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PART IV

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ENVIRONMENTAL  
PROTECTION  
AGENCY

BUSES

Noise Emission Standards for  
Transportation Equipment

**ENVIRONMENTAL PROTECTION  
AGENCY**

[ 40 CFR Part 205 ]

1977-09-31

**BUSES**

**Noise Emission Standards for  
Transportation Equipment**

**AGENCY** Environmental Protection Agency.

**ACTION** Notice of proposed rule-making

**SUMMARY** This notice proposes interior and exterior noise emission standards for buses having a Gross Vehicle Weight Rating (GVWR) in excess of 10,000 pounds. This action is being taken pursuant to the Noise Control Act of 1972. Compliance with the proposed standards should, on the average, reduce the exterior noise generated by buses under maximum acceleration by 5 dBA and the noise inside buses under maximum acceleration by 7 dBA. The Agency assessed the health and welfare impact of bus noise control by evaluating three intrusive effects of bus noise, namely, sleep awakening, sleep disturbance and speech interference. The lowering of exterior bus noise to the proposed levels will result in a 33-49 percent reduction of these intrusive noise effects. The health and welfare effects of the reduction of noise inside buses were assessed in terms of potential passenger and operator hearing loss risk and passenger speech interference. Compliance with the proposed standards for interior bus noise will result in a 43 percent decrease in passenger speech interference impacts and a substantial reduction in potential hearing loss risk for both bus passengers and bus operators.

**DATES:** The official docket (Docket Number ONAC 77-6) for the proposed Bus Noise Regulation will remain open for the submission of comments until 4:30 p.m., 90 days from date of publication. At that time all materials submitted for the record, including transcripts of all public hearings, will become part of the official record. Public hearings will be held on October 25, 1977, commencing at 9 a.m. in the Quality Inn Capitol Hill, 415 New Jersey Avenue N.W., Washington, D.C. 20001, and on November 1, 1977, commencing at 9 a.m. in the St. Francis Hotel, 335 Powell Street, San Francisco, Calif. 94119.

**ADDRESSES** Persons submitting written comments to the docket should write to Director, Standards and Regulations Division, Office of Noise Abatement and Control (AW-471), Attn: Bus Noise Regulation Docket Number ONAC 77-6, U.S. Environmental Protection Agency, Washington, D.C. 20460.

It is requested that comments to the docket be submitted with five (5) copies, if practicable.

Persons wishing to present their views at either public hearing should also notify the Director, Standards and Regulations Division, at the above noted

address, no later than October 17, 1977, of their intention to make a statement so that presentations may be scheduled. Concerning presentations at the hearings, it is requested that presentations be limited to 20 minutes in length to enable all pre-scheduled persons an opportunity to speak and to permit a question and answer period following each presentation. Persons who have not given notice of their intent to speak will be heard following the practicable, five (5) copies of their statement prior to the hearing date to the Director, Standards and Regulations Division.

All information received, which is not identified as company proprietary in nature, will be open to public inspection and copying during normal business hours at the U.S. Environmental Protection Agency Public Information Reference Unit, Room 2022, 401 M Street SW., Washington, D.C. 20460.

**FOR FURTHER INFORMATION RELATED TO THE PROPOSED STANDARDS CONTACT:**

Mr. Christopher A. Kouts, Project Officer—Buses, Standards and Regulations Division, Office of Noise Abatement and Control (AW-471), U.S. Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460 (703-557-7668).

**TO RECEIVE COPIES OF THE PROPOSED REGULATION DRAFT ENVIRONMENTAL IMPACT STATEMENT OR THE BACKGROUND DOCUMENT FOR THE PROPOSED REGULATION CONTACT:**

Mr. Charles Mooney, EPA Public Information Center (PM-215), Room 2194D, U.S. Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460 (202-755-0717).

**SUPPLEMENTARY INFORMATION:**

**1.0 INTRODUCTION**

Through the Noise Control Act of 1972, Pub. L. 92-574, 86 Stat. 1234 et seq., 42 U.S.C. 4901 et seq., the "Act", Congress established a National policy "to promote an environment for all Americans free from noise that jeopardizes their health and welfare." In pursuit of that policy, Congress stated, in section 2 of the Act, "that, while primary responsibility for control of noise rests with State and local governments, Federal action is essential to deal with major noise sources in commerce, control of which requires national uniformity of treatment."

As part of this Federal action, section 5(b)(1) of the Act requires the Administrator after consultation with appropriate Federal Agencies, to publish a report or series of reports "identifying products or classes of products, which in his judgment are major sources of noise." Pursuant to section 5(b)(1) the Administrator published in the Federal Register (40 FR 23305, May 28, 1975) a report which identified "buses" as major sources of noise.

Section 6 of the Act requires the Administrator to publish proposed regulations for each product which is identified

or which is part of a product class identified as a major source of noise, where in his judgment noise standards are feasible. Such regulations are to include standards that set limits on the noise emissions from such an identified new product "requisite to protect the public health and welfare, taking into account the magnitude and conditions of use of such product alone or in combination with other noise sources", the degree of noise reduction achievable through the application of the best available technology, and the cost of compliance."

Section 6(d)(1) of the Act specifies that the manufacturer of each new product shall warrant to the ultimate user and each subsequent purchaser that the product is designed, built and equipped so as to conform at the time of sale with the regulation.

Under section 6(e)(1), no State or political subdivision thereof may adopt or enforce any law or regulation which sets a limit on noise emissions from new products regulated by EPA, unless such law is identical to the applicable EPA regulation. The requirement to be "identical" applies to the standard and those elements of the measurement methodology which define the standard. These must be identical to those in the EPA regulation. However, other elements of the State or local law need not be identical. Such elements include the list of persons subject to the regulations, sanctions, enforcement procedures and correlatable or equivalent "short tests" used for enforcement purposes.

Section 6(e)(2) of the Act specifies that nothing in section 6 shall preclude or deny the right of any State or political subdivision thereof to establish and enforce controls on environmental noise and sources thereof through the licensing, regulation, or restriction of the use, operation, or movement of any product or combination of products, such controls which are reserved to State and local authority under this section include, but are not limited to, the following:

1. Controls on the time of day during which products may be operated.
2. Controls on the places or zones in which products may be used.
3. Controls on the noise emission level of products during use and operation that are enforceable against the consumer.
4. Controls on the number of products which may be operated at the same time.
5. Controls on noise emission level from the properties on which products are used.
6. Controls on the licensing of products.
7. Controls on the manner of operation of products.

State and local time-of-sale noise emission regulations applicable to products which are not covered by Federal regulation are in no way preempted by these regulations.

Section 10 of the Act establishes prohibited acts in relation to products for which section 6 regulations are appli-

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cable. Distribution in commerce of any new product manufactured after the effective date of regulations specified in section 6, is prohibited, unless it is in conformity with such regulations. Removal or rendering inoperative of any device or element of design incorporated into any product in compliance with section 6 regulations, other than for purposes of maintenance, repair, or replacement, prior to its sale or delivery to the ultimate purchaser or while it is in use or the use of the product after such device or element of design has been removed or rendered inoperative by any person is prohibited.

Section 11 of the Act specifies enforcement penalties for violation of any prohibited act under section 10(a), (1), (3), (5) and (6). Such penalties for first violations include a fine of not more than \$25,000 per day of violation, or imprisonment for not more than one year, or both for knowing or willful violations. The penalties double for subsequent violation.

Section 13 of the Act provides the authority for the Administrator to require a manufacturer to establish and maintain records, make such reports, and provide such information as is necessary for him to determine compliance.

Section 15 of the Noise Control Act established a process by which the Federal Government will give preference in its purchasing to products where noise emissions are significantly below those required by the Federal noise emission standards promulgated pursuant to section 6 of the Act. Accordingly, the EPA has published procedures for Certification of Low-Noise-Emission-Products (40 CFR Part 203).

For buses the specific noise emission level criteria required for Low-Noise-Emission-Product (LNEP) determination are contained in § 205.102(g) of Subpart C of the proposed regulation.

Section 16(d) grants the Administrator the authority to issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents to assist him in collecting information to carry out the purposes of the Act.

2.0 THE PROPOSED REGULATION

The proposed noise emission standards and effective dates, presented in Table 1, apply to buses while operating at maximum noise emission conditions during a low speed pass-by operating mode. The proposed exterior standard specifies an average A-weighted sound pressure level measured at a distance of 15.2 meters (50 feet) perpendicular to the center line of bus travel. The proposed interior standard specifies an average A-weighted sound pressure level measured at a height of 1.25 meters (4 feet) beside the interior seat location closest to the main body of the engine. The standard measurement procedures used to obtain the data are presented in detail in § 205.104 of Subpart C.

TABLE 1.—Proposed regulatory noise emission standards

Effective dates	EXTERIOR BUS NOISE	
	Standard	Average A-weighted sound pressure level (dBA)
Jan. 1, 1979	83	83
Jan. 1, 1983	80	80
Jan. 1, 1985	77	77
INTERIOR BUS NOISE		
Jan. 1, 1979	80	80
Jan. 1, 1983	80	80
Jan. 1, 1985	80	80

The Agency believes that the estimated health and welfare benefits from these proposed noise emission standards can be attained only if buses meet the not-to-exceed levels in Table 1 for a reasonable in-use period. At a minimum it means the standard must be met for an initial period of time and/or use, beginning on the date of the product's delivery to the ultimate purchaser. This period is described by the Agency as the Acoustical Assurance Period (AAP). It is defined as that period during which the product must meet the standard when the product is properly used and maintained. In the case of buses, the Acoustical Assurance Period is 2 years or 200,000 miles of use, whichever occurs first.

Concerning Agency enforcement of the AAP, a manufacturer must develop, pursuant to § 205.108-4 of subpart C, an anticipated increase in the noise level of its buses during the AAP. A manufacturer must take this anticipated increase in noise level, expressed in terms of a Sound Level Degradation Factor (SLDF), into account when performing tests to show compliance with the applicable standard. That is, where an SLDF is anticipated, a manufacturer must show that his product meets a level defined by the applicable standard of Table 1 minus the SLDF value.

The Administrator has determined that the proposed standards are feasible and represent those levels of noise requisite to protect the public health and welfare, taking into account the magnitude and conditions of use of such product (alone and in combination with other noise sources), the degree of noise reduction achievable through the application of the best available technology and the cost of compliance, as required by section 6(c)(1) of the Act.

EPA is unaware at this time of any bus manufacturer who would be unable to produce buses meeting the proposed standards by the specified effective dates. However, the Agency solicits the submission of such data or information during the public comment period as may refute or support this position.

The proposed regulation also incorporates an enforcement program which includes production verification, selective enforcement auditing procedures, warranty, compliance labeling and anti-tampering provisions.

The information gathered by the Agency concerning all aspects of this regulation may be found in the Background Document, the availability of which is explained in section 2.0.

3.0 BACKGROUND INFORMATION

3.1 General. The proposed regulation is another in a series of transportation equipment noise regulations to be proposed under section 6 of the Act. In arriving at the proposed regulation, the Agency carried out detailed investigations of the potential environmental and health and welfare benefits associated with the application of various noise control measures; of bus design technology, including bus manufacturing and assembly processes and available bus noise control technology; of bus noise measurement methodologies; of costs attendant to bus noise control methods; of the cost to test machines for compliance; of the cost of record keeping; and of possible economic impacts.

To meet the requirements of the Act, in considering the best available technology "requisite to protect the public health and welfare" taking into account the cost of compliance, the Agency constructed definitions of the terms "best available technology" and "cost of compliance." In doing so, the Agency carefully considered the strict language of the Act, its legislative history, and other relevant data. Based thereon, the following definitions have been established by the Administrator for the purposes of these regulations.

"Best available technology" is defined as that noise abatement technology available which produces the greatest achievable, meaningful reduction in the noise produced by buses. EPA considers that the level "achievable through the application of the best available technology" is the lowest noise level, which can be reliably predicted based on engineering analysis of products subject to the standard that manufacturers will be able to meet by the effective date, through the application of currently known noise attenuation techniques and materials. In order to assess what can be achieved, EPA has: (1) identified the sources of bus noise and the levels to which each of these sources can be reduced, using currently known techniques; (2) determined the level of overall bus noise that will result; (3) assured that such techniques may be applied to the general bus population; (4) assured that such techniques are adaptable to production line assembly; and (5) assured that sufficient time is allowed for the design and application of this technology by the effective dates of the standards.

"Cost of compliance" is defined as the cost of identifying what action must be taken to meet the specified noise emission level, the cost of taking that action, any additional cost of operation and maintenance caused by that action, and

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cost of noise testing and record keeping required by the regulation.

To determine what constitutes the best available technology and the cost of compliance, the Agency amassed information from a range of sources including: (1) studies performed by Agency personnel; (2) studies performed under contract to the Agency; (3) submissions by other Federal agencies; (4) submissions by industry; and (5) data in the available literature.

Representatives of the Agency carried out extensive interviews with key members of firms in the bus industry to gain first-hand knowledge of the industry and its products and to obtain and verify technological and financial information. Similar interviews were conducted with key persons in intercity bus companies, transit authorities, school districts, and bus industry trade associations as well as officials of various Federal agencies including the U.S. Department of Transportation.

**3.2 Product Definition.**—The Agency recognizes that there are many different types of buses commonly operated for the transportation of people and property in the United States. As a result of study and analysis, the Agency has determined that a reasonable definition for "bus" applicable to this noise rulemaking would be bus type vehicles which have a Gross Vehicle Weight Rating (GVWR) of over 10,000 pounds.

The large majority of bus type vehicles under 10,000 pounds GVWR appear to be vehicles composed of a light vehicle chassis with specialized bus body applications. The technology and characteristics of such vehicles are more akin to light vehicle terminology and characteristics than to bus type vehicles over 10,000 pounds GVWR. Accordingly, buses have been defined by the Agency as any motor vehicle with a GVWR in excess of 10,000 pounds designed for the transportation of passengers on a street or highway and includes a partially or fully enclosed engine compartment and an enclosed passenger compartment. The principal types of buses that are within this definition are those commonly referred to as school buses, transit buses, and intercity buses. There are however, other buses that meet the criteria specified by the Agency and are not typically identified in the above three types of buses. These may include airport buses and similar specialized application buses which are over 10,000 pounds GVWR. Such vehicles are also subject to these regulations. Details regarding the identification of the above vehicles for noise control regulation, their design features and functional characteristics are contained in the Background Document.

**3.3 Technology.** As explained in the Background Document, Noise level data for buses were collected by EPA from a number of sources including: (1) Submissions by manufacturers, (2) EPA sponsored testing programs at various sites throughout the United States and (3) data available in the open literature. The range of exterior bus noise levels under maximum acceleration conditions

at a position 15.2 meters (50 feet) perpendicular to the center line of travel were found to be (1) school buses 75-89 dBA, (2) transit buses 78-86 dBA and (3) intercity buses 82-87 dBA. The range of interior noise levels under maximum acceleration conditions measured at a height above the bus floor of 1.25 meters (4 feet) beside the seat location closest to the engine were found to be (1) school buses 81-89 dBA, (2) transit buses 80-90 dBA and (3) intercity buses 77-84 dBA. Diagnostic investigation showed that vehicle noise consisted of the noise radiated by the (1) engine cooling fan, (2) engine casing, (3) engine exhaust, (4) engine air intake, and (5) transmission system. Of these sources, noise radiated by the cooling fan, engine casing, and engine exhaust are the most dominant and therefore require first attention in techniques to quiet bus noise.

The results of studies performed to assess noise control techniques applicable to bus noise indicate that some vehicle design changes may be necessary to control fan and engine related noise. These changes vary in amount and type when applied to the different types of buses over 10,000 pounds GVWR. On the average, it is estimated that improved fan shrouds, increased radiator-to-fan and fan-to-engine clearances, and the use of various fan configurations can reduce fan noise by as much as 7 to 9 dBA. It is also estimated that engine casing noise can be reduced by 8 to 8 dBA through the application of acoustically absorbent material to the interior surfaces of the engine compartment. Further redesign of the engine compartment to modify the engine enclosure and acoustically treat the surfaces of the enclosure will further reduce exterior noise emissions. Finally, substantial reduction of engine exhaust noise can be accomplished by the use of improved mufflers. Current estimates indicate reductions of between 8 and 14 dBA. For some buses, the addition of larger mufflers causes relocation concerns and in some cases the loss of rear seat space. When translated into overall vehicle noise reduction, that is, a reduction of noise from a bus during a maximum acceleration measurement test, it is estimated that reduction of 8-10 dBA for all types of buses (obtained by a logarithmic aggregation of reductions in all component source noise levels) can be achieved through the application of available technology.

