Chapter 177. Emission Inspection Program

pennsylvania
DEPARTMENT OF TRANSPORTATION
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PUB-763 (10-17)

Subchapter A.
GENERAL PROVISIONS

GENERAL

IMPLEMENTATION OF EMISSION INSPECTION PROGRAM

I/M PROGRAM

GENERAL

§ 177.1. Purpose.

This chapter implements elements of Part IV of the Vehicle Code, 75 Pa.C.S. § § 4531, 4701, 4702, 4706, 4707 and 4721.

§ 177.2. Application of equipment rules.

Equipment rules apply to subject vehicles operated on a highway, unless specifically exempted by this chapter.

§ 177.3. Definitions.

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

ASM test—Acceleration Simulation Mode test—A one mode "loaded" mode emission test (ASM 5015), utilizing a dynamometer, which simulates driving a vehicle at a predetermined speed and driving condition.

Antique motor vehicle—A motor vehicle, which displays a current antique motor vehicle registration plate issued by the Department, and which is consistent with the definition of ''antique motor vehicle'' as provided in section 102 of the Vehicle Code (relating to definitions).

Approved exhaust emission analyzer—An instrument, developed for measuring the hydrocarbon, carbon monoxide, carbon dioxide or oxides of nitrogen emissions from the exhaust system of a vehicle, which meets required emission analyzer specifications and program requirements and has been approved by the Department under § 177.406(b) (relating to equipment).

BAR97—The acronym used for the California Bureau of Automotive Repair's Exhaust Gas Analyzer system Specifications provided in 1996, for the testing and documentation of technical specifications required for the approval of analyzer and dynamometer use in California for the measurement of hydrocarbon and carbon monoxide emissions. These specifications, including performance criteria, design characteristics, instrument evaluation procedures and documentation, warranty requirements and logistics shall be met or surpassed for an exhaust gas analyzer and dynamometer to be considered equivalent to the BAR97 exhaust gas analyzer system. Copies of the BAR97 specifications may be obtained from the Department of Consumer Affairs, Bureau of Automotive Repair, California Vehicle Inspection Program, 3116 Bradshaw Road, Sacramento, California 95827. A fee for this document may be required.

BAR80—The acronym used for the California Bureau of Automotive Repair's Exhaust Gas Analyzer Specifications: 1979 provided in 1980 for the testing and documentation of technical specifications required for the approval of analyzer use in California for the measurement of hydrocarbon and carbon monoxide emissions.

Bureau—The Bureau of Motor Vehicles of the Department.

Business day—Each day in which an appointed emission inspection station is open for business, excluding Sundays and selected State holidays determined by the Department.

CO (carbon monoxide)—A colorless, odorless gas formed by incomplete combustion of carbon, including gasoline. It is considered a mobile source pollutant.

CO2 (carbon dioxide)—A colorless, odorless incombustible gas formed during respiration and combustion. Certificate of emission inspection—A serially numbered sticker that, when affixed to the windshield of a vehicle, indicates that the vehicle has passed an emission inspection consistent with this chapter. The certificate is also referred to in this chapter as a sticker.

Certificate of waiver—An official Department document indicating that the requirement of passing emission reinspection has been waived for a vehicle under § 177.291 (relating to certificates of emission inspection).

Certified emission inspector—A person who holds a valid certification card issued by the Bureau which certifies that the person is qualified and has passed the requirements to perform emission inspections on subject vehicles in an appointed emission inspection station.

Certified repair technician—A person who has provided proof to the Department of completion of Department or Nationally recognized emission component repair training and has received a valid emissions repair technician certificate issued by the Department.

Classic motor vehicle—A motor vehicle, but not a reproduction thereof, which displays a current classic motor vehicle registration plate issued by the Department and meets the definition provided in section 102 of the Vehicle Code.

Collectible motor vehicle—A reconstructed motor vehicle, but not a reproduction thereof, substantially modified from the manufacturer's original specifications and appearance and maintained in a collectible condition as determined by the Department of Transportation.

Commonwealth emission inspection station—An inspection station appointed by the Commonwealth to conduct emission inspections on subject vehicles owned by and engaged exclusively in the performance of the official duties of the Federal government, the Commonwealth or a political subdivision of this Commonwealth.

Consumer complaint emission inspection procedure—The method provided for consumers who wish to have the results of the emission inspection verified at an inspection facility or lane operated under contract to the Department where the verification is supervised by a Department designated official.

DTC (Diagnostic Trouble Code)—An alphanumeric code which is set in a vehicle's onboard computer when a monitor detects a condition likely to lead to (or which has already produced) a component or system failure.

Decentralized inspection—A system for vehicle emission inspection using privately owned and operated, Department-certified facilities to provide for vehicle emission testing or allowing repairs, or both.
Department—The Department of Transportation of the Commonwealth.

EPA—The United States Environmental Protection Agency.

Emission inspection—The testing of the exhaust emissions control systems of a subject vehicle as required by this chapter. The term includes an inspection performed utilizing an I/M emission test, an OBD-I/M check, an evaporative function test, gas cap test, visual inspection or any combination of these tests.

Emission inspection program—A vehicle emission inspection program as defined by the EPA designed to meet an I/M performance standard.

Emission inspection report—A document automatically generated by an emission inspection device once the testing cycle is completed.

Federal standard—A minimum standard of vehicle or vehicle equipment performance issued under the National Highway Traffic Safety Administration Act of 1991 (49 U.S.C.A. § § 30101—30169), the act of July 5, 1994 (Pub. L. No. 103-272) (108 stat. 745), Chapter 323—Consumer Information, known as the Motor Vehicle Information, Standards and Requirements Act (49 U.S.C.A. § § 32301—32309) or the Clean Air Act (42 U.S.C.A. § 7401—7671q).

Field certified exhaust emission analyzer—An approved exhaust emission analyzer certified by the manufacturer or distributor as being properly calibrated at the emission inspection station according to the manufacturer's specifications and Department procedures and capable of properly recording, storing and transferring test data.

Fleet emission inspection station—An inspection station appointed by the Commonwealth to inspect a minimum of 15 subject vehicles, space permitting, leased or owned and registered in the name of the person in whose name the certificate of appointment is issued.

GVWR (Gross vehicle weight rating)—The value specified by the manufacturer on the Federal weight certification label as the loaded weight of a single vehicle.

Gas cap test—A fuel filler gas cap test, as specified in § 177.204(2)(iii) (relating to basis for failure), that determines whether or not the vehicle's gas cap is functioning as designed.

General emission inspection station—An inspection station appointed by the Department to conduct emission inspections on all subject vehicles, including fleet, government and private vehicles.

HC (Hydrocarbon)—An organic compound containing carbon and hydrogen and often occurring in petroleum, natural gas, coal and bitumens.

I/M—Inspection/Maintenance.

I/M emission test—The testing of exhaust emissions of a subject vehicle, while the vehicle is running, for CO, HC, NO or other emitted gasses.

I/M indicator insert (for safety certificate of inspection)—An insert containing an indicator in the background to be affixed to the safety certificates of inspection to indicate a requirement for an emission I/M inspection.

I/M monthly insert (for a certificate of emission inspection)—An insert to be affixed to the certificate of emission inspection to show the expiration date of the current emission I/M inspection.

I/M region—The designation and grouping of counties in the Commonwealth certified under § 177.51(d) (relating to program requirements for purposes of administration of emission inspection requirements) under this chapter. Currently, in accordance with § 177.51(d), Chester, Delaware, Bucks, Montgomery and Philadelphia Counties constitute the Philadelphia Region; Allegheny, Beaver, Washington and Westmoreland Counties constitute the Pittsburgh Region. Pending certification in accordance with § 177.51(d), Berks, Dauphin, Cumberland, Lancaster, Lebanon, Lehigh, Northampton and York Counties shall constitute the South Central Region; Blair, Cambria, Centre, Erie, Lackawanna, Luzerne, Lycoming and Mercer Counties shall constitute the Northern Region.

I/M registration indicator—An indicator on the registration card which identifies the vehicle as a subject vehicle which shall be emission inspected annually.

