

ENFORCEMENT OF CONTROL OF INTERSTATE MOTOR CARRIER NOISE: A FEDERAL PERSPECTIVE

Henry E. Seiff
Bureau of Motor Carrier Safety,
U.S. Department of Transportation

The U.S. Bureau of Motor Carrier Safety promulgates and enforces a series of regulations designed to increase the safety of interstate commercial vehicle transportation. This bureau is responsible for the administration of the Federal Motor Carrier Safety Regulations and that part of the Hazardous Materials Regulations that concerns highway transportation of certain dangerous or potentially dangerous commodities.

In 1970, the bureau began making rules that would lead to a limitation on the noise level within the cabs of commercial vehicles (1). This was brought about because of the concern that high noise levels could cause driver fatigue and, in the long run, degrade hearing acuity, thus affecting the safe operation of the vehicle. Further investigation revealed little evidence that noise levels in the range experienced by truckers would cause sufficient fatigue to measurably affect the safe operation of commercial vehicles. However, there was no doubt that exposure to noise levels in excess of those specified by the Occupational Safety and Health Administration (90 dBA for an 8-hour exposure) would in the long run affect the driver's hearing.

Substantial tests were conducted to correlate a fast and easy interior noise test of the noise exposure the driver was likely to sustain during as much as a 10-hour driving period without rest. Subsequently, a final rule setting a limit of 90 dBA (only coincidentally the same number set by OSHA for an 8-hour exposure) was set in late 1973.

The test is performed with the sound-level meter held 6 in. (15 cm) from the driver's right ear while the stationary vehicle is operated at wide-open throttle in neutral against the engine speed governor. The standard went into effect on October 1, 1974, and covered vehicles built after that date. Older vehicles are required to meet this maximum noise standard by April 1, 1975.

Under the authority of the Noise Control Act of 1972, the Secretary of Transportation must be consulted before publication of any standards concerning motor carrier noise emissions (exterior noise standards). In addition, after the publication of such standards by the Environmental Protection Agency, the secretary must promulgate regulations to ensure compliance with all standards promulgated by EPA and must carry out those regulations through the use of safety enforcement powers under the Interstate Commerce and Department of Transportation acts. The part of the Interstate Commerce Act that refers to motor carriers (Part II) is the primary responsibility (within the Department of Transportation) of the Bureau of Motor Carrier Safety, and that bureau was therefore delegated the exterior noise enforcement authority. The bureau has been deeply involved in working with EPA on the Interstate Motor Carrier Standards, which were published October 29, 1974.

By mutual agreement between the transportation department and EPA, an effective date of October 15, 1975, was set for the new EPA standard. We believe this provides adequate time for the rule-making procedure leading to the publication of enforcement standards.

ENFORCEMENT PROCEDURES

The enforcement procedures used by the Bureau of Motor Carrier Safety represent a long-standing and well-reasoned method of ensuring compliance with both Federal Motor Carrier Safety Regulations and the Hazardous Materials Regulations of the U.S. Department of Transportation. The enforcement of both interior and exterior noise standards will fit into the present compliance activities so that resources can be best used for all responsibilities.

The bureau employs approximately 123 safety investigators and 27 other professionals (regional directors, regional hazardous materials and accident investigation specialists) in 9 regions throughout the country. They are responsible for the safety compliance of approximately 160,000 motor carrier operators, ranging in size from single-vehicle operators to operators of large fleets such as United Parcel Service, Leaseaway, and Consolidated Freightways.

To effectively enforce both safety and noise standards, we continue to stress education and voluntary compliance. Safety investigators are available to assist any motor carrier, trade organization, union, or other group in setting up safety programs and to provide information concerning the federal safety regulations.

The bureau encourages state authorities to adopt the Federal Motor Carrier Safety Regulations and assists them in both training and enforcement. We hope that cooperative programs of the bureau and the EPA will be effective in convincing states and localities to adopt the new Motor Carrier Noise Regulations and make them effective locally. We expect that a large percentage of the enforcement of these regulations will be done by state and local authorities.

The field staff conducts a well-organized enforcement program. Safety surveys at the carrier's place of business reveal inadequate safety practices, record-keeping violations, and thus lax safety compliance by the carrier. Random road checks allow us to inspect vehicles and, if necessary, to put them "out of service" on the spot. These road checks are our leads to noncomplying carriers.