Related to the reduction of exterior noise levels is the concurrent reduction of interior bus noise levels, which can be accomplished with the application of some additional technology to minimize the transmission of noise from the engine and the exhaust system to the interior compartment of the bus. The principal technologies for reducing interior noise relate to the reduction of vibration transmission along with the application of absorptive material to the interior surfaces of the bus. Where the addition of sound absorptive materials to the interior of the bus may be necessary to reduce the interior noise levels to the

regulatory standard, the durability of the materials employed should be compatible with existing durability requirements already in effect for the same vehicle type. With the application of vibration isolation techniques and in some cases interior sound absorptive materials it appears to the Agency that an average reduction in interior bus noise levels of 4 to 10 dBA can be achieved across all bus types through the application of available technology.

Details describing the specific technology applications, their design features, and functional characteristics for each type of bus considered for regulation are presented in the Background

**3.4 Measurement Methodology.** The Agency desires, whenever practicable, to utilize those measurement standards and techniques voluntarily developed and in general use. However, such standards frequently were developed for non-regulatory purposes and their application to Federal rulemaking necessitates certain modifications. The EPA exterior noise measurement methodology for buses is a modification of the Society of Automotive Engineers (SAE) J366b method currently employed by many bus and truck manufacturers. The Agency's purpose in modifying the SAE J366b procedure was to provide in particular for a measurement procedure which would encompass those buses which have automatic transmissions that cannot be normally locked into a specific gear. Besides requiring a modified SAE J366b acceleration sound level test procedure, the Agency is also requiring that buses equipped with engine brakes be tested according to a specified deceleration test procedure. The Agency is pursuing this course of action because it has reason to believe that certain buses equipped with engine brakes even when properly muffled can generate noise emissions substantially above the proposed standards.

In regard to the selection of the proposed interior sound level measurement procedure, with the utilization of the same bus operational procedure as the exterior measurement procedure, a single measurement point representing the noisiest location in the bus interior has been selected for determining compliance with the interior noise standards.

In arriving at the proposed exterior and interior measurement procedures, the Agency has endeavored to arrive at simple, low cost test methods that will provide the accurate data requisite for product verification at a manufacturer's plant and for compliance testing in the field.

The Agency recognizes that situations may exist or arise where other measurement methodologies, both for exterior and for interior noise, may be just as appropriate for obtaining the required data and, for that matter may have more utilitarian use. To this end, the Agency has provided for the inclusion of other measurement methodologies where information is furnished showing

to the satisfaction of the Administrator that the data from such methodologies correlate with the data from the prescribed procedures.

#### 4.0 RATIONALE FOR STANDARDS SELECTION

In arriving at the proposed regulation, the Agency assessed a number of classification schemes which addressed the usage of different types of buses which operate in different urban and suburban environments and the areas where the largest number of citizens are exposed to bus noise, both as bus riders and bystanders. The transit bus, used primarily in highly populated urban and suburban areas, is clearly one appropriate classification. The other classifications, school buses and intercity buses, operate in rural as well as in urban and suburban areas. The health and welfare benefits derived by reducing the noise generated by school and intercity buses result from their operation in land use areas where population densities are high as well as in areas of more sparse habitation. In concluding that all buses above 10,000 pounds GVWR should be regulated to the same level in the same time frame, the Agency looked at relationship among vehicle usage, population impact, noise levels, production cost, and quieting technologies.

Of particular concern to the Agency was the appropriateness of making the regulations applicable to school buses. The total relative cost to reduce school bus noise is high when compared to the health and welfare benefits resulting from noise control of the other principal types of buses covered by this proposed regulation. For the following reasons, however, EPA proposes to make the regulations applicable to school buses. Although intercity buses operate primarily on major, arterial highways and transit buses operate mainly on primary urban/suburban roads, school buses not only travel along these roads but also on secondary streets in suburban residential areas. The only other truck type vehicle which is routinely encountered in these neighborhoods is the "garbage truck". (The "garbage" or "solid waste" compactor is presently the subject of a separate proposed noise emission regulation.) Accordingly, if not subject to these regulations the school bus may reasonably be expected over time, as all other major sources of urban transportation noise are reduced by regulation, to be the single loudest source of vehicular noise in the community.

An important point regarding the regulation of bus noise is the relationship between the technologies to reduce exterior and interior noise. Agency studies have shown that, without concomitant reductions in exterior bus noise, interior bus noise becomes more difficult to reduce. As a result, without the regulation of exterior school bus noise, the health and welfare benefits to be accrued from the regulation of interior school bus noise cannot be realized.

Requiring noise control regulation of school buses effects uniform treatment of noise control for all types of buses

and prevents school buses from becoming the noisiest source of urban/suburban street vehicle noise. This may be even more important in the future in light of the potential for a future increase in the number of diesel vehicles in the school bus fleets of some school districts and the resulting noise increase which would likely occur in the absence of noise source regulation.

If noise control standards were not made applicable to school buses, a group of medium truck chassis vehicles might be allowed to exceed the standards already set forth for such vehicles. This is true because the school bus industry is highly cost competitive and, as a result, truck chassis manufacturers may not apply truck chassis noise abatement techniques to school bus chassis, since the increase in cost for quieter school buses would be a market disadvantage. Public comment is particularly invited on the question as to whether these regulations should be applicable to school buses.

The Agency examined the health and welfare benefits that would accrue if bus noise levels were reduced to various selected study levels corresponding to (1) the approximate current average sound levels for each class of vehicle, (2) levels achievable with "off the shelf" noise abatement techniques, and (3) levels that the Agency believes attainable through the application of "best available technology." The benefits attendant to these levels were then assessed in terms of the number of people who are impacted by single event noise exposure from both exterior and interior bus noise emissions and the number of people who can be removed from such impact through regulation of bus noise.

In reviewing the noise control technology applicable to bus noise reduction, lower regulatory standards than those found in this proposed regulation (for both exterior and interior bus noise) were studied and were found technologically feasible. However, after assessing the additional costs for such technology and the additional benefits projected to be accrued from such standards, the Agency determined that the proposed standards were more reasonable to impose.

Estimates of the costs to quiet these vehicles were developed on an engineering cost basis, assuming that incremental reductions from present day average noise levels could be applied to each class of buses. The Agency also examined the potential economic impact that may result from imposition of the various levels of noise reduction technology. The Agency concluded that in order to take advantage of available technology and thus realize short term health and welfare effects, an incremental reduction in the noise levels of these vehicles was a better approach than specifying that all vehicles meet the lowest or most stringent levels in one step.

The attainment of the health and welfare benefits from the reduction of bus noise emissions is dependent on the continued compliance of these products with

the Federal noise emission standards during actual use. To ensure that manufacturers develop and apply durable sound reduction measures to their products, the Agency believes it is necessary to establish a specific period of time or use during which newly manufactured products must, as a minimum requirement, comply with the Federal standard. It is the Agency's opinion that this time period should be of a duration that is commensurate with average major component repair, replacement or product overhaul time periods. The Agency believes that if a bus complies with the standard during this initial period, the Acoustical Assurance Period, it is unlikely that the noise emissions of the bus will degrade (increase) above the standard for the remainder of the expected life of the product: *Provided*, That the product is properly maintained and used. This places a burden on several parties. First, it requires the manufacturer to design and build the product so that, if it is properly maintained and operated, the product will be capable of performing at or below the requisite sound level, and second it relies on the owner/user to properly maintain and use the product. (The responsibility of the owner/user is discussed in other portions of this preamble; see discussion of anti-tampering infra.)

The Agency considers the concept of an Acoustical Assurance Period necessary because if the product is not built such that it is even minimally capable of meeting the standards while in use over this initial period when properly used and maintained, the standard itself becomes a nullity and the anticipated health and welfare benefits illusory.

The Agency considers the concept reasonable because in the information which is available to it, it finds that the noise levels of buses do not increase appreciably over the initial 2-years or 200,000 miles when the product is properly used and maintained. Furthermore, the Agency finds that the industry is technologically capable of designing these products to assure minimal degradation in the noise control features. This capability was considered within the technology, maintenance and cost assessments attendant to the standards proposed in this regulation.

In making the determination that the Acoustical Assurance Period for buses should be 2-years, or 200,000 miles, EPA took into account the magnitude and conditions of use of these products, the best maintenance attendant to noise control, and the cost of compliance. Among specific factors considered were:

1. The likelihood that acoustical degradation of noise control features and the resultant increase in noise level above the standard, would not occur during the Acoustical Assurance Period if the manufacturer used proper design and fabrication, quality materials and workmanship;
2. The low maintenance normally required on buses during their early years of use; and
3. The relative usage cycles of these products during their early years of use.

In assessing the noise control technology which is needed for compliance

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with the proposed bus standards, the Agency found no components which cannot be built to assure minimal or no degradation (increase) in the bus's sound level; Provided, That the bus is properly maintained and used. The Agency has also found in its studies of the bus industry that the industry, in general, strives to produce a long lasting, durable product by using component parts of high quality and bus designs which can withstand extensive use. As a result of the above studies, the Agency has concluded that the AAP requirement will not impose additional maintenance or equipment costs over those already estimated as attributable to the proposed regulation. It is clearly one approach. It is important to understand what the AAP means to the manufacturer. The manufacturer will be held responsible for producing a product that is capable of meeting the standard. The proposed enforcement provisions of the AAP allow the product to be designed and built at the level of the standard assuming no degradation in noise control features with time, or built with noise levels somewhat below the standard to account for some degradation with time. But in neither event can the product exceed the standard during the Acoustical Assurance Period.

EPA is also proposing a procedure whereby the manufacturer must account for sound level degradation in his compliance testing and verification program by applying a Sound Level Degradation Factor (SLDF) to the noise emission standard. This may result in a manufacturer-specific production test level which is lower than that specified by the standard. For example, if a manufacturer estimates that the noise level of his product may increase 3 dBA during the AAP and SLDF would be 3 dBA. Then, for production verification (discussed below), the manufacturer would have to test his product at a level which is 3 dBA lower than that specified by the standard. If a product is not expected to degrade during the AAP, the SLDF will be zero. It is EPA's evaluation that in most cases the SLDF would be near or equal to zero.

Manufacturers would be subject to federal enforcement actions consistent with section 11 of the Noise Control Act if the noise emission level during the AAP exceeds the noise emission standard. It should be clearly understood that this concept does not impose any additional burden on the manufacturer for proper maintenance and use. That is, if the product is not properly maintained and used during the AAP, the manufacturer is relieved of subsequent resulting liability. In this regard, maintenance instructions from the manufacturer to the owner/user may include component part replacement during the AAP, provided that the scheduled replacement of those parts is necessary and reasonable. In the final analysis, the responsibility for properly maintaining and operating the product rests with the owner/user.

EPA solicits comments on the approach it has taken to attain the health and welfare benefits requisite to this regulatory action. EPA also solicits comments on the length of the AAP together with the rationale and data to support the position taken.

## 5.0 ESTIMATED IMPACT OF PROPOSED REGULATIONS

5.1 Health and Welfare. Approximately 93 million Americans are exposed to levels of urban traffic noise which may jeopardize their health and welfare. Buses are an integral component of the urban noise problem. Assessment of the intrusive nature of bus noise impact led the Agency to a single event passby noise exposure analysis for assessing the health and welfare impact of bus noise contribution to exterior noise exposure. Three indicators of intrusiveness (sleep awakening, sleep disturbance and speech interference) were used for the single event analysis. Compliance with the proposed standards for buses would result in a 39.5 percent reduction in potential sleep awakening impacts due to buses, a 33.4 percent reduction in potential sleep disturbance impacts due to buses and a 48.2 percent reduction in potential speech interference impacts due to bus noise exposure.

One of the problems which was not specifically addressed in the health and welfare analysis of exterior bus noise was the noise impact that certain population groups experience while residing or working in areas where buses frequently travel, where buses congregate in large numbers (such as near bus yards or bus depots) or where buses are the only surface transportation vehicle in the proximity (such as in bus malls). In these areas, buses can be a major contributor to the ambient environmental noise level as opposed to most other areas where bus noise does not greatly affect existing ambient environmental noise levels but can disrupt certain human activities. Although the health and welfare benefits of the proposed regulation were assessed on the basis of a nationwide average (thus, not addressing specific bus noise problems), the people impacted in these high bus noise impact areas will most likely receive substantial benefits from the proposed exterior standards.

The health and welfare impacts due to noise inside buses were assessed in terms of the reduction of speech disturbances inside buses and reduced potential hearing loss risk for bus passengers and operators. Hearing damage is generally brought about by noise exposure on a continuing, 24 hour, day-to-day basis. As a result in order to ascertain the hearing loss effects due to interior bus noise on bus passengers and operators, the Agency assumed a reasonable range of three non-bus-daily noise exposures (60, 70, 80 dBA) for all bus occupants in carrying out the hearing loss risk analysis. It should be noted that the impacts discussed for interior bus noise hearing loss risk assume many years of exposure to interior bus noise along with other noise exposures.

Compliance with the proposed standards for interior noise levels for buses would result in a 42.7 percent decrease in potential passenger speech interference impacts, a 92.4 percent decrease in potential hearing loss risk for passengers exposed to 60 dBA prior to bus transit, a decrease of 68.8 percent in potential hearing loss risk for passengers exposed to 70 dBA prior to bus transit, and a reduction of 2.6 percent in potential hearing loss risk for passengers exposed to an 80 dBA level prior to bus transit. Similar percentage impact reductions will occur for bus operators.

All of the foregoing reductions for both interior and exterior noise impact are percentages taken from present day impacts and projected to the year 2000. If the number of bus vehicles rises significantly above the current population (utilized in the health and welfare analysis), the actual number of bus noise exposures as compared to the current number of exposures may be more, but the relative benefits, when compared with projections utilizing an increased bus population with no regulation imposed, should remain the same.

For a detailed discussion of the noise impact techniques utilized in the health and welfare analyses, refer to the Background Document.

5.2 Cost and Economic Impact. Estimates of the costs to quiet buses can be expressed in terms of increased list price. It is estimated that list price increases will range from 1.8 to 8.8 percent, (depending on bus type and size) resulting in a weighted average list price increase of 3.2 percent for all bus vehicles. There are indications that several small firms in the bus industry, by virtue of their small market share, specialized product and other factors, could incur relatively higher manufacturing costs which may result in higher list price increases. The Agency is desirous of minimizing disruptive impacts that may result from these regulations and solicits data and information which would indicate whether such disruption could reasonably be expected to occur should these regulations be promulgated as proposed herein.

The total estimated increase in annualized cost to users through the year 2000 due to the implementation of both the proposed interior and exterior standards is estimated to be about \$69 million.

For school buses, this results in a potential average annual increase cost per school district of \$2,319 per year. The above cost per school district is based on the assumption that the percentage of diesel school buses produced will remain relatively constant at about 11 percent of total school production. If the percentage of diesel school buses increases significantly the costs incurred by school districts due to the proposed rule will be increased.

A portion of any cost increase resulting for transit buses will most probably be funded through Federal programs under the Urban Mass Transit Administration (UMTA). Present UMTA policy provides up to 80 percent funding on initial purchase of transit buses and up

50 percent funding of local transit company operating costs. In trying to assess the maximum impact of the proposed regulation on transit and intercity bus fares, the Agency assumed that increased total costs of the regulation would be financed almost entirely by fare increases. This is an extreme case since transit systems and intercity bus carriers typically try to absorb costs in order to forestall fare increases. Utilizing such a (worst case) assumption, the Agency projects a maximum of a 1.0 to 1.5 percent fare increase as a result of the regulation.

Various aspects of potential economic impact were assessed to evaluate changes which could occur due to promulgation of the proposed regulations. Since many effects are difficult to quantify, a qualitative summary follows:

**Impacts on Suppliers.** Some component suppliers may increase their sales depending on their ability to reduce the noise emissions of their product and thereby contribute to the reduction in overall vehicle noise. Furthermore, those suppliers specializing in the manufacture of sound dampening and sound absorbent materials and other products required for abatement would be expected to experience increased sales.

**Impacts on Exports.** Products manufactured for export only are not required under the Act to comply with the regulations. Accordingly, because the technology studied is essentially modular, vehicles for export can generally be produced without noise abatement equipment; therefore, the impact on U.S. exports would be minimal.