Idle test—A vehicle emission inspection test procedure for sampling exhaust emissions which requires maintaining the vehicle's engine speed in the idle range of rpms. The vehicle engine speed is set with the operational range of rpms as prescribed in 40 CFR Part 51, Subpart S, Appendix B(I) (relating to test procedures), and the exhaust gas emissions are measured within the single idle speed range.

Implement of husbandry—Farm equipment that meets all of the following criteria:

(1) Is equipped with pneumatic tires except if prohibited by religious beliefs.

(2) Is infrequently operated or moved upon highways.

(3) Is used in agriculture for any of the following purposes:

(i) performance of agriculture production or harvesting activities for the farmer's agricultural operations; or

(ii) transportation of agricultural products or agricultural supplies for the benefit of the farmer's agricultural operations.

The term also includes earthmoving equipment and any other vehicle determined by the department to be an implement of husbandry.

Inspection area—The area in which emission inspections shall be conducted.

Light duty trucks—Trucks weighing less than 9,000 pounds GVWR.

Light duty vehicles—Passenger cars or multi-purpose vehicles weighing less than 6,000 pounds GVWR.

Limited fleet inspection periods—Inspection periods in which approved fleet owners/lessors are required to emission inspect their vehicles, as specified in the Application for Fleet Stations form provided by the Department.

MIL (Malfunction Indicator Light)—Dashboard light illuminated when a vehicle's onboard computer detects conditions likely to result in emissions exceeding standards by 1 1/2 times or greater. The MIL may display

‘‘Check Engine,’’ ‘‘Service Engine Soon,’’ or other similar message, or a symbol or picture representing an automobile engine.

MY (Model Year)—The calendar year so designated by the manufacturer of a vehicle as the model year for a particular vehicle design.

NMHC (Nonmethane hydrocarbons)—A mobile source or exhaust pollutant for which the EPA has set allowable standards.

NO (Oxides of nitrogen)—A mobile source or exhaust pollutant for which the EPA has set allowable standards.

OBD (Onboard Diagnostics)—A system of vehicle component and condition monitors controlled by a central, onboard computer designed and programmed, among other things, to signal the motorist when conditions exist which could lead to (or which has already produced) a component or system failure.

OBD Data Link Connector (DLC)—The interface which allows connection of the vehicle’s OBD computer to an OBD scanner. Connecting an OBD scanner to the DLC allows I/M inspectors and vehicle repair technicians to read the readiness status of the vehicle’s various onboard monitors and to read any diagnostic trouble codes recorded by the OBD computer.

OBD-I/M Check—An inspection and evaluation of a vehicle’s emission control systems utilizing the vehicle’s OBD system as provided in § 177.203 (relating to test procedures) and § 177.204.

On-road testing device—An exhaust gas analyzer capable of measuring vehicle exhaust gas content outside of the emission inspection station environment, while the vehicle is in motion on the road or at a roadside stop.

PA97—The emission inspection analyzer designed to meet the requirements and specifications for idle testing of this Commonwealth’s emission inspection program as defined in Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standards, equipment specifications and quality control requirements).

PA97 (with dynamometer)—The emission inspection analyzer and dynamometer designed to meet the requirements and specifications for ASM testing of this Commonwealth’s emission inspection program as defined in Appendix A.

Ppb—Part per billion.

Ppm—Part per million.

Qualified Commonwealth employee—An individual, police officer or qualified Department employee, who has completed training in the inspection or weighing of vehicles as required by section 4704, 4981 or 8302 of the Vehicle Code (relating to inspection by police or Commonwealth personnel; weighing and measurement of vehicles; and powers and duties of department).

Quality assurance officer—A person designated by the Department to investigate, inspect and supervise the operations of emission inspection stations.

Qualifying repairs—Vehicle repairs necessary to correct the deficiencies which resulted in a vehicle’s failure of the emission inspection test and which count toward the minimum dollar amount required before a waiver may be issued. For those repairs where repair or replacement of emission-related parts requires replacement of other nonemission related equipment constructed as one indivisible unit by the manufacturer, the total replacement costs or repair costs may be counted toward qualifying repairs.

Rpm—Revolutions per minute.

Readiness code—A status flag stored by a vehicle’s onboard computer which is different from a DTC in that it does not indicate a vehicle component or system failure, but rather indicates whether or not the component or system in question has been recently checked by the OBD system to determine if it is functioning properly.

Recognized repair facility—A business engaged in the diagnosis and repair of automotive engines and related systems, and one that has been issued or applied for a State Sales Tax identification number by the Commonwealth or another state jurisdiction.

Registration recall—A formal action of the Department to withdraw the vehicle registration of a vehicle owner or operator for failure to produce proof of correction or waiver of an on-road emission test failure.

Residency exemption—A document issued by the Department stating that a residency exemption application has been verified and approved, and that the vehicle listed is exempt from an emission inspection.

Residency exemption application—An application issued by the Department and used by a Commonwealth vehicle owner residing outside of a designated emission I/M program area to apply for an exemption from emission inspection when the owner has incorrectly received an I/M indicator on the registration card or registration renewal card.

Scanner or scan tool—A PC-based or handheld device used to interface with a vehicle's onboard computer through its DLC for the purpose of determining readiness status and reading DTCs.

Secretary—The Secretary of the Department.

Special mobile equipment—

(i) Vehicles not designed or used primarily for the transportation of persons or property and only incidentally operated or moved over a highway, including, but not limited to: ditch digging apparatus; well boring apparatus; earth moving and road construction and maintenance machinery, such as asphalt spreaders, bituminous mixers, bucket loaders, snowplows, ditchers, graders, finishing machines, road rollers, scarifiers, earth moving carryalls, scrapers, power shovels and draglines; and self-propelled cranes and tractors, other than truck tractors.

(ii) The term does not include: house trailers; dump trucks; truck-mounted transit mixers, cranes or shovels; or other vehicles designed for the transportation of persons or property to which machinery has been attached.

Street rod—A motor vehicle, or a reproduction thereof, with a model year of 1948 or older which has been materially altered or modified by the removal, addition or substitution of essential parts and with a gross weight or registered gross weight of not more than 9,000 pounds.

Subject emission control device—The vehicle emission control devices, including the catalytic convertor, the fuel tank inlet restrictor and the exhaust gas recirculation (EGR) valve which are required to be inspected as part of the emission inspection program.

Transient test—A vehicle emission inspection test in which the vehicle is tested for exhaust emissions under conditions simulating actual on-road driving conditions. Testing equipment includes a dynamometer that permits simulation of driving and exhaust gas analyzer equipment that analyzes the exhaust gas emissions under various driving conditions.

Two-speed test—A vehicle emission inspection test in which the exhaust emissions are measured at two ranges of engine revolutions per minute (rpm) as prescribed in 40 CFR Part 51, Subpart S, Appendix B(II) (relating to test procedures two speed idle test).

Unsafe condition—A defect, malfunction or condition which may expose an emission inspector to harm in the performance of an emission inspection of that vehicle.

VIID—Vehicle Inspection Information Database—The vehicle database established to collect inspection test data and to provide emission inspection test standards to emission inspection stations for the purpose of conducting the appropriate emission inspection.

VIN—A combination of numerals or letters or both which the manufacturer assigns to a vehicle for identification purposes, or, in the absence of a manufacturer-assigned number, which the department assigns to a vehicle for identification purposes.

Vehicle Code—75 Pa.C.S.

Vehicle equipment standard—A minimum standard for vehicle performance or vehicle equipment performance which meets the needs of vehicle safety, noise control or air quality control, and which is practicable and provides objective criteria.

Vehicle Inspection Division—The division within the Bureau which administers vehicle equipment and inspection matters.

Vehicle year—The date of manufacture of a vehicle as specified by the VIN, or, if this number is not available or cannot be interpreted for the year, the annual production period of the vehicle as designated by the manufacturer.

IMPLEMENTATION OF EMISSION INSPECTION PROGRAM

§ 177.22. Commencement of inspections.

Prior to implementation of the OBD-I/M check and related inspection provisions of this chapter, the Department will provide affected vehicle owners with at least 60 days notice. The notice will be published in the Pennsylvania Bulletin, as provided for in 75 Pa.C.S. § 4706(b.1) (relating to prohibition on expenditures for emission inspection program).

