81-5); a copy is enclosed for your information.

Four of the subway train fires examined in this special investigation originated in the current collectors of R-46 cars. These current collectors had been manufactured by the firm Profabco and installed on the cars by NYCTA following an investigation of unsafe conditions on NYCTA's R-46 cars by the Urban Mass Transportation Administration (UMTA) pursuant to Section 107 of the National Mass Transportation Assistance Act of 1974. Problems with the original current collectors on NYCTA's R-46 cars were identified by UMTA as an unsafe condition for which a corrective action plan was required. However, NYCTA's installation of the new Profabco current collectors was not in accordance with the corrective action plan approved by UMTA, nor was this change submitted to UMTA in advance as required.

In its Safety Effectiveness Evaluation of Rail Rapid Transit Safety (NTSB-SEE-81-1, January 1981), the Safety Board found UMTA's Section 107 investigative authority unwieldy primarily because it requires the existence of an unsafe condition as a prerequisite to investigation. This restriction operates, in effect, as a "Catch-22" because it is extremely difficult to make a determination that an unsafe condition exists without first investigating it. However, UMTA's Section 107 authority is so narrowly-defined that it does not permit UMTA to investigate a suspected safety problem to determine whether or not a condition is, in fact, unsafe. In its evaluation, the Safety Board noted that UMTA's investigation of unsafe conditions of NYCTA R-46 subway cars was the only time this authority had been used since Section 107 was enacted in 1974. UMTA also recognized the limitations of its Section 107 authority and had been seeking, before the Department proposed its repeal, the authority to establish investigative procedures that would clarify this function.

UMTA's investigation of the problems of NYCTA's R-46 subway cars was the only test of its Section 107 authority. In most respects, it operated well and resulted in the identification of serious safety problems, the development of a corrective action plan, and implementation of the plan with UMTA's direct approval and oversight. However, this oversight by UMTA broke down in one critical area -- the current collector problems. UMTA approved NYCTA's planned corrective actions for the current collectors but failed to determine precisely what actions NYCTA was taking. If UMTA had monitored and evaluated NYCTA's corrective actions for the current collector as carefully as it had monitored actions to correct the other more serious problems identified in the R-46 car, the four current collector fires might have been prevented.

With the exception of the current collector problem, UMTA's exercise of its Section 107 authority did operate as it was intended--to assure the correction of unsafe conditions which create a serious hazard of death or injury. In a July 22, 1981 letter to the Secretary of Transportation, the Safety Board expressed its views on the Department's proposal to repeal Section 107:

...we cannot agree that this Federal investigative authority has led to "an intrusive role in rail transit safety." In fact, as the Safety Board's evaluation noted, the Urban Mass Transportation Administration has exercised its authority under Section 107 on only one occasion, and that investigation identified serious safety problems in federally-funded R-46 transit vehicles. These results certainly benefited the local transit authority, the safety of its passengers, and the taxpayers' investment in rail rapid transit. In any case, it is our view that repeal of Section 107 would not relieve the Department of its responsibility to the public to insure that the rail rapid transit systems which it funds with taxpayers' dollars, and whose use it encourages, operate safely. It would only make it more difficult for the Department to fulfill its safety oversight responsibility.

One of the reasons given for UMTA's proposal to repeal Section 107 was that it overlaps or duplicates the authority of other Federal agencies such as the National Highway Traffic Safety Administration (NHTSA), the Federal Railroad Administration (FRA), and the Safety Board. In July 1981, the UMTA Administrator wrote to NHTSA, FRA, the Federal Highway Administration, the U.S. Coast Guard, the Occupational Safety and Health Administration, and the Safety Board to solicit information as to the legislative authority and willingness of those agencies to assume responsibility for investigating unsafe conditions in federally-funded mass transit systems. The Safety Board is aware that in some areas of mass transit other Federal agencies have investigative authority which overlaps or duplicates UMTA's Section 107 authority. For example, NHTSA has the authority to investigate and recall buses for safety defects, FRA has regulatory and investigative authority in light rail and commuter rail transit, and the U.S. Coast Guard has regulatory and investigative authority over ferryboat operations. In rail rapid transit, however, no other Federal agency has the authority to conduct extensive safety oversight. While the Safety Board investigates certain rail rapid transit accidents and performs occasional studies, its oversight capabilities are limited. The Safety Board does not have (nor does it seek) the authority for comprehensive and systematic safety oversight in rail rapid transit.

Investigative authority is an important and valuable safety oversight tool. While Section 107 provides that tool to UMTA, its authority is too narrow in that the existence of an unsafe condition creating a serious hazard of death or injury is a prerequisite to

investigation. This tool would be far more effective if it were directed to investigation of accidents and incidents or any condition which affects or could affect passenger safety for the purpose of determining whether or not an unsafe condition exists. This authority, coupled with the existing Section 107 authority to require submission of a corrective action plan and implementation of the approved plan under direct oversight, would provide one means of assuring the resolution of safety problems before they result in accidents. It is particularly important for UMTA to exercise an oversight role and maintain adequate investigative authority in this area because of its role in providing Federal financial assistance to rail rapid transit authorities. Safety must be a major area of consideration in providing Federal funding to rail rapid transit systems. Therefore, as a result of this special investigation, the Safety Board has recommended that the Secretary of Transportation:

Propose legislation to amend Section 107 of the National Mass Transportation Assistance Act of 1974 to substitute, for the Secretary's authority to investigate unsafe conditions in federally-funded mass transit systems, the authority to investigate any mass transit accident or incident in such systems, or any condition which affects or could affect the safety of passengers. (Class II, Priority Action) (R-81-117)

The Safety Board's special investigation also revealed that installation of the Profabco current collectors created a more serious hazard than the hazard it was intended to correct. The Profabco current collectors were installed without prior testing, even though Profabco had no previous experience in the design and manufacture of current collectors and its units had never been tried. Postaccident testing showed that the Profabco units burned with more fire and more smoke than the current collectors they replaced.