**Impacts on Foreign Trade.** The proposed regulations will apply to all imported buses. However, the percentage (approximately 2.5 percent) of buses imported when compared with overall domestic bus production is very small. There is no reason to believe that imports will be unable to competitively comply with the standards and thus the proposed regulation should have little to no effect on foreign trade.

**Employment Impacts.** Regulating noise emissions of buses will probably have a negligible overall effect on employment. The existing research and development (R&D) staffs of major firms and independent suppliers of these services would appear to be able to readily meet bus industry's R&D requirements for abatement. There may, in fact, be a modest increase in manufacturing effort to design, build and install the necessary noise abatement materials. This initial increase may be offset by a corresponding decline in regular production personnel if decreases in demand for regulated buses result. This latter effect is uncertain since it is also probable that firms will increase their sales efforts in order to counter any potential decline in demand in this highly competitive market.

**Effects on Gross National Product.** The proposed regulation is not expected to directly affect the Gross National Product (GNP). Since the Agency's best estimate of the price elasticity of demand for buses is  $-0.5$ , it is expected that margin-

al price increases of buses would probably be offset by equal percentage decreases in demand; the net result being an unchanged GNP as expressed in current dollars.

#### 6.0 ENFORCEMENT

**6.1 General.** The EPA enforcement strategy will place a major share of the responsibility on the manufacturers for pre-sale testing to determine the compliance of buses with these regulations and the interior and exterior noise emission standards at the time of sale. This approach leaves the manufacturers in control of many aspects of the compliance program and imposes a minimal burden on their business. The effectiveness of this strategy necessitates limited record-keeping and reporting by the manufacturer and monitoring by EPA personnel of the tests conducted and actions taken by the manufacturer in compliance with this regulation. Comments are solicited on this strategy and in particular the reporting requirements contained in the regulation.

The strategy proposed in this regulation for enforcement of both the interior and exterior standards consists of three parts: (1) Production Verification (PV), (2) Selective Enforcement Auditing (SEA), and (3) In-use Compliance.

The manufacturer who assembles the completed bus, as in the case of intercity and transit buses, is responsible for satisfying the PV, SEA and in-use requirements of this regulation for both the interior and exterior standards. In the case of vehicles which are assembled by two manufacturers, such as many Type I school buses, the chassis manufacturer must satisfy the PV, SEA and in-use provisions of this regulation with respect to the vehicle exterior noise emission standard. The body assembler/mounter of the Type I school bus is responsible for compliance with these provisions with respect to the vehicle interior standard. In addition, the body assembler is prohibited from causing the vehicle exterior noise emissions to exceed the standard and is subject to SEA provisions of the regulation for the exterior standard.

The following discussion of PV, SEA and in-use provisions applies to the enforcement of both the interior and exterior standards and is applicable to the appropriate manufacturer as discussed above.

**6.2 Production Verification.** PV is the testing by a manufacturer of early production models of a category or configuration of the product, and submitting a report of the results to the EPA. This process, using the proposed methodologies, for both interior and exterior testing, gives the EPA some assurance that the manufacturer has the requisite noise control technology in hand and the capability to apply it to the production process. Models selected for testing must have been assembled using the manufacturer's normal assembly method and must be units assembled for sale.

PV does not involve any formal EPA approval or issuance of certificates sub-

sequent to manufacturer testing. The proposed regulation would require that, prior to the distribution in commerce of any regulated product, a product must undergo production verification. Section 205.105-2(a) would allow a conditional and temporary waiver of this requirement under special circumstances. Responsibility for testing lies with the appropriate manufacturer as set out above and in section 205.105-1 of the regulation. The Administrator reserves the right to be present to monitor any test (including simultaneous testing with his equipment) or to require that a manufacturer ship products for testing to the EPA's Noise Enforcement Facility in Sandusky, Ohio or to any other site the Administrator may find appropriate.

The basic production unit selected for testing purposes is a product configuration, which is a set of vehicles grouped together on the basis of parameters proposed in § 205.105.3. The manufacturer would be required to verify each configuration. The regulations, however, also allow manufacturers to group configurations into categories based on the parameters proposed in § 205.105-2 and to verify by category. This is done by selecting the configuration in each category that the manufacturer determines will have the highest level of noise emissions at the end of its Acoustical Assurance Period (AAP) (based on tests or on engineering judgment). If when tested in accordance with the test procedure, that configuration does not exceed a sound level defined by the new product standard minus that configuration's expected noise degradation over the period of its AAP, the all configurations in that category are considered product verified. This applies to both the interior and exterior standards.

The Administrator also reserves the right to test vehicles at a manufacturer's test facility using either his own equipment or the manufacturer's equipment. This will provide the Administrator an opportunity to determine that the manufacturer's test facility and test equipment meet the specifications proposed in the regulations. If it is determined that the facility or equipment does not meet these specifications, the Administrator may disqualify it from further use for testing under this subpart.

Under proposed § 205.106(a)(1), the Administrator may require that manufacturers submit to him any vehicle, including those tested or scheduled to be tested pursuant to these regulations at such time and place as he may designate.

If a manufacturer proposes to add a new configuration to the product line or to change or deviate from an existing configuration with respect to any of the configurations, he must verify the new configuration either by testing a product and submitting data or by filing a report which demonstrates verification on the basis of previously submitted data. A manufacturer may production verify a configuration at any time during the model year or in advance of the model year if he so desires.

Production verification is an annual requirement. However, the Administra-

tor, upon request by a manufacturer, may permit the use of data from previous production verification reports for specific configurations or categories.

Production verification performed on the early production models give some assurance that the manufacturer has in hand adequate technology to produce vehicles which conform to the applicable noise emission standard and limits the possibility that non-conforming products are distributed in commerce. Because the possibility still exists that subsequently produced vehicles may not conform, selective enforcement auditing testing is incorporated in these proposed regulations.

**6.3 Selective Enforcement Auditing.** Selective enforcement auditing (SEA) is the testing of a statistical sample of assembly line production vehicles from a specified vehicle configuration or category to determine whether these vehicles comply with the applicable noise emission standards. The Agency proposes to utilize this strategy to oversee compliance with both the interior and exterior

standards. SEA testing is initiated when a test request is issued to the manufacturer by the Assistant Administrator for Enforcement or his designated representative. The test request will require the manufacturer to test a batch of vehicles of a specified category or a configuration produced at a specified plant. An alternative category or configuration may be designated in the event that vehicles of the first category or configuration are not available for testing.

The SEA plan employs a technique known as inspection by attributes. The basic criterion for acceptance or rejection of a batch is the number of sample vehicles in the batch which meet the standard rather than the average noise level of the vehicles tested.

A sequential batch sampling inspection plan will be used for SEA testing. Sequential sampling differs from single sampling in that small test samples are drawn from sequential batches rather than one large sample being drawn from a single batch. It offers the advantage of keeping the number of vehicles tested to a minimum when the majority of such vehicles are meeting the standards.

A batch will be defined as the number of vehicles produced during a time period specified in the test request. This will allow the Administrator to select batch sizes small enough to keep the number of vehicles to be tested at a minimum and still draw statistically valid conclusions about the noise emission performance and/or interior noise levels of all vehicles in that category or configuration.

The sampling plans proposed in these regulations are arranged according to the size of the batch from which a sample is to be drawn. Each plan specifies the sample size and the acceptance and rejection number for the established acceptance quality level (AQL). This AQL is the maximum percentage of vehicles exceeding the applicable noise emission standard minus the appropriate Sound Level Degradation Factor that for pur-

poses of sampling inspection can be considered satisfactory. An AQL of 10 percent was chosen for both the interior and exterior standard to take into account some test variability. The number of failing vehicles in a sample is compared to the acceptance and rejection numbers for the appropriate sampling plan. If the number of failures is less than or equal to the acceptance number, then there is a high probability that the percentage of non-complying vehicles in the batch is less than AQL and the batch is accepted. If the number of failing vehicles is greater than or equal to the rejection number, then there is a high probability that the percentage of non-complying vehicles in the batch is greater than the AQL and the batch is rejected. The effectiveness of sampling since the sampling strategy involves a multiple sampling plan, in some instances the number of failures in a test sample may not allow acceptance or rejection of a batch so that continued testing may be required until a decision can be made to either accept or reject a batch.

When a batch sequence is tested and accepted in response to a test request, the testing is terminated. When a batch sequence is tested and rejected and the manufacturer desires to continue production and introduction into commerce of the failed configuration (category), the Administrator may require 100 percent testing of the vehicles of that configuration or category produced at that plant. He may then distribute the individual vehicles that pass the test.

Regardless of whether a batch is accepted or rejected, failed vehicles would have to be repaired or adjusted and pass a retest before they can be distributed in commerce.

The manufacturer can request a hearing on the issue of non-compliance of the rejected category or configuration.

Because the number of vehicles tested in response to a test order may vary considerably, a fixed time limit cannot be placed on completing all testing. The proposed approach is to establish a limit on test time per vehicle. It is estimated that manufacturers when conducting vehicle exterior and/or interior noise measurements can test a minimum of five (5) vehicles per day. However, manufacturers are requested to present any data or information that may effect a revision of this estimate.

**6.4 Administrative orders.** Section 11(d)(1) of the Act provides that:

Whenever any person is in violation of section 10(a) of this Act, the Administrator may issue an order specifying such relief as he determines is necessary to protect the public health and welfare.

This provision grants the Administrator discretionary authority to issue remedial orders to supplement the criminal penalties of section 11(a). The proposed regulations provide for several types of orders in specified circumstances: (1) Recall orders for failure of vehicles to comply with regulations § 205.109; (2) cease to distribute orders for vehicles not properly production verified § 205.105-10; and (3) cease to dis-

tribute

107-2.

In addition, 40 CFR 205.4(f) provides for cease to distribute orders for substantial infractions of regulations requiring entry to manufacturers' facilities and reasonable assistance. These provisions do not limit the Administrator's authority to issue orders, but give notice of cases where such orders would in his judgment be appropriate. In all such cases notice and opportunity for a hearing will be given.

**6.5 Compliance labeling.** The proposed regulation requires that buses be labeled to provide notice that the product complies with both the exterior and interior noise emission standards. As was stated above, the manufacturer who is required to conduct production verification testing for a particular standard must satisfy the labeling requirements applicable to that standard. The EPA is considering requiring that the actual not-to-exceed level of the standard be stated on the label. This would be intended to aid state and local officials in field testing and enforcement of complimentary in-use standards. Specific comments on the advantages and disadvantages of including the level of the standard on the compliance label are solicited from all concerned parties.

**6.6 In-use compliance.** In-use compliance provisions are included in §§ 205.108-1, 205.108-2 and 205.108-3 to ensure that degradation of emitted noise levels is minimized. Provided that the vehicles are properly maintained and used. These provisions include a requirement that the manufacturers provide a time of sale warranty to purchasers, assist the Administrator in defining those acts that constitute tampering, provide to purchasers notice that such acts are tampering, and provide purchasers with instructions specifying the maintenance and use required to minimize degradation during product use.

It should be noted that the warranty is a time-of-sale warranty. Section 6 of the Act requires that a manufacturer warrant to the ultimate purchaser and all subsequent purchasers that at the time-of-sale the product was designed, built, and equipped to comply with the regulations. A warranty claim can be made by a purchaser at any time, throughout the actual life of the product so long as it relates back to a non-compliance at the time-of-sale.

**6.7 Acoustical assurance period (AAP) compliance.** The manufacturer must also design his product so that it will meet the noise standard for the period of time specified as the Acoustical Assurance Period beginning at the date of delivery to an ultimate purchaser.

EPA does not specify what testing or analysis a manufacturer must conduct to determine that his vehicles will meet the AAP requirement of these regulations. However, these regulations do require the manufacturer to make a determination regarding the expected degradation and maintain records of the test data or other information upon which the determination was based. This determination



may be based on information such as tests of critical noise producing or abatement components, rates of noise control deterioration, engineering judgments based on previous experience, and physical durability characteristics of the product or product subcomponents.

The mechanism used in these regulations to express the amount of expected degradation, if any, is the sound level degradation factor (SLDF). The SLDF is the degradation (noise level increase in A-weighted decibels) which the manufacturer expects will occur on a configuration during the period of time specified as the AAP. The manufacturer must determine an SLDF for each of his vehicle configurations.

To ensure that the vehicles will meet the noise standard throughout the AAP, they must emit a time of sale sound level less than or equal to the new product sound emission standard minus the SLDF. In no case shall this noise level exceed the federal standard; i.e., a negative SLDF may not be used. Production verification and selective enforcement audit testing both embody this principle.

If the product's noise level is not expected to deteriorate during the AAP when properly used and maintained, the SLDF is 0. If a manufacturer determines that a vehicle configuration will become quieter during the acoustical assurance period, the configuration must still meet the standard at the time of sale and an SLDF of 0 must also be used for that configuration.

This strategy should impose little, if any, additional cost on the manufacturer. In fact a basic assumption in our economic analysis has been that the noise level of a product which is properly used and maintained will not degrade, at least not any appreciable amount. However, EPA is not dictating that a product's noise level cannot deteriorate during its AAP, but rather merely requiring that it not deteriorate above the standard; it may be that most of the data required to determine an SLDF will already be in the hands of the manufacturer since this information is typically used for general product development work. In any event, EPA is not now proposing to require long term durability tests to be run as a matter of course.

**6.8 Applicability of previously promulgated regulations.** Manufacturers who will be subject to these proposed regulations must also comply with the general provisions of 40 CFR Part 205 Subpart A. These include the requirements for inspection and monitoring of manufacturer's actions taken in compliance with these proposed regulations and the requirements for requesting and granting exemptions from these proposed regulations.

A more detailed description of the enforcement regulations may be found in the Background Document.

**7.0 FUTURE INTENT**

The Agency is pursuing a strategy through which major contributors to overall transportation noise will be identified and subsequently regulated. This coordinated approach is necessary because a number of different types of vehicles are operated at the same time on the highway system and the quieting of only one vehicle type will not in itself be sufficient to adequately reduce the noise from the transportation system to a level the Agency believes requisite to protect the public health and welfare with an adequate margin of safety.

The Agency intends to continue its investigations pursuant to noise regulatory actions for other transportation vehicles. Consequently, the levels specified for the standard in this proposed rulemaking are consistent with the Agency's objective to ultimately reduce the total noise emitted from all transportation vehicles including medium and heavy trucks, buses, automobiles and light duty vehicles and motorcycles.

**8.0 PUBLIC COMMENT**

The Agency is committed by statute and policy to public participation in the decision making process for its environmental regulations. That policy encourages and solicits communications and comments on all aspects of the proposed regulation, including EPA's determination that buses are a major source of noise (40 FR 23107, May 28, 1975). These contributions are desired from as many diverse views as possible. Such information, when submitted, is fully analyzed and where so indicated, necessary changes in proposed rule will be made, and explained in the final regulation.

**9.0 BACKGROUND DOCUMENT**

The document entitled "Draft Environmental Impact Statement, and Background Document for the Proposed Bus Noise Emission Regulation" may be obtained from:

U.S. Environmental Protection Agency, EPA Public Information Center (PAI-215, Room M2194D, Waterside Mall, Washington, D.C. 20460.

This regulation is proposed under the authority of sections 6, 10, 11, 13, and 15 of the Noise Control Act (Pub. L. 92-574, 86 Stat. 1237, 1242, 1244, and 1245 (42 U.S.C. 4905, 4909, 4910, 4912, and 4914).

Dated: August 29, 1977.

Douglas M. Costle,  
Administrator.

In consideration of the foregoing, it is proposed to amend Part 205 by adding Subpart C as follows:

**Subpart C—Buses**

Sec. 205.100	Applicability.
205.101	Definitions.
205.102	Vehicle noise emission standards.
205.103	Maintenance of records: Submittal of information.
205.104	Test procedures.
205.104-1	Low speed exterior sound emission test procedures.
205.104-2	Low speed interior sound emission test procedures.
205.104-3	Sound data acquisition system.
205.105	Product verification.
205.105-1	General requirements.