§ 177.23. Notification of requirement for emission inspection.

The Department will notify the owner or lessee of a subject vehicle that is required to have an emission inspection.

§ 177.24. Program evaluation.

A program evaluation of the vehicle inspection and maintenance (I/M) program that meets EPA requirements will be performed with date submitted to EPA on a biennial basis.

I/M PROGRAM

§ 177.51. Program requirements.

(a) Network type. Testing shall be performed through a decentralized system of privately owned and operated, Department-certified facilities.

(b) Test-and-repair. Emission inspection stations may conduct both testing and repairing of subject vehicles.

(c) Inspection. Subject vehicles shall be emission inspected annually in coordination with a safety inspection according to procedures established by the Bureau, subject to paragraphs (1)—(3). A safety inspection certificate for a vehicle subject to an emission inspection may not be affixed to the vehicle until the subject vehicle has passed an emission inspection or received an exemption or a waiver as provided in § 177.281 (relating to issuance of waiver). The term ‘‘safety inspection certificate’’ as used in this subsection does not include temporary inspection approval indicators as defined in § 175.2 (relating to definitions). Safety inspection stations are not required to conduct emission inspections to maintain certification as safety inspection stations.

(1) When the Secretary certifies, by publication of a notice in the Pennsylvania Bulletin, that the number of subject pre-MY 1996 vehicles constitutes less than 40% of the total subject vehicles registered in an I/M county or region, subject pre-MY 1996 vehicles in that I/M county or region shall be inspected biennially in coordination with an annual safety inspection, provided that emissions in that I/M county or region are at or below levels which are in compliance with the State Implementation Plan, conformity requirements under the Clean Air Act, and the I/M performance standard.

(2) At such time as the Secretary certifies, by publication of a notice in the Pennsylvania Bulletin, that the number of subject pre-MY 1996 vehicles constitutes less than 20% of the total subject vehicles registered in an I/M county or region, pre-MY 1996 vehicles shall no longer be subject to the I/M program, provided that emissions in that I/M county or region are at or below levels which are in compliance with the State Implementation Plan, conformity requirements under the Clean Air Act, and the I/M performance standard.

(3) Nothing in this section relieves any vehicle from the requirements for annual safety inspections under Chapter 175 (relating to vehicle equipment and inspection).

(d) I/M counties or regions covered. The Department will establish counties or regions within this Commonwealth which are subject to an emission inspection by certification of the Secretary of the need to comply with Federal law and will publish the certification as a notice in the Pennsylvania Bulletin listing the I/M counties or regions.

(e) Model year coverage. Subject gasoline-powered motor vehicles with a model year of 1975 and newer with a GVWR of 9,000 pounds or less and registered in an I/M county or region are subject to an emission inspection. Current model year vehicles and vehicles driven less than 5,000 miles per year are exempt from this requirement.

(f) Exhaust emission test types. The following types of tests will be administered to the appropriate model years and fuel types, subject to subsection (c)(2):

(1) Prior to the date established in accordance with § 177.22 (relating to commencement of inspections), subject vehicles registered in counties in the Philadelphia Region will be required to undergo the following tests:

Model Year	***Test Type***
1975-1980 vehicles and 1975-1983 light duty trucks.	One-speed idle test; gas cap test; visual inspection.
1981 and newer vehicles and 1984 and newer light duty trucks.	ASM 1 (ASM5015); evaporative system function tests (pressure, purge and gas cap test); visual inspection.
1981 and newer full time all wheel drive vehicles.	Two speed idle test, visual inspection, pressure and gas cap test.

(2) On and after the date established in accordance with § 177.22 subject vehicles MY 1996 and newer registered in counties in the Philadelphia Region will be required to undergo the following tests:

Model Year	***Test Type***
1996 and newer vehicles 8,500 GVWR and under.	OBD-I/M check; gas cap test.
1996 and newer vehicles between 8,501 and 9,000 GVWR.	Two speed idle test, visual inspection and gas cap test.

All subject vehicles MY 1975-1995 registered in counties in the Philadelphia Region shall be tested in accordance with the following table:

Calendar Year	Model Year	Test Type
2003	1975-1977 vehicles and light duty trucks.	Gas cap test; visual inspection.
	1978-1980 vehicles and 1978-1983 light duty trucks.	One-speed idle test; gas cap test; visual inspection.
	1981-1995 vehicles and 1984-1995 light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1981-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2004	1975-1978 vehicles and light duty trucks.	Gas cap test; visual inspection.
	1979-1980 vehicles and 1979-1983 light duty trucks.	One-speed idle test; gas cap test; visual inspection.
	1981-1995 vehicles and 1984-1995 light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1981-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2005	1975-1979 vehicles and light duty trucks.	Gas cap test; visual inspection.
	1980 vehicles and 1980-1983 light duty trucks.	One-speed idle test; gas cap test; visual inspection.
	1981-1995 vehicles and 1984-1995 light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1981-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2006	1975-1980 vehicles and light duty trucks.	Gas cap test; visual inspection.
	1981-1983 light duty trucks.	One-speed idle test; gas cap test; visual inspection.
	1981-1995 vehicles and 1984-1995 light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1981-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2007	1975-1981 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1980-1983 light duty trucks.	One-speed idle test; gas cap test; visual inspection.
	1982-1995 vehicles and 1984-1995 light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1982-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.

Calendar Year	Model Year	Test Type
2008	1975-1982 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1983 light duty trucks.	One-speed idle test; gas cap test; visual inspection.
	1983-1995 vehicles and 1984-1995 light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1983-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2009	1975-1983 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1984-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1984-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2010	1975-1984 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1985-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1985-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2011	1975-1985 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1986-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1986-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2012	1975-1986 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1987-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1987-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2013	1975-1987 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1988-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1988-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.

Calendar Year	Model Year	Test Type
2014	1975-1988 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1989-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1989-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2015	1975-1989 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1990-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1990-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2016	1975-1990 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1991-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1991-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2017	1975-1991 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1992-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1992-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2018	1975-1992 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1993-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1993-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2019	1975-1993 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1994-1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1994-1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.

Calendar Year	Model Year	Test Type
2020	1975-1994 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.
	1995 vehicles and light duty trucks.	ASM 1 (ASM5015); evaporative system function test (pressure purge and gas cap test); visual inspection.
	1995 full time all wheel drive vehicles.	Two speed idle test; visual inspection; pressure and gas cap test.
2021 and thereafter	1975-1995 vehicles, light duty trucks and full time all wheel drive vehicles.	Gas cap test; visual inspection.

(3) Prior to the date established in accordance with § 177.22, subject vehicles registered in counties in the Pittsburgh Region will be required to undergo the following tests:

Model Year	*Test Type*
1975-1980	One-speed idle test; gas cap test; visual inspection.
1981 and newer full time all wheel drive vehicles.	Two speed idle test, visual inspection, pressure and gas cap test.

(4) On and after the date established in accordance with § 177.22, subject vehicles MY 1996 and newer registered in counties in the Pittsburgh Region will be required to undergo the following tests:

Model Year	*Test Type*
1996 and newer vehicles 8,500 GVWR and under.	OBD-I/M check; gas cap test.
1996 and newer vehicles between 8,501 and 9,000 GVWR.	Two-speed idle test, gas cap test; visual inspection.

All subject vehicles MY 1975-1995 registered in counties in the Pittsburgh Region shall be tested in accordance with the following table:

Calendar Year	Model Year	Test Type
2003	1975-1977 vehicles.	Gas cap test; visual inspection.
	1978-1980 vehicles.	One-speed idle test; gas cap test; visual inspection.
	1981-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2004	1975-1978 vehicles.	Gas cap test; visual inspection.
	1978-1980 vehicles.	One-speed idle test; gas cap test; visual inspection.
	1981-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.