Most of our interior and exterior noise checks are made on the highways. Figure 1 shows a typical road check site. A weigh station or other large area on the side of the road is usually chosen. Because they do not have authority to stop motor vehicles, the safety investigators work together with state authorities much of the time.

The investigator usually selects a vehicle that appears not to be well maintained, for all vehicles cannot be inspected. After the truck has been weighed, the safety

Figure 1. Road check site.



Figure 2. Noise-detection device.



Figure 3. Insulation placed under truck cab.



Figure 4. Installation of acoustic headliner.



Table 1. Interior noise levels of trucks tested in 1973.

Testing Agency	Sound Level (dBA)	Number of Trucks	Percentage of Trucks
Bureau of Motor Carrier Safety	≤90	61	79
	91-92	9	12
	>92	7	9
Leaseway	≤90	76	43
	91-92	36	20
	>92	67	37
Bureau, Leaseway, AIRCO, and New York Motor Truck Association	≤90	194	57
	91-92	53	16
	>92	92	27

investigator asks the driver to pull aside for a safety inspection. At this point the safety investigator checks the driver's papers, including log sheets, medical certificate, and shipping papers. The entire vehicle is then checked from front to rear—brakes, lights, fifth wheel, air and electrical hoses, wheels, tires, suspension, and other safety accessories.

Both an interior and a stationary exterior noise check are included as part of this safety inspection procedure. Of course, we will have to be sure that we have an adequate site for noise measurement before we begin. If 2 safety investigators are available, they can check both interior and exterior noise simultaneously, for the procedures are nearly identical for stationary tests. The addition of the noise check should not be particularly time-consuming, except setting up the proper site at the beginning of the day and ensuring that each vehicle is properly situated within the site when the check is made.

The safety investigators will be prepared to do pass-by inspections also. But, since they do not have the power to stop vehicles, pass-by tests are expected to be a small portion of the overall total. They will, of course, conduct tests in response to complaints from drivers or citizens. And they will perform the visual tire and exhaust system checks set forth by EPA as part of the normal vehicle inspection procedure.

During the inspection, the safety investigator fills out a form listing the defects found. Violations of the interior and exterior noise regulations are recorded on this form in the same manner as any other violation. Violations of the Federal Motor Carrier Safety Regulations and the Hazardous Materials Regulations are criminal, not civil offenses. The bureau has the authority to assess civil forfeitures to carriers for the absence of required documents, false documents, and certain other record-keeping violations, but equipment violations, such as those found in road checks, must generally be brought to criminal court. Penalties for violations of Federal Motor Carrier Safety Regulations range from \$100 to \$500 per count for the first count, and \$200 to \$500 for additional counts; each day of a continuing violation is a separate offense.

The penalty provisions of the Noise Control Act of 1972 provide for a maximum fine of \$25,000 per count, with no minimum specified. Here, too, violations are considered to be criminal offenses:

As a practical matter, we have generally found it neither equitable to the carrier nor worthwhile to the government to ask the U.S. Department of Justice to prosecute a carrier for one violation. Before enforcement action is initiated by the bureau, a pattern of violations is documented. We prosecute carriers who have shown that they are not willing or able to abide by the regulations. This is an important matter to consider in the enforcement of both interior and exterior motor carrier noise standards by the federal government. In most cases, the carrier will receive a copy of the MCS-63 form and be required to make necessary repairs to the vehicle, including control of noise, within 15 days. In only a few cases will court action likely be initiated, and then only after a pattern of violations is found. State and local authorities that adopt the federal regulations can complement our efforts not only by inspecting far more vehicles than our limited field staff can but also by issuing citations, which may be more helpful as a reminder to the carrier in the short run than federal inspectors are.

NOISE INSPECTIONS TO DATE

By the end of 1974, the Bureau of Motor Carrier Safety had issued approximately 100 type 2 sound-level meters and calibrators to its field staff. Although not every safety investigator had a meter as yet, enough were available to undertake some sampling of interior noise. Since the standard is only in effect for new trucks at this time, we initiated a program of providing complementary noise checks of older vehicles until the standard took effect April 1, 1975. Not only did these early noise checks provide data but they also provided the carrier with advance information on how his trucks were doing before noise levels higher than 90 dBA became a violation of the federal regulations.