Sec. 205.105-2	Production verification of vehicles; compliance with standards.
205.105-3	Configuration identification.
205.105-4	Production verification report: Required data.
205.105-5	Test sample selection.
205.105-6	Test vehicle preparation.
205.105-7	Testing.
205.105-8	Addition of changes to, and deviation from a vehicle configuration during the model year.
205.105-9	Production verification based on data from previous model years.
205.105-10	Cessation of distribution.
205.105-11	Labeling (interior/exterior standards)—compliance.
205.105-12	Labeling—Exterior [Reserved].
205.106	Testing by the Administrator.
205.107	Selective enforcement auditing requirements.
205.107-1	Test request.
205.107-2	Test vehicle sample selection.
205.107-3	Test vehicle preparation.
205.107-4	Testing procedures.
205.107-5	Reporting of the test results.
205.107-6	Acceptance and rejection of batches.
205.107-7	Acceptance and rejection of batch sequence.
205.107-8	Continued testing.
205.107-9	Prohibition of distribution in commerce; manufacturer's remedy.
205.108	In-use requirements.
205.108-1	Warranty.
205.108-2	Tampering.
205.108-3	Instructions for maintenance, use, and repair.
205.108-4	Sound level degradation factor (SLDF) and retention of durability data.
205.109	Recall of non-complying vehicles.

**APPENDIX I**

Authority: Sec. 6, Noise Control Act (42 U.S.C. 4905) and additional authority as specified.

**Subpart C—Buses**

**§ 205.100 Applicability.**

Except as otherwise provided, the provisions of this subpart apply to any bus or vehicle (as defined in § 205.101) which meets the definition of the term "new product" in the Act.

**§ 205.101 Definitions.**

(a) As used in this subpart, all terms not defined herein shall have the meaning given them in the Act or in other subparts of this part.

(1) "Acceptable quality level" means the maximum percentage of failing vehicles that, for purposes of sampling inspection, can be considered satisfactory as a process average.

(2) "Acceptance of a batch" means that the number of noncomplying vehicles in the batch sample is less than or equal to the acceptance number as determined by the appropriate sampling plan.

(3) "Acceptance of a batch sequence" means that the number of rejected batches in the sequence is less than or equal to the acceptance number as determined by the appropriate sampling plan.

(4) "Acceptance of a vehicle" means that the noise emissions of the vehicle when measured in accordance with the applicable procedure as delineated in this subpart, conform to the applicable standard minus the applicable SLDF.

(5) "Batch" means the collection of vehicles of the same category or configuration as designated by the Administrator in a test request, from which a batch sample is to be drawn and inspected to determine conformance with the acceptability criteria.

(6) "Batch sample" means the collection of vehicles of the same category or configuration which are drawn from a batch from which test samples are drawn.

(7) "Batch size" means the number as designated by the Administrator in the test request of vehicles of the same category or configuration in a batch.

(8) "Batch sample size" means the number of vehicles of the same category or configuration in a batch sample.

(9) "Bus" means any vehicle which has an enclosed passenger compartment.

(10) "Category" means a group of vehicle configurations which are identical in all material aspects with respect to the parameters listed in § 205.105-2.

(11) "Configuration" means the basic classification unit of a manufacturer's product line and is comprised of all vehicle designs, models or series which are identical in material aspects with respect to the parameters listed in § 205.105-3.

(12) "Designed for the transportation of passengers on a highway or a street" means that the vehicle:

- (i) Is self propelled and is designed for the transportation of passengers;
- (ii) Is capable of maintaining a maximum cruising speed of at least 25 mph over a level paved surface;
- (iii) Is equipped or can readily be equipped with features customarily associated with practical street or highway use, such features including, but not being limited to, a reverse gear, a differential, and a fifth wheel; and,
- (iv) Does not exhibit features which render its use on a street or highway impractical or highly unlikely, such features including, but not being limited to, tracked road means, an inordinate size or features ordinarily associated with combat or tactical vehicles.

(13) "Exhaust system" means the system comprised of a combination of components which provides for enclosed flow of exhaust gas from engine exhaust port to the atmosphere.

(14) "Falling vehicle" means that the noise emissions of the vehicle, when measured in accordance with the applicable procedure, exceed the standard minus the applicable, SLDF.

(15) "Gross vehicle weight rating" (GVWR) means the value specified by the manufacturer as the loaded weight of a single vehicle.

(16) "Governed engine speed" means the maximum engine speed achieved under the regulation test conditions,

where wide-open-throttle is maintained through the end point.

(17) "Inspection criteria" means the rejection and acceptance numbers associated with a particular sampling plan.

(18) "Low noise emission product" means any product which emits noise in amounts significantly below the levels specified in noise emissions standards under the applicable regulation.

(19) "Maximum rated engine speed" means the maximum engine speed, as determined by the engine manufacturer beyond which the ungoverned engine should not be operated.

(20) "Model year" means the manufacturer's annual production period which includes January 1 of such calendar year. Provided, That if the manufacturer has no annual production period, the term "model year" shall mean the calendar year.

(21) "Noise control system" includes any vehicle part, component, or system, the primary purpose of which is to control or cause the reduction of noise emitted from a vehicle.

(22) "Noise emission test" means a test conducted pursuant to the measurement methodology specified in § 205.104.

(23) "Production verification vehicle" means any vehicle selected for testing, tested or verified pursuant to the production verification requirements of this subpart.

(24) "Rejection of a batch" means the number of noncomplying vehicles in the batch sample is greater than or equal to the rejection number as determined by the appropriate sampling plan.

(25) "Rejection of a batch sequence" means that the number of rejected batches in a sequence is equal to or greater than the rejection number as determined by the appropriate sampling plan.

(26) "Shift" means the regular production work period for one group of workers.

(27) "Sound Level Degradation Factor" (SLDF) means the increase in A-weighted sound level which the product configuration is projected to undergo during the Acoustical Assurance Period when properly maintained and used.

(28) "Tampering" means those acts prohibited by section 10(a)(2) of the Act.

(29) "Test sample" means the collection of vehicles from the same category or configuration which is drawn from the batch sample and which will receive noise emission tests.

(30) "Test sample size" means the number of vehicles of the same category or configuration in a test sample.

(31) "Test vehicle" means a vehicle in a test sample or a production verification vehicle.

(32) "Vehicle" means any motor vehicle, with a gross vehicle weight rating (GVWR) in excess of 10,000 lbs, designed for the transportation of passengers on a street or highway and includes a partially or fully enclosed engine compartment.

§ 205.102 Vehicle noise emission standards.

(a) *Low speed exterior noise emission standards.* Vehicles manufactured subsequent to the effective dates noted below shall be designed, built, and equipped so that at the time of sale they will not produce exterior sound emissions in excess of the following levels when tested and evaluated as prescribed in this subpart:

Effective date:	Level (dBA)
(i) Jan. 1, 1979.....	83
(ii) Jan. 1, 1983.....	80
(iii) Jan. 1, 1985.....	77

(b) The standards set forth in paragraph (a) of this section refer to the sound emissions as measured in accordance with the procedures prescribed in § 205.104-1.

(c) *Low speed interior noise emission standards.* Buses manufactured subsequent to the effective dates noted below shall be designed, built, and equipped so that at the time of sale they will not produce interior sound emissions in excess of the following levels indicated when tested and evaluated as prescribed in this subpart:

Effective date:	Level (dBA)
(i) Jan. 1, 1979.....	80
(ii) Jan. 1, 1983.....	83
(iii) Jan. 1, 1985.....	80

(d) The standards set forth in paragraph (c) of this section refer to the sound emissions as measured in accordance with the procedures prescribed in § 205.104-2.

(e) Every manufacturer of a new bus or vehicle subject to the standards prescribed in this section shall comply with the other provisions of this subpart or Subpart A, as applicable, before distributing any new bus or vehicle into commerce.

(f) *In-use standard.* (1) Following the effective date of the standards prescribed in paragraphs (a) and (c) of this section, buses, when properly used and maintained, shall continue to meet the standards for an Acoustical Assurance Period (AAP) of two years or 200,000 miles, whichever occurs first, after sale to the ultimate purchaser.

(2) At the time of product verification (PV) testing in § 205.105 and selective enforcement auditing (SEA) testing in § 205.107, new vehicles must comply with the standards set forth in paragraphs (a) and (c) of this section minus the sound level degradation factor (SLDF) developed in accordance with § 205.108-4.

(g) *Low noise emission product.* For the purpose of Low-Noise-Emission-Product (LNEP) Certification pursuant to 40 CFR Part 203, buses subject to this subpart which are procured after the dates listed below shall not emit A-weighted sound pressure levels in excess of the indicated levels determined in accordance with the procedures prescribed in § 205.104. In order for any bus to qualify for LNEP Certification the bus must meet both the interior and exterior standards as indicated below:

Procurement date	Average A-weighted sound (vrr)	
	Exterior	Interior
Jan. 1, 1978	78	81
Jan. 1, 1982	75	78
Jan. 1, 1984	72	75

(Sec. 10, 13, Noise Control Act (42 U.S.C. 4901, 4914))

**§ 205.103 Maintenance of records: Submittal of information.**

(a) Except as otherwise provided for in this regulation the manufacturer of any new vehicle subject to any of the standards or procedures prescribed in this subpart shall establish, maintain, and retain the following adequately organized and indexed records:

(1) *General records.* (i) Identification and description by category and configuration parameters of all vehicles; composing the manufacturer's product line for which testing is required under this subpart and the identification and description of all devices incorporated into the vehicle for the purpose of noise control and attenuation.

(ii) A description of any procedures other than those contained in this regulation used to perform noise tests on any test vehicle.

(iii) A record of the calibration of the acoustical instrumentation as is required by § 205.104-3.

*Individual records for test vehicles:*

(1) A complete record of all noise emission tests performed for PV and SEA (except tests performed by EPA directly), including all individual worksheets and/or other documentation relating to each test, or exact copies thereof.

(2) A record and description of all repairs, maintenance, and other servicing performed on PV and SEA test vehicles, giving the date and time of the maintenance or service, the reason for it, the person authorizing it, and the names of supervisory personnel responsible for the conduct of the maintenance or service.

(3) A properly filed production verification report following the format prescribed by the Administrator in § 205.105-4 fulfills the requirements of paragraphs (a) (1), (ii), (iii), and (a) (2) (i) of this section.

(4) All records required to be maintained under this part shall be retained by the manufacturer for a period of three (3) years from the production verification date. Records may be retained as hard copy or alternatively reduced to microfilm, punch cards, etc., depending on the record retention procedures of the manufacturer; however, all of the information contained in the hard copy shall be retained in the alternative method if this method is used.

(b) The manufacturer shall, pursuant to a request made by the Administrator, submit to the Administrator the follow-

ing information with regard to new vehicle production:

(1) Number of vehicles, by category or configuration, scheduled for production for the time period designated in the request.

(2) Number of vehicles, by category or configuration, produced during the time period designated in the request.

(Sec. 13, Noise Control Act (42 U.S.C. 4912))

**§ 205.104 Test procedures.**

**§ 205.104-1 Low speed exterior sound emission test procedures.**

(a) *Instrumentation.* The following instrumentation shall be used, where applicable.

(1) A sound measurement system which meets the Type I requirements of ANSI S1.4-1971, Specification for Sound Level Meters or a sound level system with a magnetic tape recorder and/or a graphic level recorder or indicating meter may be used, providing the system meets the requirements § 205.104-3.

(2) A windscreens must be employed with the microphone during all sound measurements. The windscreens shall not affect the A-weighted sound levels from the vehicle in excess of ±0.5dB.

(3) A sound level calibrator shall be used which shall produce a sound pressure level, at the microphone diaphragm that is known to within an accuracy of ±0.5B. The Calibrator shall be checked annually to verify that its output has not changed.

(4) An engine-speed tachometer which is accurate within ±2 percent of the meter reading.

(5) An anemometer or other device for measurement of ambient wind speed accurate within ±10 percent at 19.3 km/hr (12 mph).

(6) A thermometer for measurement of ambient temperature accurate within ±1 C.

(7) A barometer for measurement of ambient pressure accurate within ±1 percent.

(b) *Test site requirements.* (1) The test site shall be such that the vehicle radiates sound into a free field over a reflecting plane. This condition may be considered fulfilled if the test site consists of an open space free of large reflecting surfaces, such as parked vehicles, signboards, buildings, or hillsides, located within 30.4 meters (100 feet) of either the vehicle path or the microphone.

(2) The microphone shall be located 15.2±0.1 meters (50 feet ±4 inches) from the centerline of vehicle travel and 1.3±0.1 meters (4 feet ±4 inches) above the ground plane. The microphone point is defined as the point of intersection of the vehicle path and the normal to the vehicle path drawn from the microphone.

The microphone shall be oriented with respect to the source in a fixed position so as to minimize the deviation from the flattest frequency response over the frequency range 100 Hz to 10 KHz for a vehicle traversing through the end zone.

(3) (i) For vehicles with manual transmissions or for vehicles with automatic transmissions which can manually be held in gear, an acceleration point shall be established on the vehicle path 15.2 meters (50 feet) before the microphone point.

(ii) For vehicles with automatic transmission vehicles, which cannot be manually held in gear, a starting point shall be established as described in paragraph (c) (2) (ii) of this section.

(4) An end point shall be established on the vehicle path 30.5 meters (100 feet) from the acceleration point and 15.2 meters (50 feet) from the microphone point.

(5) The end zone is the last 12.2 meters (40 feet) of vehicle path prior to the end point.

(6) The measurement area shall be the triangular paved (concrete or sealed asphalt) area formed by the acceleration point, the end point, and the microphone location.

(7) The reference point on the vehicle, used to indicate when the vehicle is at any of the points on the vehicle path, shall be the front of the vehicle except as follows:

(i) If the engine is front mounted and the horizontal distance from the front of the vehicle to the exhaust outlet is more than 5.1 meters (200 inches) tests shall be run using both the front and rear of the vehicle as reference points.

(ii) If the main body of the engine is located rearward to the center of the chassis or at the approximate center (±1.5 meters, ±5 feet) of the chassis, the rear of the vehicle shall be used as the reference point.

(8) The plane containing the vehicle path and the microphone location (plane ABCDE) shall be flat within ±0.05 meter (±2 inches).

(9) Measurements shall not be made when either the road surface or the measurement surface area is wet, covered with snow, or during precipitation.

(10) Not more than one person, other than the observer reading the meter, shall be within 15.2 meters (50 feet) of the vehicle path or instrument and the person shall be directly behind the observer reading the meter, on a line through the microphone and observer. A cable should be used between the microphone and the sound level meter. No observer shall be located within 1 meter (3.3 feet) in any direction of the microphone location.