Calendar Year	Model Year	Test Type
2005	1975-1979 vehicles.	Gas cap test; visual inspection.
	1980 vehicles.	One-speed idle test; gas cap test; visual inspection.
	1981-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2006	1975-1980 vehicles.	Gas cap test; visual inspection.
	1981-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2007	1975-1981 vehicles.	Gas cap test; visual inspection.
	1982-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2008	1975-1982 vehicles.	Gas cap test; visual inspection.
	1983-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2009	1975-1983 vehicles.	Gas cap test; visual inspection.
	1984-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2010	1975-1984 vehicles.	Gas cap test; visual inspection.
	1985-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2011	1975-1985 vehicles.	Gas cap test; visual inspection.
	1986-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2012	1975-1986 vehicles.	Gas cap test; visual inspection.
	1987-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2013	1975-1987 vehicles.	Gas cap test; visual inspection.
	1988-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2014	1975-1988 vehicles.	Gas cap test; visual inspection.
	1989-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2015	1975-1989 vehicles.	Gas cap test; visual inspection.
	1990-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2016	1975-1990 vehicles.	Gas cap test; visual inspection.
	1991-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2017	1975-1991 vehicles.	Gas cap test; visual inspection.
	1992-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.

Calendar Year	Model Year	Test Type
2018	1975-1992 vehicles.	Gas cap test; visual inspection.
	1993-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2019	1975-1993 vehicles.	Gas cap test; visual inspection.
	1994-1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2020	1975-1994 vehicles.	Gas cap test; visual inspection.
	1995 vehicles.	Two-speed idle test; gas cap test; visual inspection.
2021 and thereafter	1975-1995 vehicles.	Gas cap test; visual inspection.

(5) Following publication of notice of an effective date in the Pennsylvania Bulletin in accordance with § 177.22, subject vehicles registered in the South Central Region will be required to undergo the following:

Model Year	***Test Type***
1975-1995	Gas cap test; visual inspection
1996 and newer vehicles 8,500 GVWR and under	OBD-I/M check; gas cap test
1996 and newer vehicles between 8,501 and 9,000 GVWR	Gas cap test; visual inspection

(6) Following publication of notice of an effective date in the Pennsylvania Bulletin in accordance with § 177.22, subject vehicles registered in the Northern Region will be required to undergo the following:

Model Year	***Test Type***
1975 and newer vehicles	Gas cap test; visual inspection

(7) One-speed and two-speed idle testing shall be as described in 40 CFR Part 51, Subpart S, Appendix B (I and II) (relating to one and two-speed idle tests), which is adopted by reference.

(g) Evaporative system function tests. Evaporative system function tests, including an evaporative system pressure test on 1981 and later model year subject vehicles and an evaporative system purge test on 1981 and later model year subject vehicles shall be administered upon notification by the Department to the emission inspection stations and shall be consistent with § § 177.201—177.204 and Appendix B (relating to general; and Department procedures and specifications).

(h) Emission test procedures and standards. Emission test procedures and standards shall be consistent with § § 177.201—177.204.

(i) Exhaust emission test equipment. Exhaust emission test equipment requirements shall be consistent with 177.201—177.204.

(j) On-road testing. The Department will conduct on road testing of subject vehicles as authorized in section 4704(a)4) of the Vehicle Code (relating to inspection by police or Commonwealth personnel). Drivers of vehicles shall permit the testing of their vehicles by authorized personnel.

(k) Recall. The owner of a vehicle for which a voluntary or mandatory manufacturer's emission-related recall notice was issued 6 months after the commencement of an I/M program in the affected county shall have the necessary repairs completed prior to presenting the vehicle for emission inspection as a prerequisite to begin the emission inspection process.

(l) Visual inspection. A visual emission control device inspection shall be administered as specified in § 177.204 (relating to basis for failure) of the vehicle emission control system of 1975 and later model year subject vehicles.

(m) Subsequent approval by the EPA of emission test equipment, test procedures or report requirements. If the EPA develops or approves other emission test equipment, test procedures or report requirements, the Department may adopt the subsequently approved equipment, procedures or reports consistent with section 4706(e) of the Vehicle Code (relating to prohibition on expenditures for emission inspection program).

§ 177.52. Emission inspection prerequisites.

The following prerequisites shall be accomplished by the vehicle owner or driver prior to the performance of the emission inspection:

(1) The vehicle owner or driver shall present the vehicle registration card to the emission inspection station and pay the required test fee to the inspection station. This fee shall also include one free retest, if the vehicle owner or driver complies with the retest requirements as provided in § § 177.271—177.274 (relating to retest).

(2) When the EPA National Recall Database with the necessary recall notice information is available to the Department, the inspection station shall check with the VIID when applicable to determine whether an applicable emission-related manufacturer recall notice was issued for the subject vehicle.

(3) When the EPA National Recall Database with the necessary recall notice information is available to the Department, and if a subject vehicle was targeted for a voluntary or mandatory manufacturer's applicable emission recall notice, the vehicle owner or operator shall present proof of compliance with the recall notice to the emission inspection station before the emission inspection begins.

§ 177.53. Vehicle inspection process.

The vehicle inspection process shall be as follows:

(1) If a subject vehicle passes the emission inspection, the emission inspection station shall provide the vehicle owner or operator with an emission inspection report certifying that the vehicle has passed the emission inspection.
(2) If a subject vehicle fails any phase of the emission inspection, the emission inspection station shall provide the vehicle owner or operator with a software generated interpretive diagnostic information form based on the particular portions of the inspection that the vehicle failed.

(3) If a subject vehicle fails any phase of the emission inspection, the vehicle owner shall have the vehicle repaired and submit the vehicle for retesting.

(4) If the subject vehicle fails the retest, the vehicle owner can apply for a waiver. If the waiver requirements as prescribed in § § 177.281 and 177.282 (relating to issuance of waiver; and annual adjustment of minimum waiver expenditure for emission inspection) are met, a waiver will be issued.

(5) An emission inspector will place a certificate of emission inspection on the windshield of the subject vehicle, as prescribed in § 177.291 (relating to certificates of emission inspection procedures), which has passed the emission requirements or received a waiver.

Subchapter B.
SUBJECT VEHICLES

§ 177.101. Subject vehicles.

(a) Subject vehicles. Subject vehicles in an I/M county or region include gasoline powered 1975 and newer model year vehicles, excluding the current model year, with a GVWR of 9,000 pounds or less which are:

(1) Registered in or required to be registered in a certified I/M county or region.

(2) Leased vehicles with registration or titling in the name of someone other than the lessee or user where the motor vehicle is registered or required to be registered in an I/M county or region.

(3) Operated on Federal installations located within an I/M county or region, regardless of where the vehicles are registered. This requirement applies to employee-owned or leased vehicles, including vehicles owned, leased or operated by civilian and military personnel on Federal installations, as well as, agency-owned or operated vehicles. Vehicles exempted from this requirement are:

(i) Tactical military vehicles.

(ii) Visiting agency, employee or military personnel vehicles as long as the visits do not exceed 60 calendar days per calendar year.

(4) School buses 9,000 pounds or less GVWR and other buses with a seating capacity of 15 seats or less with a GVWR of 9,000 pounds or less.

(b) Other exempted vehicles. Other exempted vehicles include vehicles operated or registered as one of the following:

(1) Special mobile equipment.

(2) Implements of husbandry.

(3) Motor vehicles being towed.

(4) Classic, antique or collectible motor vehicles.

(5) Motorcycles.

(6) Motorized pedalcycles.

(7) Street rods.

(8) Vehicles repossessed by a financier or collector through the use of miscellaneous motor vehicle business registration plates.

(9) Buses with a seating capacity of 16 or more.

(10) Motor vehicles being driven, or towed by an official inspection station owner or employee for the purpose of inspection.

(11) New vehicles while they are in the process of manufacture, including testing, and not in transit from the manufacturer to a purchaser or dealer.

(12) Vehicles driven less than 5,000 miles in the previous 12 months as indicated by the mileage noted on their safety inspection certificate or by the mileage recorded on the vehicle inspection data base and which were owned by one individual for at least 1 year.

(13) Current model year vehicles which are subject vehicles never before registered in this Commonwealth or any other jurisdiction and which have less than 5,000 miles on their odometers.

(14) Specially constructed vehicles.

§ 177.102. Inspection of vehicles reentering this Commonwealth.