One of the recommendations made by the Safety Board as a result of its public hearing and evaluation of rail rapid transit safety was that UMTA:

Establish a process, based upon testing and evaluation in accordance with such criteria as the Administration shall establish, for the certification or identification of specific products and materials used in the construction of rail rapid transit cars as meeting minimum safety standards or guidelines, and provide this information to rail rapid transit authorities on a regular basis. (Class II, Priority Action) (R-81-11)

This recommendation was made because there are no national standards, specifications, criteria, or guidelines for the safety performance of equipment and materials used in subway cars. Consequently, each rail rapid transit authority must either accept product information supplied by the manufacturer or undertake the costly task of performing its own testing or engaging a private firm to perform the testing. The process is further complicated by the absence of safety standards which makes it necessary for each individual transit authority to conduct the research necessary to identify acceptable levels of safety performance for each product or to rely on "judgmental analysis" to determine its own safety standards.

In its evaluation report, the Safety Board cited the experience of San Francisco's Bay Area Rapid Transit District (BART) in attempting to identify suitable materials to replace the flammable and toxic materials which had been involved in the fatal subway train fire in the Transbay Tube on January 17, 1979. Before the fire occurred, BART had already selected a replacement material for its subway car seats using "judgmental

analysis." After the fire, BART re-examined its selection and found that the material previously selected would not adequately resolve the problems of flammability and toxicity. Both BART and the Metropolitan Atlanta Rapid Transit Authority indicated that information supplied by manufacturers was not always accurate or reliable. BART examined a materials information bank developed for UMTA by DOT's Transportation Systems Center and found that the information available was not sufficient to guide its selection. BART eventually engaged a firm to conduct a fire testing program for a variety of materials but still encountered numerous difficulties which complicated its search for a satisfactory material.

In the end, BART had to rely again on "judgmental analysis." A subsequent analysis performed by the staff of the California Public Utilities Commission, a State agency that oversees BART safety, found that, BART's best efforts notwithstanding, the material that BART ultimately selected and later retrofitted in all of its subway cars posed flammability and toxicity problems. BART's experience is just one example of individual efforts by transit authorities to identify acceptable safety performance levels and to test products and materials to determine whether they meet the performance levels specified with little or no assurance that their efforts and the resources and time devoted will be sufficient to produce a satisfactory result.

A certain level of testing by individual transit authorities--for example, preoperational testing of a new rail rapid transit system or a new subway car--is necessary to determine how the system as a whole and its subsystems will perform. However, basic testing of individual products and materials should not have to be duplicated by each transit authority individually or to depend upon the availability of resources or other factors. A safety certification process would be both more cost-efficient and more safety effective. Such a process could provide for the identification of products which, based upon independent testing, meet or exceed levels of safety performance which are considered desirable. This type of process is not new; it is used for safety and other purposes in a variety of areas including consumer appliances, motor oils, and household furniture.

While safety standards may be made compulsory through statutory or regulatory action by State or Federal authorities, a product safety certification process can be entirely voluntary; desirable safety performance levels can be identified without being required, and the submission of products by manufacturers for independent testing--in accordance with specified uniform testing methods and procedures based on research--can be left to the manufacturer. Even a voluntary safety certification process would provide valuable information to transit authorities about the basic safety performance of alternative products and materials without the need for fundamental testing on a site-by-site basis. While the equipment in many cases may be site-specific, safety performance needs are national and even international in application.

A voluntary safety certification process would not necessarily have prevented NYCTA's introduction of untested equipment into passenger service, but it could have made available information about alternative products or made available standard testing methods and procedures which might have contributed to a different result.

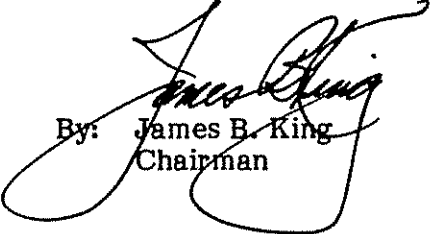
Therefore, as a result of this special investigation, the National Transportation Safety Board recommends that the Urban Mass Transportation Administration:

Establish procedures to monitor, evaluate, and assure that approved plans to correct unsafe conditions are carried out by transit authorities and that no changes in the plans are approved or made without adequate evaluation. (Class II, Priority Action) (R-81-118)

In addition, the National Transportation Safety Board reiterates the following recommendation, which originally was issued on February 11, 1981, to the Urban Mass Transportation Administration:

Establish a process, based upon testing and evaluation in accordance with such criteria as the Administration shall establish, for the certification or identification of specific products and materials used in the construction of rail rapid transit cars as meeting minimum safety standards or guidelines, and provide this information to rail rapid transit authorities on a regular basis. (Class II, Priority Action) (R-81-11)

KING, Chairman, DRIVER, Vice Chairman, GOLDMAN, and BURSLEY, Members, concurred in these recommendations. McADAMS, Member, did not participate.

By: 
James B. King
Chairman