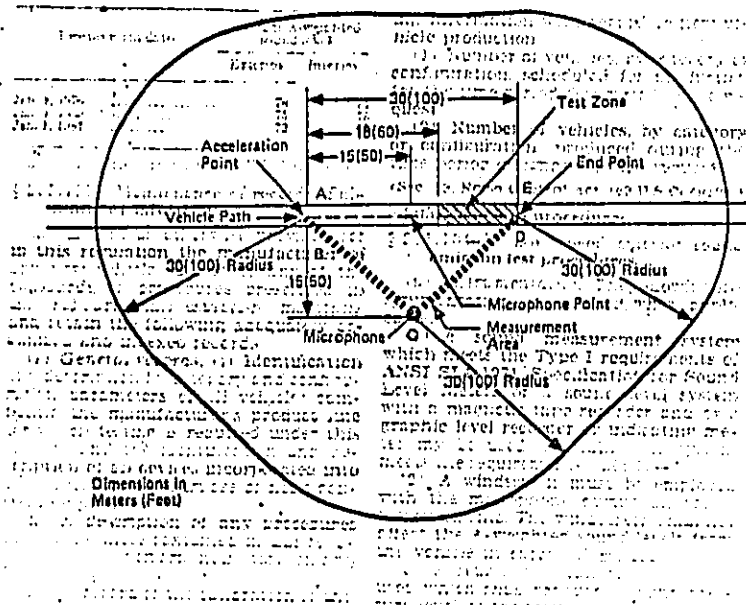


FIGURE 205.101

- (11) The maximum A-weighted fast response sound level observed at the test site immediately before and after the test shall be at least 10 dB below the regulated level.
- (12) The road surface within the test site upon which the vehicle travels, and at minimum, the measurement area shall be smooth concrete or smooth scaled asphalt free of extraneous material such as gravel.
- (13) Vehicles with diesel engines shall be tested using Number 1D or Number 2D diesel fuel possessing a cetane rating from 42 to 50 inclusive.
- (14) Vehicles with gasoline engines shall use the grade of gasoline recommended by the manufacturer for use by the purchaser.
- (15) Vehicles equipped with thermostatically controlled radiator fans (fan clutches) shall be tested with the fan engaged in a "lock up" mode such that the fan drive hub and the fan are turning at the same speed or as near the same speed as is possible within the design limits of the particular fan clutch design.
- (c) Procedure.—(1) Vehicle operation for vehicles equipped with manual (standard) transmissions or for vehicles with automatic transmissions which can be manually held in gear. Full throttle acceleration and closed throttle deceleration tests shall be used. A beginning engine speed and proper gear ratio shall be determined for use during measurements. Closed throttle deceleration tests are required only for those vehicles equipped with an engine brake. In the procedure contained in paragraph (c) of this section, the phrase "governed engine speed" applies to vehicles which are equipped with engine speed governors, while the phrase "maximum rated engine speed" applies to vehicles which are not equipped with engine speed governors.
  - (i) Select the highest rear axle and/or transmission gear ("highest gear" is used in the usual sense; it is synonymous with the lowest numerical ratio), and an initial vehicle speed such that at wide-open throttle the vehicle will accelerate from the acceleration point.
    - (A) Starting at no more than two-thirds (66 percent) of maximum rated or of governed engine speed.
    - (B) Reaching maximum rated engine speed (if the vehicle is not equipped with an engine governor) or governed engine speed (if the vehicle is equipped with an engine governor) within the end zone.
    - (C) Without exceeding 56 km/hr (35 mph) before reaching the end point.
      - (i) Should maximum rated or governed rpm be attained before reaching the end zone, decrease the approach rpm in 100 rpm increments until maximum rated or governed rpm is attained within the end zone.
      - (ii) Should maximum rated or governed rpm not be attained until beyond the end zone, select the next lower gear until maximum rated or governed rpm is attained within the end zone.
      - (iii) Should the lowest gear still result in reaching maximum rated or governed rpm beyond the permissible end zone, unload the vehicle and/or increase the ap-

- proach rpm in 100 rpm increments until the maximum rated or governed rpm is reached within the end zone.
- (ii) For the acceleration test, approach the acceleration point using the engine speed and gear ratio selection in paragraph (c)(1)(i) of this section, and at the acceleration point, rapidly establish wide-open throttle. The vehicle reference shall be as indicated in paragraph (b)(7) of this section. Acceleration shall continue until maximum rated or governed engine speed is reached.
  - (A) Vehicles equipped with governed engines must be held at wide open throttle until the entire vehicle is out of the end zone.
  - (B) Vehicles equipped with ungoverned engines must not be allowed to drop more than 100 rpm below maximum rated engine speed until the vehicle is out of the end zone.
  - (iii) Wheel slip which affects maximum sound level must be avoided.
  - (iv) If the vehicle being tested is equipped with an engine brake, it must also be tested as follows: Approach the microphone point at maximum rated or governed engine speed in the gear selected for the acceleration test. When the vehicle reference point reaches the microphone point, close the throttle and immediately apply the engine brake fully and allow the vehicle to decelerate to one-half of maximum rated or of governed engine speed. The vehicle reference shall be as indicated in paragraph (b)(7) of this section. The engine brake must be full on during this test.
- (2) Vehicle operation for vehicles equipped with automatic transmissions which cannot be manually held in gear. Full throttle acceleration tests and closed throttle deceleration tests are to be used. Closed throttle deceleration tests are required only for those vehicles equipped with an engine brake.
  - (i) Select the highest gear axle and/or transmission gear (highest gear is used in the usual sense; it is synonymous with the lowest numerical ratio) to accelerate the vehicle under wide open throttle from a stationary position.
  - (ii) A starting point along the test path at which the vehicle shall begin the acceleration test shall be determined by the following procedure:
    - (A) The vehicles' reference point shall be placed at the midpoint ( $\pm 0.3$  meters,  $\pm 1$  feet) of the end zone with the front end of the vehicle facing back along the test path in the opposite direction of travel that is used for the sound measurement tests.
    - (B) The vehicle shall then be accelerated, as rapidly as possible to establish a wide open throttle, until the first transmission shift point is reached.
    - (C) The location along the test path at which the front end of the vehicle is passing when the first transmission shift point occurs during the wide open throttle acceleration shall be the designated stationary starting point.
    - (D) The vehicle's direction of travel shall then be reversed for sound testing.

(iii) For the acceleration test, accelerate the vehicle from a standing position with the front of the vehicle at the selected stationary starting point, obtained by using paragraph (c)(2)(ii) of this section, as rapidly as possible to establish a wide open throttle. The acceleration shall continue until the entire vehicle has vacated the end zone.

(iv) Wheel slip which affects maximum sound level must be avoided.

(v) If the vehicle being tested is equipped with an engine brake, it must also be tested as follows: Approach the microphone point at maximum rated engine speed (if the vehicle is not equipped with an engine speed governor) or governed engine speed (if the vehicle is equipped with an engine speed governor) in the gear utilized for the acceleration test. When the vehicle's reference point reaches the microphone point, close the throttle, immediately apply the engine brake fully and allow the vehicle to decelerate to one-half of maximum rated or governed engine speed. The vehicle reference shall be as indicated in paragraph (b)(7) of this section. The engine brake must be full on during the test.

(3) *Measurements.* (i) The meter shall be set for "fast response" and the A-weighted network.

(ii) The sound meter shall be observed during the period while the vehicle is accelerating. The applicable reading shall be the highest sound level obtained for the run. The test shall be rerun if unrelated peaks should occur due to extraneous ambient noises.

(iii) Sound level measurements shall be taken on both sides of the vehicle. The sound level associated with a side shall be the average of the first two pass-by measurements for that side, if they are within 2 dBA of each other. The average of the measurements on each side shall be computed separately. If the first two measurements for a given side differ by more than 2 dBA, two additional measurements shall be made on each side, and the average of the two highest measurements on each side, within 2 dBA of each other, shall be taken as the measured vehicle sound level for that side. The reported vehicle sound level shall be the higher of the two averages.

(d) *General requirements.* (1) Measurements shall be made only when wind speed is below 19.3 km/hr (12 mph).

(2) Proper usage of all test instrumentation is essential to obtain valid measurements. Operating manuals or other literature furnished by the instrument manufacturer shall be referred to for both recommended operation of the instrument and precautions to be observed. Specific items to be adequately considered are:

(i) The effects of ambient weather conditions on the performance of the instruments (for example, temperature, humidity, and barometric pressure.)

(ii) Proper signal levels, terminated impedances, and cable lengths on multi-instrument measurement systems.

(iii) Proper acoustical calibration procedure, to include the influence of external cables, etc. Field calibration shall

be made immediately before and after each test sequence. Internal calibration means is acceptable for field use; *Provided*, That external calibration is accomplished immediately before or after field use.

(3)(i) A complete calibration of the instrumentation and external acoustical calibrator over the entire frequency range of interest shall be performed at least annually and as frequently as necessary during the yearly period to insure compliance with the standards cited in American National Standard S1.4-1971 "Specifications for Sound Level Meters" for a Type 1 instrument over the frequency range 100 Hz-10,000 Hz.

(ii) If calibration devices are utilized which are not independent of ambient pressure (e.g., a pistonphone) corrections shall be made for barometric or altimetric changes according to the recommendation of the instrument manufacturer.

(4) The vehicle shall be brought to a temperature within its normal operating range prior to commencement of testing. During testing appropriate caution shall be taken to maintain the engine at temperatures within the normal operating range.

(e) *Alternative procedures.* The Administrator may approve applications from manufacturers of buses for exterior noise level test procedures which differ from those contained in this part so long as the alternative procedures have been demonstrated to correlate with the prescribed procedure. To be acceptable, alternative testing procedures shall be such that the test result will identify all those test units which would not comply with the noise emission standard prescribed in § 205.102(a) when tested in accordance with the procedure contained in § 205.104-1. Tests conducted by manufacturers under approved alternative procedures may be accepted by the Administrator for all purposes including, but not limited to, production verification testing and selective enforcement audit testing.

#### § 205.104-2 Low speed interior sound emission test procedures.

Interior sound levels shall be measured using the following measurement equipment and test site area, and vehicle operation as described in the procedure for measurement of exterior noise emissions § 205.104-1.

(a) *Instrumentation.* The following instrumentation shall be used, where applicable.

(1) A sound level system which meets the Type I requirements of ANSI S1.1071, Specification for Sound Level Meters, or a sound level system with a magnetic tape reader and/or a graphic level recorder or indicating meter may be used providing the system meets the requirements of § 205.104-3.

(2) A windscreen must be employed along with the microphone during all measurements. The windscreen shall not affect the A-weighted sound levels from the vehicle in excess of  $\pm 0.5$  dB.

(3) A sound calibrator shall be used which shall produce a sound pressure level, at the microphone diaphragm, that is known to within an accuracy of  $\pm 0.5$  dB. The calibrator shall be checked annually to verify that its output has not changed.

(4) An engine speed tachometer which is accurate to within  $\pm 2$  percent of the meter reading.

(5) A thermometer for measurement of ambient temperature accurate within  $\pm 1$  C.

(6) A barometer for measurement of ambient pressure accurate within  $\pm 1$  percent.

(b) *Microphone placement.* (1) The test site shall be such that the bus radiates sound into a free field over a reflecting plane. This condition may be considered fulfilled if the test site consists of an open space free from reflecting surfaces, such as parked vehicles, signboards, buildings or hillsides, located within 30.4 meters (100 feet) of the vehicle path.

(2) For all buses other than those with a front mounted engine, the microphone shall be located next to the passenger seat location closest to the main body of the engine at a height of 1.25 meters (4.1 ft.) from the bus floor. In addition, the microphone shall be placed at least 0.5 meters (1.6 ft.) from the nearest vehicle wall.

(3) For front mounted engine buses the microphone shall be placed next to vehicle operator's seat at a height of 1.25 meters (4.1 ft.) from the floor and at least 0.5 meter (1.6 ft.) from the nearest vehicle wall.

(4) The microphone shall be tilted towards the front of the bus at an angle of 20-30 degrees from the vertical.

(c) *Procedure.*—(1) *Vehicle operation.* The bus shall be operated in the same manner as prescribed in § 205.104-1. The same axle ratios, gear ratios, along with the same procedure as modified by transmission type shall be utilized.

(2) All windows and doors shall be closed on the bus and all interior fan accessories (including air-conditioning fans and/or heating fans) turned on.

(d) *Measurements.* (1) The meter shall be set for "fast response" and an the A-weighted network.

(2) The meter shall be observed during the period while the bus is accelerating. The applicable reading shall be the highest sound level obtained during the run. The test shall be rerun if unrelated peaks should occur due to extraneous ambient noise.

(3) The average of the two highest levels within 2 dB of each other shall be reported as the interior sound level of the bus.

(e) *General requirements.* (1) Not more than one person, other than the observer reading the meter and the driver shall be in the bus at the time of measurement.

(2) The maximum A-weighted fast response sound level observed in the test bus immediately before and after the testing shall be at least 10 dB below the regulatory level.

(13) Instrument manufacturer recommendations for operation of instrumentation shall be followed. (14) The effects of ambient weather conditions on the performance of the instruments (for example, temperature, humidity, and barometric pressure) may as possible to estimate. (15) Proper signal levels, terminating impedances, and cable lengths on multi-instrument measurement systems.

(16) Proper acoustical calibration procedure, to include the influence of extension cables, etc. Field calibration shall be made immediately before and after each test sequence. Internal calibration means is acceptable for field use, provided that external calibration is accomplished immediately before or after field use. The speed of the vehicle is

(17) A complete calibration of the instrumentation and external acoustical calibrator over the entire frequency range of interest shall be performed at least annually and as frequently as necessary during the yearly period to insure compliance with the standards cited in American National Standard S1.4-1971 "Specifications for Sound Level Meters" for a Type 1 instrument over the frequency range 100 Hz-10,000 Hz.

(18) If calibration devices are utilized which are not independent of ambient pressure (e.g., a pistonphone) corrections shall be made for barometric or altimetric changes according to the recommendation of the instrument manufacturer.

(19) The vehicle shall be brought to a temperature within its normal operating temperature range prior to the commencement of testing. During testing appropriate caution shall be taken to maintain the engine at temperatures within the normal operating range.

(20) **Alternative procedures.** The Administrator may approve applications from manufacturers of buses for interior noise level test procedures which differ from those contained in this part as long as the alternative procedures have been demonstrated to correlate with the prescribed procedure. To be acceptable, alternative testing procedures shall be such that the test results will identify all those test units which would not comply with the noise emission limit prescribed in § 205.102 (c) when tested in accordance with the procedure contained in § 205.104-2. Tests conducted by manufacturers under approved alternative procedures may be accepted by the Administrator for all purposes, including, but not limited to, production verification testing and selective enforcement audit testing.

§ 205.104-3 Sound data acquisition system.

Systems employing tape recorders and graphic level recorders may be established as equivalent to a Type 1 ANSI S1.4-1971 sound level meter, for use in determining compliance with this regulation by meeting the requirements of this section of § 205.104-3(b)(1). This sound data acquisition system qualification procedure is based primarily on ANSI S6.1-1973 "Performance Requirements for a System Frequency response. The overall steady-state frequency response of the data acquisition system shall be within the tolerances prescribed in Table 205.104-3 when measured in accordance with § 205.104-3. The tolerances in Table 205.104-3 are applicable to either flat or A-weighted response. See paragraph (a) of this section for

**Detector response:** The difference between the level indicated for a 1000 Hz sinusoidal signal equivalent to a sound level of 86 dB rms and the level indicated for an octave band of random noise of equal energy as the sinusoidal signal centered at 1000 Hz shall be no greater than 0.5 dB. A true rms voltmeter shall be used to determine equivalence of two input signals.

**Indicating meter:** If an indicating meter is used to obtain sound levels or band pressure levels, it shall meet the requirements of paragraphs (a)(2) and (a)(6) of this section and the following:

TABLE 205.104-3 System response data

Frequency (Hertz)	A-weighted response (dB) (1)	Tolerance (decibels)	
		Plus	Minus
31.5	-39.4	1.5	1.5
63.0	-31.0	1.5	1.5
125.0	-22.2	1.0	1.0
250.0	-13.1	1.0	1.0
500.0	-4.8	1.0	1.0
1000.0	0	1.0	1.0
2000.0	6	1.0	1.0
3150.0	10	1.0	1.0
5000.0	12	1.0	1.0
7940.0	13	1.0	1.0
12500.0	12	1.0	1.0
20000.0	7	1.0	1.0
31500.0	1	1.0	1.0
50000.0	-5	1.5	2.0
79400.0	-11	1.5	3.0
125000.0	-17	2.0	4.0
200000.0	-23	3.0	6.0

(A) The 1 dB steps.  
(B) No scale indication shall be more than 0.2 dB different from the true value of the signal when an input signal equivalent to 86 dB sound level indicates correctly.

(C) Maximum indication for an input signal of 1000 Hz tone burst of 0.2 second duration shall be within the range of -2 to 0 dB with respect to the steady-state indication for a 1000 Hz tone equivalent to 86 dB sound level.  
(D) **Microphone:** If a microphone is used which has not been provided as a component of a precision sound level meter, it must be determined to meet the microphone characteristics described in IEC Publication 179, Precision Sound Level Meters, such that the bus radi-

(E) **Magnetic tape recorder:** No requirements are described in this document pertaining to tape recorders, except for frequency response. Generally, recorders of adequate quality to provide the frequency response performance required will also meet other minimum requirements for distortion, signal-to-noise ratio, etc.

(F) **Graphic level recorder dynamic response:** When using a graphic level recorder, it is necessary to select pen response settings such that the readings obtained are statistically equivalent to those obtained by directly reading a meter which meets the "fast" dynamic requirement of a precision sound level meter indicating meter system for the range of vehicles to be tested. To ensure statistical equivalence, at least 30 comparative observations of real test data shall be made and the average of the absolute value of the differences observed shall be less than 0.5 dB. The settings described in paragraph (a)(6) of this section likely assure appropriate dynamic response; however, different settings may be selected on the basis of the above requirement.

(A) Use a pen writing speed of nominally 60-100 dB/sec. If adjustable, low frequency response shall be limited to about 20 Hz.

(B) Indicated overshoot for a suddenly applied 1000 Hz sinusoidal signal equivalent to 86 dB sound level shall be no more than 1 dB and no less than 0.1 dB.

(2) **Frequency response qualification procedure.** (1) Typical noise measurement and analysis configurations are shown in figures 205.102 through 205.104. The qualification procedure described herein duplicates these configurations, but with the microphone replaced by an electronic sinewave oscillator. Caution should be exercised when connecting an oscillator to the input of a sound level meter to ensure that the input is not overloaded (see § 205.104-3(a)(2)(b)).