Vehicles subject to emission inspection which have been outside of this Commonwealth continuously for 30 days or more and which, at the time of reentering this Commonwealth, do not bear a currently valid certificate of emission inspection are not required to be inspected until 10 days after reentering this Commonwealth.

§ 177.103. Used vehicles after sale or resale.

(a) A used vehicle, after sale or resale, may be driven without a current inspection certificate for 10 days after the date of sale or resale or entry into this Commonwealth, whichever occurs later. The purchaser of the vehicle, unless contracted otherwise, assumes full responsibility for having the vehicle inspected.

(b) Used vehicles, acquired after sale or resale, bearing a currently valid certificate of emission inspection may be driven on Commonwealth highways until the certificate of emission inspection expires.

§ 177.104. Vehicles registered in nondesignated areas or other states.

A vehicle registered outside a designated area or another state may be inspected for emissions but may not be issued a certificate of emission inspection unless the certificate is specifically requested by a vehicle owner.

§ 177.105. Vehicles requiring emission inspection due to change of address.

Subject vehicles required to participate in the I/M Program because of vehicle registration change of address shall be phased into the emission inspection program at the time of the expiration of the current certificate of safety inspection when the vehicle is next inspected.

Subchapter C.
EMISSION TEST PROCEDURES AND EMISSION STANDARDS

GENERAL

RECALL PROVISIONS

EMISSION INSPECTION TEST REPORT

RETEST

ISSUANCE OF WAIVER

PROCEDURES RELATING TO CERTIFICATES OF EMISSION INSPECTION

ON-ROAD TESTING

GENERAL

§ 177.201. General requirements.

I/M emission tests, OBD-I/M checks, evaporative system function tests, gas cap tests and visual inspections shall be subject to the following requirements:

(1) Vehicles shall be tested in as-received condition. A vehicle capable of operating on gasoline and other fuel is subject to testing and shall be tested while operating in the gasoline mode.

(2) An initial test is the emission test that occurs the first time in a test cycle. The initial test shall be performed without prior repair or adjustment to the subject vehicle at the emission inspection station, except as provided for in the evaporative system integrity test. An emission inspection performed after the initial test in a test cycle shall be considered a retest.

(3) An official test, once initiated, shall be performed in its entirety regardless of immediate outcome except in the case of an invalid test condition, unsafe conditions or fast pass/fail algorithms.

(4) Tests involving measurements shall be performed with approved equipment that has been calibrated according to the quality control procedures contained in 40 CFR Part 51, Subpart S, Appendix A (relating to calibrations, adjustments and quality control), which is adopted by reference, or as specified in Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standards, equipment specifications and quality control requirements).

(5) Vehicles may not be tested if the exhaust system is missing or leaking, or if the vehicle is in an unsafe condition.

(6) Alteration of a vehicle's configuration so that it changes from a certified to a noncertified configuration is prohibited. In the inspection process, vehicles that have been altered from their original certified configuration shall be tested in the same manner as other subject vehicles, in accordance with the following:

   (i) Vehicles with engines other than the engine originally installed by the manufacturer, or an identical replacement engine shall be subject to the test procedures and standards for the chassis type and model year, including visual equipment inspections for components that are part of the original certified configuration and part of the normal inspection.

   (ii) Vehicles that have been altered from an engine of one fuel type to another fuel type that is subject to the I/M program, for example, from a diesel engine to a gasoline engine shall be subject to the test procedures and standards for the current fuel type, and to the requirements of subparagraph (i).

   (iii) Vehicles that are altered to a fuel type for which there is no certified configuration shall be tested according to the most stringent emission standards established for that vehicle type and model year. Emission control device requirements may be waived if the Department determines that the alternatively fueled vehicle configuration would meet the new vehicle standards for that model year without these devices.

§ 177.202. Emission test equipment.

(a) Performance features of emission test equipment. Computerized test systems are required for performing any emission measurement on subject vehicles. The test equipment shall be certified to meet as applicable EPA requirements, including those contained in 40 CFR Part 51, Subpart S, Appendix D (relating to steadystateshort test equipment), which is adopted by reference, or the performance standards of California BAR 97 as they apply to the PA97 analyzer and Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standards, equipment specifications and quality control requirements). Newly acquired systems shall be subjected to acceptance test procedures to ensure compliance with program specifications.

(1) Emission test equipment shall be capable of testing subject vehicles and shall be updated as needed to accommodate new technology vehicles as well as changes to the program.

(2) At a minimum, emission test equipment shall be:

(i) Automated to the highest degree commercially available to minimize the potential for intentional fraud or human error, or both.

(ii) Secure from tampering or abuse, or both.

(iii) Based upon written specifications.

(iv) Capable of simultaneously sampling dual exhaust vehicles.

(b) Functional characteristics of computerized test systems. The test system is composed of emission measurement devices and other motor vehicle test equipment controlled by a computer.

(1) The test system shall automatically:

(i) Make pass/fail decisions for all measurements.

(ii) Record test data to an electronic medium.

(iii) Conduct regular self-testing of recording accuracy.

(iv) Perform electrical calibration and system integrity checks before each test, as applicable.

(v) Initiate system lockouts for:

(A) Tampering with security aspects of the test system.

(B) Failing to conduct or pass periodic calibration or leak checks.

(C) Failing to conduct or pass the constant volume sampler flow rate check, if applicable.

(D) Failing to conduct or pass one or more of the dynamometer checks, including coast-down, roll speed and roll distance, power absorption capability and inertia weight selection checks, if applicable.

(E) Failing to conduct or pass the pressure monitoring device check, if applicable.

(F) Failing to conduct or pass the purge flow metering system check, if applicable.

(G) Failing to have installed in the test analyzer a full data recording medium or one that passes a cyclical redundancy check.

(2) Test systems shall include a real time data link to the Department computer or other computers as specified by the Department.

(3) The test system shall insure accurate data collection by limiting, cross-checking or confirming manual data entry.

(c) Test equipment for acceleration simulation mode (ASM) emission testing. Test equipment for ASM emission testing shall be as specified in Appendix A and quality control regulations of this chapter.

(d) One-speed idle test equipment. One speed idle test equipment requirements for model years 1975—1980 shall be as specified in 40 CFR Part 51, Subpart S, Appendix (D)(I) which is adopted by reference.

(e) Two-speed idle test equipment. Two-speed idle test equipment for model years 1981 and newer shall be as specified in 40 CFR Part 51, Subpart S, Appendix D which is adopted by reference or Appendix A, as applicable.

§ 177.202a. OBD-I/M check equipment.

(a) Performance features of OBD-I/M check equipment. The design and operation of any scanner or scan tool used in the performance of an OBD-I/M check shall meet all Federal requirements (contained in 40 CFR 85.2207-2231) and recommended Society of Automotive Engineers (SAE) practices (J1962, J1978 and J1979) for OBD system inspections.

(1) The equipment shall be automated and require no inspector intervention to collect and record OBD data retrieved by means of the diagnostic link.

(2) The equipment shall automatically retrieve an RPM signal, OBD readiness monitors, failure codes, MIL status, powertrain identification, powertrain control module identification and OBD vehicle identification number (where available) through a standard interface with the vehicle DLC.

(b) The equipment shall function in accordance with the specifications issued by the Department. Copies of the specifications are available from the Department.

§ 177.202b. Equipment for gas cap test and visual inspection.

The design and operation of equipment used in the performance of the gas cap test and visual inspection shall meet the specifications issued by the Department. Copies of the specifications are available from the Department.

§ 177.203. Test procedures.

(a) I/M emission test procedures.

(1) Idle testing. Idle tests of all model year subject vehicles shall be performed in accordance with the procedures in 40 CFR Part 51, Subpart S, Appendix B(I) and (II) (relating to test procedures-idle tests) which is adopted by reference, and Appendix A (relating to simulation mode: Pennsylvania procedures, standards, equipment specifications and quality control requirements). The following steps shall be taken when testing subject vehicles:

(i) Emission test data shall be entered into the analyzer by a certified emission inspection inspector using the bar coded vehicle registration card or the alpha-numeric keyboard in the sequence specified.

(ii) Idle tests shall be either one-speed or two speed as specified in § 177.51(f) (relating to program requirements).