Interior noise checks by the bureau of 233 trucks during October 1974 revealed that the interior noise levels were 90 dBA or lower for 209 or 90 percent of the vehicles, between 91 and 92 dBA for 17 or 7 percent, and higher than 92 dBA for 7 or 3 percent. This low percentage of potential violations is interesting in view of the concern being shown by the motor carrier industry about the supposed large number of trucks that would need to be modified to meet the requirements. Results of tests made in 1973 by the bureau, Leaseway, Airco, and the New York Motor Truck Association showed that 57 percent clearly passed the test (Table 1). A further study of those data indicated that the poor showing was primarily due to the large amount of data from the Leaseway Corporation, which showed only 43 percent of its vehicles clearly passing and 37 percent in clear violation. The bureau data showed 79 percent of the vehicles passing and only 9 percent in clear violation, which is reasonably close to the 1974 data.

PUBLICITY CONCERNING MOTOR CARRIER NOISE STANDARDS

As indicated earlier, the Bureau of Motor Carrier Safety relies in large part on a program of voluntary compliance by motor carriers. And this requires getting information to all motor carriers and others concerned with safe highway movements of commercial vehicles. The bureau undertakes information dissemination within its limited budget. Press releases are published on all rule-making actions. Personnel are made available to speak before industry groups whenever possible. The field staff spends much of its time meeting with and educating interested groups. The trade press is also quick to pick up regulatory efforts of wide interest, such as noise-related work.

The Bureau of Motor Carrier Safety is planning to cooperate with the Environmental Protection Agency in publicizing the Interstate Motor Carrier Noise Emission Standards and Enforcement Regulations.

The bureau has just completed a slide presentation for use by its field staff, trade organizations, and others to help carriers get started in quieting truck cab interior noise. Many professional organizations, of course, offer the industry valuable service in this area, but many carriers will try to do the work themselves. The presentation shows a relatively simple way of locating noise sources within the truck cab and gives some suggestions on how to go about quieting them with readily available materials and a little common sense.

Figure 2 shows the noise detection device, which consists of a sound-level meter that is given a directional response by the addition of an ordinary funnel over the microphone. A sound-level meter that meets at least ANSI type 2 requirements can be used both for locating noise sources and for making the interior and exterior noise tests. A less expensive meter is perfectly acceptable for locating interior noise sources but may not be accurate enough to ensure the carrier that the vehicle complies with the federal standards. The bureau borrowed the idea of the funnel from Stemco Manufacturing Company.

The truck used in making the slides for the presentation is a 17-year-old tractor with more than 700,000 miles (1 120 000 km) on it. The initial interior reading was 93 dBA. The noise-locating device was moved about the cab, near possible sources of noise, until substantial increases in noise level were found. We found it to work best when it was set on the 100 to 110-dBA range and when the engine was set at maximum governed speed in neutral and the doors were closed as set forth in the regulations. The meter and funnel can indicate relatively quickly which of the potential noise sources let the noise into the cab. In the truck tested, we found that holes around the pedal linkages did not serve as noise sources. The sealing area around the shift lever at the top of the "doghouse" was one area where sound was pouring into the cab. It was initially sealed with a sandwich made of fiberglass insulating material and dense, open-cell urethane foam. The fiberglass was used for fire resistance. Figure 3 shows the installation of the sandwich under the cab and also shows that a more professional job could be done by removing a rubber mat and putting the

sandwich, or a specially treated fire-resistant dense foam, in place of the jute backing originally installed.

This installation failed to reduce the noise level to 90 dBA or lower. An opening in the right side of the doghouse, used to check oil, was located as a noise source and sealed. A search around the cab led to the C-pillars behind the driver, where the meter read about 5 dBA higher than in the surrounding area. A dense foam sheet was then applied to the C-pillars. The next noise source found was the roof itself, which was resonating sound in the same manner as the C-pillars. An acoustic headliner was installed underneath the standard fiberboard headliner (Fig. 4). Available waffled open-cell carpet backing was used. The truck was then quieted to the required 90 dBA.

This slide presentation should be helpful to the industry in giving some idea of how to go about a program of checking and quieting present equipment. This procedure may be helpful for gross noise sources, but professional assistance may be more prudent for large fleet operators, particularly if the fleet consists of a mix of vehicle makes and models.

REFERENCE

1. R. R. Mackie, J. F. O'Hanlon, and M. E. McCauley. A Study of Heat, Noise, and Vibration in Relation to Driver Performance and Physiological Status. Human Factors Research, Inc., Goleta, Calif., 1970.