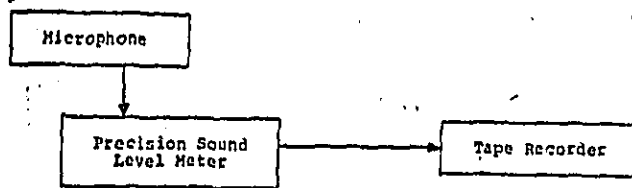


Figure 205.102 Data Recording

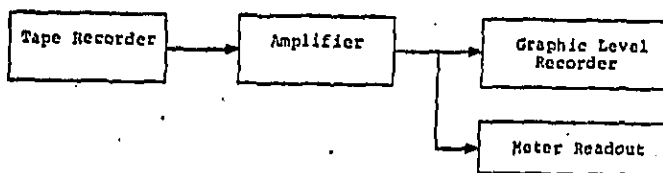


Figure 205.103 Data Analysis and Test Analysis



Figure 205.104 Test Recording

(i) Calibrate the oscillator to be used by measuring its output relative to the voltage which is equivalent to 86 dB sound level at each of the 27 frequencies listed in Table 205.101 using an electronic voltmeter of known calibration. Record the result in voltage level in dB re voltage corresponding to 86 dB sound level at 1000 Hz. This shall describe the frequency response characteristics of the oscillator.

(ii) If a graphic level recorder is to be used, connect it to the oscillator output. If the oscillator and graphic level recorder can be synchronized, slowly sweep the frequency over the range of 31.5 to 12,500 Hz, recording the oscillator output. If they cannot be synchronized, record oscillator output for signals at the 27 frequencies given in Table 205.101. The differences between the combined response thus obtained and the oscillator describe the frequency response of the graphic level recorder.

(iii) If visual observation of an indicating meter is to be used for obtaining data, the oscillator shall be connected to the indicating meter input (such as the microphone input of a sound level meter) and the meter reading observed for a fixed oscillator output voltage setting for signals at the 27 frequencies given in Table 205.101.

(iv) To check a tape recorder, connect the instruments as shown in Figure

205.104. Using a 1000 Hz tone, adjust the oscillator output level to obtain a reading 15 dB below maximum record level. If the synchronized oscillator graphic level recorder system is to be used for analysis, record an oscillator sweep over the range of 31.5 to 12,500 Hz, using an appropriate tape recorder input attenuator setting. Alternatively, tape-record frequency tones at the 27 frequencies given in Table 205.101. Replay the tape recordings using the setup shown in Figure 205.103. Record the data on a graphic level recorder or through visual observation of the indicating meter. Subtract the oscillator frequency response in paragraph (i) of this section from the response obtained through the record-playback sequence to obtain the record reproduce frequency response of the system except for the microphone.

(v) To obtain the overall system frequency response, add the manufacturer's microphone calibration data to the response just obtained. This may be the frequency response for the specific microphone to be used, including calibration tolerances. Alternatively, use the manufacturer's "typical" microphone response plus and minus the maximum deviation expected from "typical" including calibration tolerances. Use the microphone response curve which corresponds to the manner in which it is used in the field. It may be required to

add a correction to the response curves provided to obtain field response; refer to the manufacturer's manual.

(3) *General comments* (i) Tape recorders shall be calibrated using the brand and type used for actual data acquisition. Differences in tape can cause an appreciable variation in the recorder/reproduce frequency response characteristics of tape recorder.

(ii) It shall be ensured that the instrumentation used will perform within specifications and applicable tolerances over the temperature, humidity, and other environmental variation ranges which may be encountered in vehicle noise measurement works.

(iii) Qualification tests shall be performed using equipment (including cables) and recording and playback techniques identical with those used while recording vehicle noise. For example, if weighted sound level data are normally recorded use similar weighting and apply the tolerances of Table 205.101 to the weighting curve for comparison with record-playback curves. Precautions should also be taken to ensure that source and load impedances are appropriate to the device being tested. Other data acquisition systems may use any combination of microphones, sound level meters, amplifiers, tape recorders, graphic level recorders, or indicating meters. The same approach to qualifying such a system shall be taken as described in this document for the systems depicted in Figures 205.102, 205.103, and 205.104.

(b) Systems other than those specified in § 205.104-1(a) and § 205.104-3(c) may be used for establishing compliance with these regulations. In each case the system must yield sound levels which are equivalent to those produced by a sound level system Type 1 ANSI S1.4-1971. The manufacturer bears the burden of demonstrating such equivalence. The manufacturer shall notify the Administrator pursuant to §§ 205.105-4(b), 205.107-5(c)(4), of the use of such a sound data acquisition system.

§ 205.105 Production verification:

§ 205.105-1 General requirements.

(a) Every new vehicle manufactured for distribution in commerce in the United States which is subject to the standards prescribed in this subpart and not exempted in accordance with § 205.5:

(1) Shall be verified in accordance with the production verification procedures described in this subpart;

(2) Shall be represented in a product verification report, as required by § 205.105-4;

(3) Shall be labeled in accordance with the requirements of § 205.105-11; and

(4) Shall conform to the applicable exterior and/or interior noise emission standard established in § 205.102 of this regulation.

(b) The requirements of paragraph (a) of this section dealing with exterior noise standards apply to new products at the time they first conform to the definition of vehicles in these regula-

ions. The responsibility for complying with the requirement of paragraph (a) of this section rests with the manufacturer of the new product at the time the product first conforms to the definition of vehicle in this regulation.

(c) The requirements of paragraph (a) of this section dealing with interior noise standards apply to new products at the time they meet the definition of bus in this regulation. The responsibility for complying with the requirements of paragraph (a) of this section rests with the manufacturer of the new product at the time it first conforms to the definition of bus in these regulations.

(d) Subsequent manufacturers of a new product which conforms to the definition of vehicle in these regulations when received by them from a prior manufacturer, need not fulfill the requirements of paragraph (a) (1), (2), or (3) of this section where such requirements have already been complied with by a prior manufacturer.

(e) The manufacturer who is required to conduct product verification testing, for a particular standard, shall satisfy all other provisions of this subpart applicable to that standard, including, but not limited to, record keeping, reporting and in-use requirements.

(Sec. 10-19 of the Noise Control Act (42 U.S.C. 4909, 4912).)

**§ 205.105-2 Production verification of vehicles; compliance with exterior and interior standards.**

(a) (1) Prior to distribution in commerce of vehicles of a specific configuration, the first manufacturer of such vehicles must verify such configurations in accordance with the requirements of this subpart. However, production verification of a configuration is automatically, and conditionally waived by the Administrator without request by the manufacturer for a period of up to 45 consecutive days from the date of distribution in commerce by a manufacturer of the first vehicle of that configuration, in order to enable a manufacturer to distribute vehicles in commerce and thus avoid disruption of the manufacturing process. To qualify for such waiver, a manufacturer must conduct any tests required in paragraphs (b) or (c) of this section as soon as weather conditions at a manufacturer's test facility permit after distribution in commerce of the first vehicle of a configuration. Such conditions must be documented by the manufacturer and provided to the Administrator on request. Failure to test on such first suitable day will result in automatic and retroactive rescission of the waiver and will render the manufacturers liable for illegally distributing vehicles in commerce.

(2) At the completion of any 45 day period the conditional waiver granted under paragraph (a)(1) of this section is rescinded for that configuration unless the manufacturer has complied with the requirements of paragraph (b) or (c) of this section as appropriate; except that, upon application by a manufacturer and

a showing that the weather conditions at the manufacturer's test facility or other conditions beyond the control of the manufacturer made it impossible to conduct the required testing and that documentation of such conditions is submitted by the manufacturer, the Administrator at his option, may extend for a specified period (not to exceed 45 days) conditional production verification for a configuration to enable the manufacturer to comply with the requirements of paragraph (b) or (c) of this section or he may require that the manufacturer ship the test vehicle to the EPA test facility for testing by the Administrator.

(b) The production verification requirements with regard to each vehicle configuration consist of:

(1) Testing in accordance with § 205.104 of a vehicle selected in accordance with § 205.105-5;

(2) Compliance of the test vehicle with a dBA level such that the arithmetic addition of the Sound Level Degradation Factor (SLDF) determined in accordance with § 205.108-4 to that dBA level does not exceed the applicable interior and/or exterior standards, when tested in accordance with § 205.104; and

(3) Submission of a production verification report pursuant to § 205.105-4.

(c) (1) In lieu of testing vehicles of every configuration as described in paragraph (b) of this section, the manufacturer may elect to verify the configuration based on representative testing, the requirements of which consist of:

(A) Grouping exterior and/or interior configurations into categories where each category will be determined by a separate combination of at least the following parameters: the manufacturer may use more parameters:

- (1) Gasoline—2 stroke cycle.
- (2) Gasoline—4 stroke cycle.
- (3) Diesel—2 stroke cycle.
- (4) Diesel—4 stroke cycle.
- (5) Others.
- (B) Engine Manufacturer.
- (C) Engine Displacement.
- (D) Engine Configuration (including, but not limited to V-6, L-6, etc.).
- (E) Engine Location.
  - (1) Front.
  - (2) Midships.
  - (3) Rear.
- (F) Body Style, including but not limited to:
  - (1) Flat Front End School Bus.
  - (2) Conventional School Bus.
  - (3) Intracity Transit Bus.
  - (4) Intercity Transport Bus.

(2) (A) Identifying the configuration within each category which emits the highest sound level (dBA) at the end of its defined acoustical assurance period, based on his best technical judgment or emission test data or both;

(B) If two or more configurations would emit the same level described in paragraph (c)(1)(A) of this section, then identifying the configuration which emits the highest sound level when distributed into commerce;

(3) Testing in accordance with the applicable exterior and/or interior

test(s) in § 205.104 of a vehicle selected in accordance with § 205.105-5 which must be a vehicle of the configuration which is identified pursuant to subparagraph (1)(B) of this paragraph as having the highest sound level (estimated or actual) within the category.

(4) Compliance of the test vehicle with a dBA level such that the arithmetic addition of the SLDF to that dBA level does not exceed the applicable exterior and/or interior standards when tested in accordance with § 205.104; and

(5) Submission of a production verification report pursuant to § 205.105-4.

(6) Where the requirements of paragraph (c)(1) of this section are complied with, all those configurations contained within a category are considered to be represented by the tested vehicle and are considered to be production verified.

(7) Where all other requirements of paragraph (c)(1) of this section are complied with except that the manufacturer tests a configuration which does not have the highest sound level in a category (as identified in paragraph (c)(1)(B) of this section), all those configurations in the category which have sound levels no greater than the tested vehicle are considered to be production verified; however, a manufacturer must production verify according to the requirements of paragraph (b)(1) and/or (c)(1) of this section any configurations in the subject category which have a higher sound level than the vehicle configuration tested.

(8) A manufacturer may elect to production verify using representative testing pursuant to paragraph (c) of this section, all or part of his product line.

(9) A manufacturer may, at his option, proceed with any of the following alternatives with respect to any vehicle determined not in compliance with applicable standards:

(1) Delete that configuration from the production verification report. Configurations so deleted may be included in a later report under § 205.105-4. However, in the case of representative testing a new test vehicle from another configuration must be selected and production verified according to the requirements of paragraph (c) of this section, in order to production verify the category represented by the non-compliant vehicle.

(2) Modify the test vehicle and demonstrate by testing that it meets applicable standards. All modifications and test results must be reported in the production verification report. The manufacturer must modify all production vehicles of the same configuration in the same manner as the test vehicle before distribution into commerce.

(3) Upon request by the Director, Noise Enforcement Division, the manufacturer shall notify such Director of any production verification testing scheduled by the manufacturer pursuant to this section so that EPA Enforcement Officers may be present and observe such testing or conduct the testing in lieu of the manufacturer.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)



**§ 205.105-3 Configuration identification.**

(a) *Exterior configuration parameters.* A separate vehicle configuration shall be determined by each combination of the following parameters:

- (1) Exhaust system configuration:
  - (i) Single vertical.
  - (ii) Dual vertical.
  - (iii) Single horizontal.
  - (iv) Dual horizontal.
- (2) Air induction system (engine):
  - (i) Natural.
  - (ii) Turbocharged.
- (3) Cooling fan type:
  - (i) Axial.
  - (ii) Radial.
- (4) Engine manufacturer's horsepower rating.
- (5) Category parameters listed in § 205.105-2.

(b) *Interior configuration parameters.*

- (1) Accessories within the bus affecting noise absorption:
  - (i) Number of passenger seats.
  - (ii) Type of floor, wall, and passenger seat coverings.
- (2) Design characteristics of the bus body affecting noise transmission through the bus walls and floor:
  - (i) Thickness and type of acoustic and thermal insulation beneath the floor and within the walls.
- (3) Category parameters listed in § 205.105-2.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-4 Production verification report; Required data.**

(a) Prior to the distribution in commerce of any product to which this regulation applies, the manufacturer shall submit a production verification report to the Director, Noise Enforcement Division (EN-387), U.S. Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. A manufacturer may choose to submit separate production verification reports for different parts of his product line.

(b) The report shall be signed by an authorized representative of the manufacturer and shall include the following:

- (1) The name, location, and description of the manufacturer's noise emission test facilities which meet the specifications of § 205.104 and have been utilized to conduct testing pursuant to this subpart, except a test facility that has been described in a previous submission under this subpart need not again be described but must be identified as such.
- (2) A description of normal pre-delivery maintenance procedure.
- (3) A description of all vehicle configurations, as determined in accordance with § 205.105-3, to be distributed in commerce by the manufacturer, including the sound level degradation factor for each configuration and a list identifying or defining any device or element of design (including its location and method of operation) incorporated into vehicles for the purpose of noise control and attenuation both exterior and interior, including the following information for each configuration:

- (i) Muffler (exhaust):
  - (A) Manufacturer name.
  - (B) Manufacturer part number.
- (ii) Air induction system (engine):
  - (A) Manufacturer name.
  - (B) Manufacturer part number.
  - (iii) Cooling fan (radiator):
    - (A) Manufacturer name.
    - (B) Manufacturer part number.
  - (iv) Governed or maximum rated rpm.
  - (v) Any device which affects noise emissions from the vehicle and does not operate during the normal operating modes of the vehicle (e.g., over temperature protection).
  - (vi) Sound level degradation factor (see § 205.108-4).

The manufacturer may satisfy the vehicle configuration description requirements of this paragraph by submitting as part of the production verification report a copy of his sales literature that describes his product line including options; *Provided*, That this literature is supplemented with any additional information necessary to fulfill the requirements of this section. If a manufacturer elects to production verify pursuant to § 205.105-2(e), the configuration, within each category, which is estimated to have the highest sound level at the end of its Acoustical Assurance Period shall be identified. The manufacturer may estimate the sound level based on his best technical judgment or data. The criteria used to estimate each sound level shall be stated with the estimates.

(4) The following information for each noise emission test conducted:

- (i) The completed data sheet required by § 205.104 for all official tests conducted in accordance with § 205.105-7 including, for each invalid test, the reason for invalidation.
- (ii) A complete description of any preparation, maintenance or testing which was performed on the test vehicle and which will not be performed on all other production vehicles.
- (iii) The reason for replacement where a replacement vehicle was necessary, and test results, if any, for replaced vehicles.
- (5) A complete description of the sound data acquisition system if other than those specified in §§ 205.104-1(a) and 205.104-2(a).
- (6) The following statement and endorsement:

This report is submitted pursuant to Section 6 and Section 13 of the Noise Control Act of 1972. All testing for which data is reported herein is conducted in strict conformance with applicable regulations under 40 CFR Part 205 et seq. All the data reported herein is a true and accurate representation of such testing. All other information reported herein is, to the best of

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 (Company name)  
 knowledge, true and accurate. I am aware of the penalties associated with violations of the Noise Control Act of 1972 and the regulations thereunder.

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 (Authorized representative)

(c) Where a manufacturer elects to submit separate production verification reports for portions of his product line

as provided for in paragraph (a) of this section, information provided in previous reports need not be resubmitted. Except, that information necessary to update or make current previously submitted information must be submitted.

(d) Any change with respect to any information reported pursuant to this subpart shall be reported as soon as the information becomes available.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-5 Test vehicle sample selection.**

(a) Test vehicles of a configuration for which production verification testing is required by § 205.105-2 shall be a vehicle of the subject configuration which has been assembled using the manufacturer's normal production processes and will be sold or offered for sale in commerce.