(2) ASM test. The ASM test of 1981 and newer model year subject vehicles shall be performed in accordance with the ASM test procedure and specifications and quality assurance requirements contained in Appendix A. The ASM test procedure, including algorithms and other procedural details, shall be approved by the EPA prior to use in the I/M program of the Commonwealth. Special test algorithms and pass/fail algorithms may be employed to reduce test time when the test outcome is predictable with near certainty, if approved by the EPA.

(3) Evaporative system function tests. Evaporative system functions tests, including an evaporative system pressure test and an evaporative system purge test on 1981 and newer model year subject vehicles, shall be administered on subject vehicles registered in Bucks, Chester, Delaware, Montgomery and Philadelphia counties upon notification to the Department of EPA approved procedures and will be conducted based on the procedures approved by the Department.

(b) OBD-I/M check.

(1) Readiness requirement for a valid OBD-I/M check. An initial scan of the OBD system should determine the status of all readiness codes.

(i) A status indication of ‘‘not ready,’’ ‘‘not supported’’ or similar message for one or more of the continuous monitors (that is, misfire, fuel trim or comprehensive components), may be disregarded for readiness determination purposes only and the OBD-I/M check can proceed.

(ii) For model year 1996—2000 vehicles, a status indication of ‘‘not ready,’’ ‘‘not supported’’ or similar message for two or fewer other readiness codes may be disregarded for readiness determination purposes only and the OBD-I/M check can proceed.

(iii) For model year 2001 and newer vehicles, a status indication of ‘‘not ready’’ or ‘‘not supported’’ for no more than one other readiness code may be disregarded for readiness determination purposes only and the OBD-I/M check can proceed.

(iv) The readiness requirement may also be waived or otherwise accommodated for specific makes, models, and model years of vehicles with known readiness design problems, in accordance with applicable technical service bulletins or EPA guidance, or both. The Bureau will advise all participating stations by station bulletin whether the readiness requirements can be waived or otherwise accommodated for specific makes, models and model years of vehicles.

(2) Performing the OBD-I/M check. Following a determination of readiness, the seven step procedure delineated below shall be used when performing an OBD-I/M check:

(i) Initiate the official test by scanning or manually inputting the required vehicle and owner information.

(ii) Visually examine the vehicle instrument panel to determine if the MIL illuminates briefly when the ignition key is turned to the ‘‘key on, engine off’’ (KOEO) position. A brief period of illumination of the MIL at start-up is normal and helps confirm the MIL bulb is in proper operating condition. This portion of the test procedure is also known as the ‘‘bulb check.’’ Enter the results of the bulb check for downloading into the VIID.

(iii) Locate the vehicle’s data link connector (DLC) and plug the scan tool into the connector. While it is recommended that this step be performed with the ignition in the ‘‘off’’ position, this step can also be performed with the vehicle running.

(iv) Start the vehicle’s engine so that the vehicle is in the ‘‘key on, engine running’’ (KOER) condition. The MIL may illuminate and then extinguish during this phase. Continued illumination of the MIL (MIL commanded on) while the engine is running is cause for failure of the OBD-I/M check under § 177.204(2) (relating to basis for failure).

(v) With the scan tool in the ‘‘generic OBD’’ mode, follow the scan tool manufacturer’s instructions to determine vehicle readiness status, MIL status (whether commanded on or off), and diagnostic trouble codes (DTCs) for those vehicles with the MIL commanded on.

(vi) The results of the OBD-I/M check will be transferred automatically to the VIID.

(vii) Without clearing DTCs or readiness codes, turn off the vehicle ignition and then disconnect the scan tool. Procedure for clearing codes as necessary is included in § 177.271 (relating to procedure).

(c) Gas cap test procedures. The gas cap test will be conducted using test equipment approved by the Department, in accordance with the manufacturer’s instructions.

(d) Visual inspection procedures.

(1) A visual inspection of the vehicle emission control system shall look for the presence of the following emission control devices:

(i) Catalytic converter.

(ii) Exhaust gas recirculation (EGR) valve.

(iii) Positive crankcase ventilation (PCV) valve.

(iv) Fuel inlet restrictor.

(v) Air pump.

(vi) Evaporative control system components.

(2) Visual inspections shall be performed through direct observation or through indirect observation, using a mirror or other visual aid.

(3) Inspections shall include a determination as to whether each subject device is present and appears to be properly connected and to be the correct type for the certified configuration.

(e) Subsequent test procedures approved by the EPA. If the EPA develops or approves other test procedures, including test procedures prescribed in this section, the Department may adopt these subsequently approved test procedures consistent with section 4706(e) of the Vehicle Code (relating to prohibition on expenditures for emission inspection program).

§ 177.204. Basis for failure.

The basis for failure of the tests and procedures under this chapter shall be as follows:

(1) I/M emission test. A vehicle fails the I/M emission test if emissions exceed the following standards:

(i) Idle test standards.

(A) Passenger cars and trucks less than 6,000 pounds GVWR.

MODEL YEAR	CO%	HC (PPM)
1975-1979	4.0	400
1980	3.0	300
1981-1992	1.2	220
1993 and newer	1.0	130

(B) Trucks 6,000 pounds through 9,000 pounds GVWR.

MODEL YEAR	CO%	HC (PPM)
1975-1978	6.0	650
1979	4.0	400
1980	3.0	300
1981-1992	1.2	220
1993 and newer	1.0	180

(C) Maximum exhaust dilution shall be measured as at least 6% CO plus CO2 on vehicles subject to a steady state test as described in 40 CFR Part 51, Subpart S, Appendix B (relating to test procedures), which is adopted by reference.

(ii) ASM test emission standards. Model years 1981 and newer vehicles required to receive an ASM emission inspection shall be subject to standards specified in Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standards, equipment specifications and quality control requirements).

(2) OBD-I/M check.

(i) Unless otherwise noted, a vehicle fails the OBD-I/M check for any of the following:

(A) The MIL does not illuminate at all when the ignition key is turned to the KOEO position.

(B) The DLC is missing, has been tampered with, is otherwise inoperable or is inaccessible.

(C) The vehicle displays more than the requisite number of readiness codes as ‘‘not ready,’’ ‘‘not supported’’ or similar message under § 177.203(b)(1)(i)—(iii) (relating to test procedures), and there is no justification under § 177.203(b)(1)(iv) for disregard of the readiness requirement.

(D) The MIL illuminates continuously or flashes while the engine is running, even if no DTCs are present. If this condition is present, the vehicle shall fail under this paragraph, not subparagraph (ii), even if the MIL did not illuminate in the KOEO position.

(E) Any DTCs are present and the MIL status, as indicated by the scan tool, is commanded on, regardless of whether or not the MIL is actually illuminated.

(ii) During the first test cycle of emission inspection utilizing the OBD-I/M check in an I/M county or region, the inability to locate or access a vehicle’s DLC shall not be a basis for failure, provided that the MIL illuminates when the ignition key is in the KOEO position and does not illuminate continuously or flash while the engine is running.

(3) Evaporative emission system function test (gas cap test) standards. A vehicle shall fail the gas cap test if at any time during the gas cap test the pressure drops from the starting pressure by more than 6 inches of water, causing the test to be terminated. If the pressure does not drop more than 6 inches during the test, the vehicle shall pass the gas cap test.

(4) Visual inspection of vehicle emission control system. A vehicle shall fail the visual inspection if applicable required emission control equipment specified in § 177.203(d) is not present, is not properly connected or is not the correct type for the certified configuration.

(5) Subsequent test procedures and bases for failure approved by the EPA. If the EPA develops or approves other test procedures and bases for failure of test procedures, including the test procedures prescribed in this section, the Department may adopt these subsequently approved test procedures and bases for failure consistent with section 4706(e) of the Vehicle Code (relating to prohibition on expenditures for emission inspection program).

RECALL PROVISIONS

§ 177.231. Requirements regarding manufacturer recall notices.

When the EPA vehicle emission related database is available to the Department, owners or lessees of vehicles for which voluntary or mandatory manufacturer emission-related recall notices have been issued shall have the necessary repairs completed prior to submitting the vehicle for emission testing and shall present proof of compliance with the recall notice at the time of emission inspection. This is required to complete the emission inspection process.