(b) Should a situation arise in which the configuration to be tested consists of only vehicles with automatic transmissions, they shall be tested in accordance with § 205.104-1(c) (2).

(c) If the configuration to be tested consists of both automatic transmission and standard transmission vehicles, the test vehicle shall be a standard transmission vehicle unless the manufacturer has reason to believe that the automatic transmission vehicle emits a greater sound level.

(Secs. 10, 13, Noise Control Act (42 U.S.C. 4909, 4912).)

**§ 205.105-6 Test vehicle preparation.**

(a) Prior to the official test, the test vehicle selected in accordance with § 205.105-5 shall not be prepared, tested, modified, adjusted, or maintained in any manner unless such adjustments, preparation, modification, or tests are part of the manufacturer's prescribed manufacturing and inspection procedures, and documented in the manufacturer's internal vehicle assembly and inspection procedures or unless such adjustments or tests are required or permitted under this subpart or are approved in advance by the Administrator. The manufacturer may perform adjustments, preparations, modifications or tests normally performed at the port of entry by the manufacturer to prepare the vehicle for delivery to a dealer or a customer; *Provided*, That such adjustments, preparation, modification, or tests are documented in the production verification report.

(b) Equipment or fixtures necessary to conduct the test may be installed on the vehicle; *Provided*, That such equipment or fixtures shall have no effect on the noise emissions of the vehicle, as determined by the measurement methodology.

(c) In the event of a vehicle malfunction (i.e., failure to start, etc.) the manufacturer may perform the maintenance that is necessary to enable the vehicle to operate in a normal manner; *Provided*, That such maintenance is documented and reported in the final report and prepared and submitted in accordance with this subpart.

(d) No quality control, testing, assembly, or selection procedures shall be used on the test vehicle or any portion thereof, including parts and subassemblies, that will not normally be used during the production and assembly of all other vehicles of the category which will be distributed in commerce, unless such procedures are required or permitted under this subpart or are approved in advance by the Administrator.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-7 Testing.**

(a) (1) The manufacturer shall conduct one valid exterior and/or interior test in accordance with the test procedures specified in § 205.104 for each vehicle selected for verification testing.

(2) Where a manufacturer produces vehicles which are subject to both the exterior and interior noise standards he may conduct both exterior and interior tests simultaneously.

(b) No maintenance will be performed on the test vehicles except as provided for by § 205.105-6. In the event a vehicle is unable to complete either emission test, the manufacturer may replace the vehicle. Any replacement vehicle will be a production vehicle of the same configuration as the replaced vehicle or a noise configuration and will be subject to all the provisions of these regulations. Any replacement shall be reported in the production verification report including the reason for the replacement.

(c) In the event a vehicle fails to comply with the standards of this subpart when tested in accordance with the procedures specified in paragraph (a) of this section, the manufacturer may proceed in accordance with § 205.105-3(e).

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-8 Addition of changes to, and deviation from a vehicle configuration during the model year.**

(a) Any change to a configuration with respect to any of the parameters stated in § 205.105-3 shall constitute the addition of a new and separate configuration or category to the manufacturer's product line.

(b) (1) When a manufacturer introduces a new category or configuration to his product line, he shall proceed in accordance with § 205.105-2.

(2) If the configuration to be added can be grouped within a verified category and the new configuration is estimated to have a lower sound pressure level than a previously verified configuration within the same category, the configuration shall be considered verified. Provided, that the manufacturer submits a report pursuant to § 205.105-4 with respect to such configuration.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-9 Production verification based on data from previous model years.**

(a) Production verification of each configuration will be required at the beginning of each model year except that in certain instances, the Administrator,

upon request by the manufacturer, may permit the use of production verification data for specific configurations from previous production verification reports. Considerations relevant to his decision may include but are not limited to:

(1) The level of the standard in effect for the model year in question;

(2) Performance based on production verification data for previous model years;

(3) Performance based on data obtained from selective enforcement testing during previous model years; and

(4) The number and type of noise emission design changes incorporated in the new models that affect the noise emission level of that model.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-10 Cessation of distribution.**

(a) If a category or configuration is found to be non-conforming to this subpart by reason of failure to be properly verified, as required by § 205.105-2, the Administrator may issue an order to the manufacturer to cease to distribute in commerce vehicles of that category or configuration. However, such an order shall not be issued if the manufacturer has made a good faith attempt to properly production verify the category or configuration. The burden of establishing such good faith shall rest with the manufacturer.

(b) Any such order shall be issued after notice and opportunity for a hearing.

(Sec. 11, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-11 Labeling (interior/exterior standards)—compliance.**

(a) The manufacturer who is required to satisfy the production verification requirements of these regulations for the interior and/or exterior standards must satisfy the requirements of this section.

(1) The manufacturer of any vehicle subject to the provisions of § 205.102 shall, at the time of manufacture, affix a permanent, legible label, of the type and in the manner described in paragraphs (a) (2), (3), and (4) of this section, containing the information specified in this section, to all such vehicles to be distributed in commerce. The labels shall be affixed in such a manner that they cannot be removed without destroying or defacing them, and shall not be affixed to any equipment which is easily detached from such vehicle.

(2) A label shall be permanently attached, in a readily visible position in the operator's compartment.

(3) The label regarding exterior vehicle noise emissions shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label:

(i) The label heading:

Vehicle Exterior Noise Emission Control Information;

(ii) Full corporate name and trademark of manufacturer;

(iii) Date of manufacture;

(iv) The statement:

This vehicle conforms to U.S. EPA Regulations for Exterior Noise Emission Applicable to Buses.

The following acts or the causing thereof by any person are prohibited by the Noise Control Act of 1972: (A) The removal or rendering inoperative, other than for purposes of maintenance, repair or replacement, of any noise control device or element of design listed in the owner's manual incorporated into this vehicle in compliance with the Noise Control Act. (B) The use of this vehicle after such device or element of design has been removed or rendered inoperative.

(v) Vehicles manufactured solely for use outside the United States shall be clearly labeled "For Export Only."

(4) The label regarding interior vehicle noise emissions shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label:

(i) The label heading "Vehicle Interior Noise Emission Control Information";

(ii) Full corporate name and trademark of manufacturer;

(iii) Date of manufacture;

(iv) The statement:

This Vehicle Conforms to U.S. EPA Regulations for Interior Noise Emission Applicable to Buses.

The following acts or the causing thereof by any person are prohibited by the Noise Control Act of 1972: (A) The removal or rendering inoperative other than for purposes of maintenance repair or replacement, of any noise control device or element of design listed in the owner's manual incorporated into this vehicle in compliance with the Noise Control Act. (B) The use of this vehicle after such device or element of design has been removed or rendered inoperative.

(v) Vehicles manufactured solely for use outside of the United States shall be clearly labeled "For Export Only."

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.105-2 Labeling—exterior. (Reserved)**

**§ 205.106 Testing by the Administrator.**

(a) (1) The Administrator may require that any vehicle to be tested pursuant to these regulations or any untested vehicles be submitted to him, at such place and time as he may designate for the purpose of conducting test in accordance with the test procedures described in § 205.104 to determine whether such vehicles conform to applicable regulations.

(2) The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment of the type required by these regulations shall be made available by the manufacturer for test operations. The Administrator may conduct such tests with his own equipment, which shall equal or exceed the performance specifications of the instrumentation and equipment specified by the Administrator in these regulations.

(b) (1) If, based on tests conducted by EPA or on other relevant information, the Administrator determines that the test facility does not meet the requirements of § 205.104 (including any alternative procedures that may be approved thereunder), he will notify the manufacturer in writing of his determination and the reasons therefor.

(2) After any notification in paragraph (b) (1) of this section, no data derived from such test facility will be acceptable for purposes of this part and the Administrator may issue an order to the manufacturer, with respect to the vehicle category or configuration in question, to cease to distribute in commerce vehicles of such category or configuration: Except, that any such order shall be issued only after notice and opportunity for a hearing. Such notification may be included in any notifications under paragraph (b) (1) of this section. A manufacturer may request that the Administrator grant a hearing. Request shall be made not later than fifteen (15) days, or other such period as may be allowed by the Administrator, subsequent to notification of the Administrator's intent to issue an order to cease to distribute.

(3) The manufacturer may request in writing that the Administrator reconsider his determination in paragraph (b) (1) of this section based on data or information which indicates that changes have been made to the test facility and such changes have resolved the reasons for disqualification.

(4) The Administrator will notify the manufacturer of his determination with regard to the requalification of the test facility within 10 days of the manufacturer's request for reconsideration pursuant to paragraph (b) (3) of this section.

(Sec. 11, 13, Noise Control Act (42 U.S.C. 4910, 4912).)

§ 205.107 Selective enforcement auditing requirements.

§ 205.107-1 Test request.

(a) The Administrator will request all testing under this subpart by means of a test request addressed to the manufacturer.

(b) The test request will be signed by the Assistant Administrator for Enforcement or his designee. The test request will be delivered by an EPA Enforcement Officer to the plant manager or other responsible official as designated by the manufacturer.

(c) The test request will specify the vehicle category or configuration selected for testing, the batch selected for testing, the batch size, the manufacturer's plant or storage facility from which the vehicles must be selected, and the time at which a vehicle must be selected. The test request will also provide for situations in which the selected configuration or category is unavailable for testing. The test request may include an alternative category or configuration selected for testing in the event that vehicles of the first specified category or configuration are not available for testing because

the vehicles are not being manufactured at the specified plant, are not being manufactured during the specified time, or are not being stored at the specified plant or storage facility.

(d) Any manufacturer shall, upon receipt of the test request: (1) If the manufacturer produces less than 4 of the specified category or configuration of vehicles per given period of time as specified in the test request, select and test every vehicle produced in two consecutive batches in accordance with these regulations and the conditions specified in the test request.

(i) If one or more of the vehicles in a test batch fails to meet the standard, the batch is rejected.

(ii) If one batch is rejected then the batch sequence determined under this paragraph is rejected.

(2) If the manufacturer produces 4 or more of the specified category or configuration of vehicle per given period of time as specified in the test request, select and test a batch sample of vehicles from consecutively produced batches of the vehicle category or configuration specified in the test request in accordance with these regulations and the conditions specified in the test request.

(e) (1) Any testing conducted by the manufacturer pursuant to a test request shall be initiated within such period as is specified within the test request. Such test initiation may be delayed for increments of 24 hours or one business day where ambient test site weather conditions in any 24-hour period do not permit testing: *Provided*, That the ambient test site weather conditions for that period are recorded.

(2) The manufacturer shall complete exterior noise emission and/or interior noise testing on a minimum of five vehicles per day unless otherwise provided for by the Administrator or unless ambient test site conditions only permit the testing of a lesser number: *Provided*, That ambient test site weather conditions for that period are recorded.

(3) The manufacturer shall be allowed 24 hours to ship vehicles from a batch sample from the assembly plant to the testing facility if the facility is not located at this plant or in close proximity to the plant: Except, that the Administrator may approve more time based upon a request by the manufacturer accompanied by a satisfactory justification.

(f) The Administrator may issue an order to the manufacturer to cease to distribute into commerce vehicles of a specified category or configuration being manufactured at a particular facility if:

(1) The manufacturer refuses to comply with the provisions of a test request issued by the Administrator pursuant to this section; or

(2) The manufacturer fails to comply with any of the requirement of this section.

(g) A cease-to-distribute order shall not be issued under paragraph (f) of this section if such refusal is caused by conditions and circumstances outside the

control of the manufacturer which renders it impossible to comply with the provisions of a test request or any other requirements of this section. Such conditions and circumstances shall include, but are not limited to, any uncontrollable factors which result in the temporary unavailability of equipment and personnel needed to conduct the required tests, such as equipment breakdown or failure or illness of personnel, but shall not include failure of the manufacturer to adequately plan for and provide the equipment and personnel needed to conduct the tests. The manufacturer will bear the burden of establishing the presence of the conditions and circumstances required by this paragraph.

(h) Any such order shall be issued only after a notice and opportunity for a hearing.

(Secs. 11, 13, Noise Control Act (42 U.S.C. 4910, 4912).)

§ 205.107-2 Test vehicle sample selection.

(a) Vehicles comprising the batch sample which are required to be tested pursuant to a test request in accordance with this subpart will be selected in the manner specified in the test request from a batch of vehicles of the category or configuration specified in the test request. If the test request specifies that the vehicles comprising the batch sample must be selected randomly, the random selection will be achieved by sequentially numbering all of the vehicles in the batch and then using a table of random numbers to select the number of vehicles as specified in paragraph (c) of this section based on the batch size designated by the Administrator in the test request. An alternative random selection plan may be used by a manufacturer: *Provided*, That such a plan is approved by the Administrator. If the test request does not specify that test vehicles must be randomly selected, the manufacturer shall select test vehicles consecutively. The provisions of § 205.105-5 (b) and (c) shall also pertain to this section.

(b) The Acceptable Quality Level is 10 percent. The appropriate sampling plans associated with the designated AQL are contained in Table II of Appendix I to this subpart.

(c) The appropriate batch sample size will be determined by reference to Tables I and II of Appendix I to this subpart. A code letter is obtained from Table I based on the batch size designated by the Administrator in a test request. The batch sample size will be obtained from Table II. The batch sample size will be equal to the maximum cumulative sample size for the appropriate code letter obtained from Table I plus an additional 10 percent rounded off to the next highest number.

(d) If the test request specifies that vehicles comprising the batch sample must be selected randomly, individual vehicles comprising the test sample will be randomly selected from the batch sample using the same random selection plan as in paragraph (a) of this section. Test

sample size will be determined by entering Table II, and relevant information. (e) The test vehicles of the category or configuration selected for testing shall have been assembled by the manufacturer for distribution in commerce pursuant to the manufacturer's normal production process. (f) Unless otherwise indicated in the test request, the manufacturer will select the batch sample from the production batch next scheduled after receipt of the test request, of the category or configuration specified in the test request. (g) Unless otherwise indicated in the test request, the manufacturer shall select the vehicles designated in the test request for testing. (h) At their discretion, EPA Enforcement Officers, rather than the manufacturer, may select the vehicles designated in the test request. The manufacturer will keep on hand all vehicles in the batch sample until such time as the batch is accepted or rejected in accordance with § 205.107-6. Except that vehicles actually tested and found to be in conformance with these regulations need not be kept. (Sec. 13, Noise Control Act (42 U.S.C. 4912).)

#### § 205.107-3 Test vehicle preparation.

Prior to the official test, the test vehicle selected in accordance with § 205.107-2 will be prepared in accordance with § 205.105-6.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

#### § 205.107-4 Testing procedures.

(a) The manufacturer shall conduct one valid test in accordance with the procedures specified in § 205.104 for each vehicle selected for testing pursuant to this subpart. (b) No maintenance will be performed on test vehicles except as provided for by § 205.107-3. In the event a vehicle is unable to complete the emission test, the manufacturer may replace the vehicle. Any replacement vehicle will be a production vehicle of the same configuration as the replaced vehicle. It will be randomly selected from the batch sample and will be subject to all the provisions of these regulations.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

#### § 205.107-5 Reporting of the test results.

(a) (1) The manufacturer shall submit a copy of the test report for all testing conducted pursuant to § 205.107 at the conclusion of each 24-hour period during which testing is done.

(2) For each test conducted the manufacturer will provide the following information:

- (i) Configuration and category identification where applicable;
- (ii) Sound Level Degradation Factor (SLDF);
- (iii) Year, make, assembly date, and model of vehicle;
- (iv) Vehicle serial number; and
- (v) Test results by serial numbers.

(3) The first test report for each batch sample will contain a listing of all serial numbers in that batch.

(b) In the case where an EPA Enforcement Officer is present during testing required by this subpart, the written reports requested in paragraph (a) of this section may be given directly to the Enforcement Officer.

(c) Within 5 days after completion of testing of all vehicles in a batch sample, the manufacturer shall submit to the Administrator a final report which will include the information required by the test request in the format stipulated in the test request in addition to the following:

- (1) The name, location, and description of the manufacturer's emission test facilities, which meet the specifications of § 205.104 and were utilized to conduct testing reported pursuant to this section; Except that a test facility that has been described in a previous submission under this subpart need not again be described but must be identified as such.
- (2) A description of the random vehicle selection method used, referencing any tables of random numbers that were used, name of the person in charge of the random number selection, if the vehicle test request specifies a random vehicle selection.

(3) The following information for each interior/exterior noise emission test conducted:

- (i) The completed data sheet required by § 205.104 for all noise emission tests including for each invalid test, the reason for invalidation.
- (ii) A complete description of any modification, repair, preparation, maintenance, and/or testing which was performed on the test vehicle and will not be performed on all other production vehicles.
- (iii) The reason for the replacement and the test results for the replaced vehicles.
- (iv) A complete description of the sound data acquisition system if other than those specified in § 205.104.

(5) The following statement and endorsement:

This report is submitted pursuant to section 6 and section 13 of the Noise Control Act of 1972. All testing for which data is reported herein was conducted in strict conformance with applicable regulations under 40 CFR Part 205 et seq. All the data reported herein is a true and accurate representation of such testing. All other information reported herein is, to the best of (company name) knowledge, true and accurate. I am aware of the penalties associated with violations of the Noise Control Act of 1972 and the regulations thereunder.

(authorized representative)

(Sec. 13, Noise Control Act (42 U.S.C. 49-12).)

#### § 205.107-6 Acceptance and rejection of batches.

(a) A failing product is one whose measured sound level is in excess of the sound level equal to the applicable noise

emission standard set forth in § 205.102 minus the SLDF as determined in § 205.108-4 for the category or configuration being tested.

(b) The batch from which a batch sample is selected will be accepted or rejected based upon the number of failing vehicles in the batch sample. A sufficient number of test samples will be drawn from the batch sample until the cumulative number of failing vehicles is less than or equal to the acceptance number or greater than or equal to the rejection number appropriate for the cumulative number of vehicles tested. The acceptance and rejection numbers listed in Table II of Appendix I to this subpart at the appropriate code letter obtained according to § 205.107-2 will be used in determining whether the acceptance or rejection of a batch has occurred.

(c) Acceptance or rejection of a batch takes place when the decision that a vehicle is a failing vehicle is made on the last vehicle required to make a decision under paragraph (a) of this section.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

#### § 205.107-7 Acceptance and rejection of batch sequence.

(a) The manufacturer will continue to inspect consecutive batches until the batch sequence is accepted or rejected. The batch sequence will be accepted or rejected based upon the number of rejected batches. A sufficient number of consecutive batches will be inspected until the cumulative number of rejected batches is less than or equal to the sequence acceptance number or greater than or equal to the sequence rejection number appropriate for the cumulative number of batches inspected. The acceptance and rejection number listed in Table III of Appendix I to this subpart at the appropriate code letter obtained according to § 205.107-2 will be used in determining whether the acceptance or rejection of a batch sequence has occurred.

(b) Acceptance or rejection of a batch sequence takes place when the decision that a vehicle is a failing vehicle is made on the last vehicle required to make a decision under paragraph (a) of this section.

(c) If the batch sequence is accepted, the manufacturer will not be required to perform any additional testing on vehicles from subsequent batches pursuant to the initiating test request.

(d) The Administrator may terminate testing earlier than required in paragraph (b) based on a request by the manufacturer, accompanied by voluntary cessation of distribution in commerce, from all plants, of vehicles from the configuration in question. Provided, That once production is reinstated the manufacturer must take the action described in § 205.107-9(a)(1) and (a)(2) prior to distribution in commerce of any vehicle from any plant of the vehicle category or configuration in question.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.107-8 Continued testing.**

(a) If a batch sequence is rejected in accordance with paragraph (b) of § 205.107-7, the Administrator may require continued 100 percent testing with respect to all vehicles of that category or configuration produced at that plant.

(b) The Administrator will notify the manufacturer in writing of his intent to require any 100 percent testing of vehicles pursuant to paragraph (a) of this section.

(c) Any tested vehicle which demonstrates conformance with the applicable standards may be distributed into commerce.

(d) Any knowing distribution into commerce of a vehicle which does not comply with the applicable standards is a prohibited act.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.107-9 Prohibition on distribution in commerce; manufacturer's remedy.**

(a) The Administrator will permit the cessation of continuous testing under § 205.107-8 once the manufacturer has taken the following actions:

(1) Submits a written report to the Administrator which identifies the reason for the noncompliance of the products, describes the problem, and describes the proposed quality control and/or quality assurance remedies to be taken by the manufacturer to correct the problem or follows the requirements for an engineering change pursuant to § 205.105-9; and

(2) Demonstrates that the specified product, category or configuration has passed a retest conducted in accordance with § 205.107 and the condition specified in the initial test request.

(b) Any product failing the prescribed noise emission tests conducted pursuant to this Subpart C may not be distributed in commerce until necessary adjustments or repairs have been made and the product passes a retest.

(c) No products of a rejected batch which are still in the hands of the manufacturer may be distributed in commerce unless the manufacturer has demonstrated to the satisfaction of the Administrator that such products do in fact conform to the regulation. Except, that any product that has been tested and does, in fact, conform with this regulation may be distributed in commerce.

(Secs. 11, 13, Noise Control Act (42 U.S.C. 4910, 4912).)

**§ 205.108 In-use requirements.**

**§ 205.108-1 Warranty.**

(a) The vehicle manufacturer who is required to production verify the exterior noise emission standard under this part shall include in the owner's manual or in other information supplied to the ultimate purchaser the following statement:

**EXTERIOR NOISE EMISSIONS WARRANTY**

..... warrants to the first (name of mfr.) person who purchases this vehicle for purposes other than resale and to each subsequent purchaser that this vehicle was de-

signed, built and equipped to conform at the time of sale to such first purchaser with all applicable U.S. EPA Bus exterior noise control regulations.

This warranty is not limited to any particular part, component or system of the vehicle. Defects in the design, assembly, or in any part, component, or system of the vehicle which, at the time of sale to such first purchaser, caused exterior noise emission levels to exceed Federal standards are covered by this warranty for the actual life of the vehicle.

(b) The manufacturer who is required to production verify the interior noise level standard under this part shall include in the owner's manual or in other information supplied to the ultimate purchaser the following statement:

**INTERIOR NOISE EMISSIONS WARRANTY**

..... warrants to the first (name of mfr.)

person who purchases this vehicle for purposes other than resale and to each subsequent purchaser that the interior of this vehicle was designed, built and equipped to conform at the time of sale to such first purchaser with all applicable U.S. EPA Bus interior noise control regulations.

This warranty is not limited to any particular part, component or system of the interior of the vehicle. Defects in the design, assembly, or in any part, component, or system of the interior of the vehicle which, at the time of sale to such first purchaser, caused interior noise emission levels to exceed Federal standards are covered by this warranty for the actual life of the vehicle.

(c) Not later than the date of submission of the product verification report required by § 205.105-4, the manufacturer shall submit to the Administrator two (2) copies of the written noise emission warranty required by paragraph (a) of this section and two (2) copies of all other information provided to the ultimate purchaser which could reasonably be construed as impacting on the warranty.

(d) Not later than ten (10) days after dissemination, the manufacturer shall submit two (2) representative copies of all information of a general nature, or modifications thereto, which is provided to dealers, zone representatives, or other agents of the manufacturer regarding the administration and application of the noise emission warranty. Information regarding noise emission warranty claims which is provided to a dealer or representative in response to a particular warranty claim or dealer inquiry is not considered to be information of a general nature, if such information does not receive broad dissemination to dealers.

(e) All information required to be forwarded to the Administrator pursuant to this section shall be addressed to: Director, Noise Enforcement Division, (EN-387), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

**§ 205.108-2 Tampering.**

(a) (1) The following provisions are applicable as appropriate to the manufacturer who is required to conduct production verification for the exterior and/or interior standard,

(2) For each model year and for each configuration of vehicles covered by this part, the manufacturer shall submit to the Administrator a list of those acts which, in the manufacturer's estimation, might be done to the vehicle in use, on more than an occasional basis, and result in an increase in the interior and/or exterior noise emission levels above the standards prescribed in § 205.102. The manufacturer should indicate, wherever possible, the amount of this increase in noise emission level.

(b) The above information shall be submitted to the Administrator within adequate time prior to the introduction into commerce of each configuration to allow for the development and printing of tampering lists, as provided in paragraphs (c) and (d), of this section.

(c) On the basis of the above information, the Administrator will develop a list of acts which, in the Administrator's judgment, constitute the removal or rendering inoperative, totally or partially other than for purposes of maintenance, repair, or replacement, of noise control devices or elements of design of the vehicle. This list shall be provided to the manufacturer by the Administrator within 30 days of the date on which the information required in paragraph (a) of this section is submitted by the manufacturer and shall be included in the statement to the ultimate purchaser as required by paragraph (d) (2) of this section. If the list is not provided by the Administrator within 30 days of the date on which the information required in paragraph (a) of this section is submitted, the manufacturer shall include only the statement in paragraph (d) (1) of this section until such time as the list has been provided and the owner's manual is reprinted for other purposes.

(d) The appropriate manufacturer shall include in the owner's manual the following information:

(1) The statement:

**TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED**

Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

(2) The statement:

Among those acts presumed to constitute tampering are the acts listed below.

Immediately following this statement, the manufacturer shall include the list developed by the Administrator under paragraph (c) of this section.

(e) Any act included in the list prepared pursuant to paragraph (c) of this section is presumed to constitute tampering; however, in any case in which a proscribed act has been committed and it has been shown that such act resulted in no increase in the A-weighted sound level of the vehicle or that the

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Vehicle still meets the noise emission standard of § 205.102, such act will not constitute tampering.

(f) The provisions of this section are not intended to preclude any State or local jurisdiction from adopting and enforcing its own prohibitions against the removal or rendering inoperative of noise control systems on vehicles subject to this part.

(g) All information required by this section to be furnished to the Administrator shall be sent to the following address:

Director, Noise Enforcement Division (EN-387), U.S. Environmental Protection Agency, 401 M Street SW, Washington, D.C. 20460.

Sec. 101.13, Noise Control Act 742 U.S.C. 4909-4912.

§ 205.108-3 Instructions for maintenance, use and repair.

(a) The manufacturer responsible for the exterior and or the interior noise standards shall provide to the ultimate purchaser of each vehicle covered by this subpart written instructions for the proper maintenance, use and repair of the vehicle and or vehicle body in order to provide reasonable assurance of the elimination or minimization of noise emission degradation throughout the life of the vehicle.

(1) The purpose of the instructions is to inform purchasers and mechanics of those acts necessary to reasonably assure that the degradation of noise emission level is eliminated or minimized during the life of the vehicle. Manufacturers shall prepare the instructions with this purpose in mind. The instructions shall be clear and to the extent practicable, written in non-technical language.

(2) The instructions shall not be used to secure an unfair competitive advantage. They shall not restrict replacement equipment to original equipment or service to dealer service unless such manufacturer makes public the performance specifications on such equipment.

(b) For the purpose of encouraging proper maintenance, the manufacturer shall provide a record or log book which shall contain a schedule for the performance of all required noise emission control maintenance. Space shall be provided in this record book so that the purchaser can note what maintenance was done, by whom, where and when.

(c) Not later than the date of submission of the production verification report required by § 205.105-4, the manufacturer shall submit to the Administrator two (2) copies of the maintenance instructions including the record book required by paragraphs (a) and (b) of this section.

(d) The Administrator will require modifications to the instructions if they are not sufficient to fulfill the requirements of paragraph (a) of this section.

(e) Information required to be submitted to the Administrator pursuant to this section shall be sent to the following address:

Director, Noise Enforcement Division (EN-387), U.S. Environmental Protection Agency, 401 M Street SW, Washington, D.C. 20460.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

§ 205.109-3 Sound level degradation factor (SLDF) and retention of durability data.

(a) Each manufacturer responsible for compliance with the standards specified in § 205.102 shall develop a Sound Level Degradation Factor for each of his vehicle configurations utilizing the records compiled under paragraph (b) of this section.

(1) The manufacturer shall establish and maintain records which demonstrate the increase in sound level which will occur for each vehicle configuration during the specified AAP.

(2) The records may include, but need not be limited to, the following:

- (i) Durability data and actual noise testing on critical sound producing or attenuating components
- (ii) Sound level deterioration curves on the entire vehicle.
- (iii) Data from products in actual use.
- (iv) The SLDF is to be used in all production Verification testing and Selective Enforcement Audit testing to determine compliance.

(d) If the manufacturer determines the vehicle sound level will not increase during the AAP when properly used and maintained, the SLDF is zero.

(e) If a manufacturer determines that a vehicle's sound level will not increase, but rather decreases with use, yielding a negative SLDF, he shall use zero as the SLDF in all testing under these regulations, but shall determine and record the actual SLDF.

(f) A separate SLDF shall be developed for both the exterior and the interior standards.

(Sec. 13, Noise Control Act (42 U.S.C. 4912).)

§ 205.109 Recall of noncomplying vehicles.

(a) Pursuant to section 11(d)(1) of the Act, the Administrator may issue an order to the manufacturer to recall and repair or modify any vehicles distributed in commerce which are not in compliance with this subpart.

(b) A recall order issued pursuant to this section shall be based upon a determination by the Administrator that vehicles of a specified category or configuration have been distributed in commerce which do not conform to the regulations. Such determination may be based on:

- (1) A technical analysis of the noise emission characteristics of the category or configuration in question; or
- (2) Any other relevant information, including test data.

(c) For the purposes of this section, noise emissions may be measured by any test prescribed in § 205.104 for testing prior to sale or any other test which has been demonstrated to correlate with the prescribed test procedure.

(d) Any order to recall shall be issued only after notice and an opportunity for a hearing.

(e) All costs, including labor and parts, associated with the recall and repair or modification of non-complying vehicles under this section shall be borne by the manufacturer.

(f) This section shall not limit the discretion of the Administrator to take any other actions which are authorized by the Act.

(Sec. 11, Noise Control Act (42 U.S.C. 4910).)

APPENDIX I

TABLE I - Sample size code letters

Batch size	Code letters
4 to 8	A
9 to 15	B
16 to 25	C
26 and larger	D

TABLE II - Sampling plans for inspecting batches

Sample size code letter	Test sample size	Cumulative test sample size	Batch inspection criteria	
			Acceptance No.	Rejection No.
A	1st	4	0	1
B	1st	5	0	1
B	2d	10	0	2
C	1st	11	0	2
C	2d	22	0	3
D	1st	23	0	3
D	2d	46	0	4
D	3d	69	0	5
D	4d	92	0	6
D	5th	115	0	7
D	6th	138	0	8
D	7th	161	0	9

1 Batch acceptance not permitted at this sample size.

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TABLE III.—Batch sequence plans

Sample size code letter:	Number of batches	Cumulative number of batches	Sequence inspection criteria	
			Acceptance No.	Rejection No.
A.....	2	2	1	(1)
B.....	3	3	2	(1)
C.....	4	4	3	(1)
D.....	5	5	4	(1)
E.....	6	6	5	(1)
F.....	7	7	6	(1)
G.....	8	8	7	(1)
H.....	9	9	8	(1)
I.....	10	10	9	(1)
J.....	11	11	10	(1)
K.....	12	12	11	(1)
L.....	13	13	12	(1)
M.....	14	14	13	(1)
N.....	15	15	14	(1)
O.....	16	16	15	(1)
P.....	17	17	16	(1)
Q.....	18	18	17	(1)
R.....	19	19	18	(1)
S.....	20	20	19	(1)
T.....	21	21	20	(1)
U.....	22	22	21	(1)
V.....	23	23	22	(1)
W.....	24	24	23	(1)
X.....	25	25	24	(1)
Y.....	26	26	25	(1)
Z.....	27	27	26	(1)

1 Batch sequence rejection not permitted for this number of batches.  
 2 Batch sequence acceptance not permitted for this number of batches.

TABLE IV.—Recommended format for vehicle noise data sheet

Test report No..... Manufacturer.....

Vehicle:

Trade name..... VIN.....

Model year..... Other reference No.....

Configuration identification..... Category identification.....

Test site identification and location.....

Noise level degradation factor.....

Instrumentation:

Microphone manufacturer..... Model No..... Serial No.....

Sound level manufacturer..... Model No..... Serial No.....

Calculator manufacturer..... Model No..... Serial No.....

Other and manufacturer..... Model No..... Serial No.....

Test data:

Approach feet..... Date of test.....

Approach RPM..... Temp..... Wind.....

Acceleration test.....

ACCELERATION TEST

Run No.	1	2	3	4	5
dBA:					
Left					
Right					

Highest RPM attained in end zone.....

Calculated sound pressure..... dBS

INTERIOR TEST

Microphone location.....

Level measured (dBA).....

Run No.:

1.....

2.....

3.....

4.....

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