§ 177.232. Compliance with recall notices.

Owners or lessees of subject vehicles for which the vehicle manufacturer has issued a recall notice more than 3 months prior to the beginning of the emission inspection period shall show proof of compliance with the recall notice prior to commencement of the emission inspection.

§ 177.233. Failure to comply.

Failure to comply with this section and § § 177.231 and 177.232 (relating to requirements regarding manufacturer recall notices; and compliance with recall notices) shall be considered grounds to refuse to initiate an emission inspection.

EMISSION INSPECTION TEST REPORT

§ 177.251. Record of test results.

The station shall provide the vehicle owner or driver with a computer-generated emission inspection test report.

§ 177.252. Emission inspection report.

(a) The emission inspection report shall be as shown on the sample emission inspection report form contained in Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standards, equipment specifications and quality control requirements) and shall include:

(1) A vehicle description, including license plate number, VIN, vehicle make, model, odometer reading, GVWR and estimated test weight, engine size, and inspection type.

(2) The date and time of the test.

(3) The name, identification number and signature of the individuals performing the tests and the name, address and station number of the test station.

(4) The type of tests performed.

(5) The applicable test standards.

(6) The I/M emission test results, if applicable, including exhaust concentrations, pass/fail results for each mode measured and the results of visual inspection.

(7) The OBD-I/M check results, if applicable, including the status of the MIL illumination command, the alphanumeric DTC(s) as specified per SAE J2012 and J1930, unset readiness codes if the number of unset readiness codes exceeds the limit for which an exemption is allowed, that is, if the outcome of the test is unacceptable for testing based upon the presence of too many unset readiness codes. If, during the initial emission inspection cycle in an I/M county or region, a vehicle subject to the OBD-I/M check with a DLC which cannot be accessed nevertheless satisfies the MIL elements of the OBD-I/M check, that result shall be specifically noted in the report.

(8) The results of the gas cap test.

(9) The results of the visual inspection, if applicable.

(10) A statement indicating the availability of warranty coverage as required in section 207 of the Clean Air Act (42 U.S.C.A. § 7525).

(11) The results of the recall provisions check, if applicable, including the recall campaign number and date the recall repairs were completed.

(12) A certification that tests were performed in accordance with this chapter and EPA regulations.

§ 177.253. Responsibility of the station owner for vehicles which fail the emission inspection.

(a) Owners or operators of vehicles that fail the emission inspection shall be provided with an emission inspection report as described in § 177.252 (relating to emission inspection report) as well as the consumer

complaint procedure, including the telephone number of the quality assurance officer or the Vehicle Inspection Division.

(b) Owners or operators of vehicles that fail the emission inspection may challenge the results.

(1) A challenge regarding the performance or results of the test shall be made within 10 days of the failure of the emission inspection.

(2) A quality assurance officer or Department representative will function as a referee and will arrange to meet with the owner or operator of a vehicle that fails if requested.

(3) The referee will first determine whether test equipment functioned properly. If the test equipment is functioning correctly, the referee will determine whether proper test procedures were followed. If the equipment and procedures were correct and the vehicle still fails the inspection, the vehicle shall be brought into compliance prior to a retest. If the vehicle passes, a certificate of inspection will be affixed to the vehicle.

(4) If the referee determines that the test equipment malfunctioned, the equipment shall be brought into compliance prior to a referee test. If the equipment cannot be brought into compliance at this meeting, the owner or operator of the vehicle may request that the referee test be conducted at an alternate test location.

RETEST

§ 177.271. Procedure.

(a) I/M emission test. Vehicles that fail the initial I/M emission test or a retest shall be retested after repair.

(b) OBD-I/M check. Vehicles that fail the OBD-I/M check shall be retested after repair and clearing of the DTCs appearing in the initial check and compliance of the vehicle with the readiness requirements of § 177.203(b)(1) (relating to test procedures).

(c) Gas cap test and visual inspection. Vehicles that fail the gas cap test or visual inspection shall be retested after repair.

§ 177.272. Prerequisites.

For a retest, the vehicle owner or driver shall present to the inspection station the emission inspection report and the diagnostic information repair data form as described in § 177.273 (relating to content of repair data form).

§ 177.273. Content of repair data form.

The repair data form shall include the following:

(1) The repairs performed.

(2) The cost of repairs.

(3) The repair technician’s number or name if the person who made the repairs does not have a Department issued technician number.

(4) The repairs recommended by the repair facility or identified on the emission inspection report that were not performed.

(5) The name, address and telephone number of the repair facility, and station number, if the repair facility is also a department-certified safety or emission inspection station.

§ 177.274. Retest fees.

(a) If the vehicle owner or driver presents the emission inspection report and the completed repair form to the emission inspection station that performed the initial inspection within 30 calendar days of the initial emission inspection, the vehicle owner or driver shall receive one free retest. Retests after the 30-day period or retests performed after the free retest shall only be performed upon payment of the required fee to the emission inspection station.

(b) If a referee test is requested after the vehicle has failed the free retest and the vehicle passes the referee test, a certificate of inspection shall be affixed to the vehicle and the vehicle owner or operator need not pay for this test.

(c) If a referee test is requested after the vehicle has failed the free retest and the vehicle fails the referee test, the vehicle owner or operator shall pay for this test and any subsequent retests. If expenditures for repairs meet or exceed the requirements for a waiver stated in § 177.281 (relating to issuance of waiver), a certificate of inspection with a waiver indicator may be issued. If the requirements for a waiver have not been met, the vehicle shall then be repaired to meet the requirements for passing the emission inspection or for issuance of a waiver.

§ 177.275. Repair technician training and certification.

(a) General rule. Personnel who perform diagnosis and repair of automotive engines and related systems required to meet the emission standards of this chapter may be certified by the Department as certified repair technicians. Only certified repair technicians with a valid drivers license will be authorized to process requests for and deliver waivers.

(b) Certified repair technician requirements. A repair technician desiring to be certified shall:

(1) Be 18 years of age or older.

(2) Have a valid driver's license.

(3) Have done one of the following:

(i) Completed a course pertaining to the Commonwealth's emission inspection program and regulations, including training specifically pertaining to evaluation of OBD systems, and passed a written test administered by the Department or its agents with a minimum of 80% correct test responses and obtained certification from an automotive manufacturer or from the National Institute for Automotive Service Excellence or other training identified by the Department as being equivalent and that certifies that the repair technician is proficient in evaluating and repairing emission control systems.

(ii) Completed a course pertaining to the Commonwealth's emission inspection program and regulations, including training specifically pertaining to evaluation of OBD systems, passed a written test administered by the Department or its agents with a minimum of 80% correct test responses and completed and passed a repair technician test , approved by the Department, that included testing pertaining to the Commonwealth's emission inspection program and regulations, and, at a minimum, also included:

(A) The diagnosis and repair of malfunctions in computer controlled close-loop vehicles.

(B) The application of emission control theory and diagnostic data to the diagnosis and repair of failures of the emission test and the evaporative system function tests.

(C) The utilization of diagnostic information on systematic or repeated failures observed in the emission test and the evaporative system function tests.

(D) Generalized testing on the various subsystems related to emission control.

(E) Additional testing specifically pertaining to evaluation and repair of OBD systems.

(c) Completion of training program. A person who successfully completes all phases of the training program and who passes the required testing will qualify as a certified repair technician.

(d) Supplemental training. By notice published in the Pennsylvania Bulletin, the Department may authorize periodic supplemental training as a requirement for a person to maintain the status of a certified repair technician.

ISSUANCE OF WAIVER

§ 177.281. Issuance of waiver.

The Department or a single contractor shall electronically issue a certificate of emission inspection with an indicator to show that the vehicle has received a waiver if:

(1) The subject vehicle has failed the initial emission inspection, qualifying repairs have been completed and the subject vehicle has failed the retest.

(2) Emission control devices, as originally equipped, are installed. Vehicles with emission devices which are obsolete and cannot be obtained through the original equipment manufacturer, aftermarket manufacturers or suppliers of used parts are exempt from this paragraph. Specific reporting requirements shall be completed and maintained as specified by the Department in this section and Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standards, equipment specifications and quality control requirements.)

(3) The procedure as described in Appendix A has been followed and the amount spent on qualifying repairs:

(i) Was an amount as determined in § 177.282 (relating to annual adjustment of minimum waiver expenditure for emission inspection).

(ii) Includes charges for electronic diagnostic inspection, parts costs and labor costs paid for qualifying emission repair services performed on the vehicle if paid by the vehicle owner and if the qualifying repairs were performed by a recognized or certified repair technician. For qualifying emission repair services performed by someone other than a recognized or certified repair technician, the cost of parts but not labor utilized by nonrepair technicians may apply toward the waiver limit. The cost of parts for the repair or replacement for the following emission control components may be applied: oxygen sensor; catalytic converter; thermal reactor; EGR valve; fuel filler or gas cap; evaporative canister; PCV valve; air pump; distributor; ignition wires; coil; spark plugs; and power train management system. The cost of hoses, gaskets, belts, clamps, brackets or other accessories directly associated with these components may also be applied to the waiver limit. These repairs shall have been performed no more than 60 days prior to the initial emission inspection test.

(iii) Is appropriate to the cause of the test failure.

(iv) Excludes expenses which are incurred in the repair of emission control devices which are:

(A) Found to be tampered with.

(B) Rendered inoperative.

(C) Rendered inaccessible.

(D) Not installed.

(v) Excludes costs recoverable under an emission warranty, insurance policy or prepaid maintenance agreement. These recoverable cost repairs shall be used before necessary repair costs can be applied toward the waiver cost limitations. The operator of a vehicle within the statutory age and mileage coverage under section 207(b) of the Clean Air Act (42 U.S.C.A. § 7525(b)) shall present a written denial of warranty coverage from the manufacturer or authorized dealer for this provision to be waived.

(vi) Excludes the fee for emission inspection.

(vii) Excludes charges for giving a written estimate of needed repairs, except that the fee for an electronic diagnostic inspection may be included.

(viii) Excludes charges for checking for the presence of emission control devices.

(4) The vehicle owner or driver shall present the original of repair bills or receipts for parts to the inspection station to demonstrate compliance with the qualifying dollar amount established under paragraph (3). The bills shall:

(i) Include the name, address and telephone number of the repair facility.

(ii) Describe the repairs that were performed.

(iii) State the labor or parts costs, or both, for each repair.

(iv) State on the written estimate the general problem, the necessary major parts replacement items and the total necessary repair and labor costs which would exceed the total cost limitations.

(5) Upon completion of waiver requirements and a visual check to determine that repairs were actually made, a certificate of emission inspection with a waiver indicator shall be affixed to the subject vehicle.

(6) Vehicles subject to an emission test may be issued a certificate of emission inspection with a waiver indicator without meeting the emission test standards of § 177.204 (relating to basis for failure) if, after failing an emission retest, a complete, documented physical and functional diagnosis and inspection performed by emission inspection station personnel shows that no additional emission related repairs are needed.

§ 177.282. Annual adjustment of minimum waiver expenditure for emission inspection.

The minimum expenditure for the first 2 years after commencement of the program in an affected area is $150. Beginning with the 3rd year of the program in an affected area, an expenditure of at least $450 shall be required to qualify for a waiver. The $450 expenditure shall be adjusted annually in January of each year by the percentage, if any, by which the Consumer Price Index for the preceding calendar year differs from the Consumer Price Index for 1989. The procedure for using the Consumer Price Index for determining the minimum waiver expenditure shall be as follows:

(1) The Consumer Price Index for a calendar year is the average of the Consumer Price Index for all-urban consumers published by the United States Department of Labor, as of the close of the 12-month period ending on August 31 of each calendar year.

(2) The revision of the Consumer Price Index which is most consistent with the Consumer Price Index for calendar year 1989 shall be used.

PROCEDURES RELATING TO CERTIFICATES OF EMISSION INSPECTION

§ 177.291. Procedures relating to certificates of emission inspection.

(a) Certificates issued. The Department will issue a certificate of emission inspection, through an official emission inspection station, valid until the next scheduled emission inspection, for a subject motor vehicle which meets both the following:

(1) The motor vehicle has passed an inspection or reinspection performed by the emission inspection station.

(2) The motor vehicle has all required emission control devices installed under § 177.281 (relating to issuance of waiver).

(b) Certification procedures.

(1) Motor vehicles inspected under safety inspection regulations existing on October 1, 1997, shall have their registration card checked by the examining inspector for an I/M designated code printed on the registration card.

(2) A registration card containing the designation I/M shall indicate that the vehicles shall be emission inspected.

(3) A motor vehicle with a registration card containing the designation emission inspection required shall have a specified I/M indicator insert placed on the proper certificate of safety inspection and affixed to the windshield upon passing safety inspection.

(4) Upon compliance or issuance of a Certificate of Waiver an emission inspection sticker shall be affixed to the immediate right (when viewed from the driver's position) of the safety inspection sticker or, in the case where a truck weight class sticker is present, to the immediate right (when viewed from the driver's position) of the truck weight class sticker.

(5) If the vehicle fails the emission inspection, certificate of emission inspection may not be issued except under § 177.281.

(6) A motor vehicle bearing a specified safety inspection sticker with an I/M Indicator Insert which does not have a currently valid emission inspection sticker affixed to the windshield shall be in violation of section 4703 of the Vehicle Code (relating to operation of vehicle without official certificate of inspection) and shall be subject to the penalties and fines provided in the Vehicle Code.

(c) Unauthorized display of certificate of emission inspection. A certificate of emission inspection may not be marked and affixed to a vehicle until it has successfully passed emission inspection requirements of Chapters 45 and 47 of the Vehicle Code (relating to other required equipment; and inspection of vehicles) and this chapter.

(d) Required information. The required information on the rear of the certificate of emission inspection shall be completed in permanent ink.

(e) Inspection cycle. The proper I/M monthly insert for certificate of emission inspection shall be coordinated with the vehicle safety inspection. Vehicles which are emission inspected shall receive an inspection certificate which is valid for no more than 15 months, or no more than 27 months if § 177.51(c)(1) (relating to program requirements) becomes applicable and no less than 6 months, based on the vehicle's registration month and charts supplied by the Department

(f) Affixing certificate. The certificate of emission inspection shall be affixed to the vehicle only at the premises of the official emission inspection station and on a portion of the premises located within 100 feet and on the same side of the street as the official emission inspection station. Certificates of emission inspection may not be issued or affixed at any other area or location.

(1) The surface on which the sticker is to be attached shall be wiped dry and clean of road film, grease or moisture for proper adhesion. The following instructions apply:

(i) Clean the glass thoroughly.

(ii) Remove the protective slip sheet from the adhesive side of sticker.

(iii) Place the proper monthly indicator insert in the appropriate position so that month and year of expiration are visible to oncoming traffic.

(iv) Position the sticker carefully to the immediate right (when viewed from the driver's position) of the current certificate of safety inspection or, if a truck weight class sticker is present, to the immediate right (when viewed from the driver's position) of the truck weight class sticker. Press firmly until tightly affixed to the windshield.

(2) It is the responsibility of the certified emission inspector to affix the certificate of emission inspection. Only the certified emission inspector who performed the entire emission inspection shall affix the certificate of emission inspection to the vehicle.

(g) Improper or faulty inspection. A deviation or change in the procedure specified in this section shall be considered an improper or faulty inspection and the certificate of emission inspection issued as a result shall be void.

(h) Unauthorized display of certificate of emission inspection. A certificate of emission inspection may not be marked and affixed to a vehicle until the vehicle has successfully passed an emission inspection meeting the emission requirements of Chapters 45 and 47 of the Vehicle Code (relating to other required equipment and inspection of vehicles) and this chapter.

(i) Data entry errors. If a data entry error occurs, the error and the error correction shall be clearly noted on the computerized record of inspection.

(j) Voided certificates of emission inspection. If it is necessary to void a certificate of emission inspection, the certificate number and the reason shall be clearly noted on the computerized record of inspection.

§ 177.292. Recording inspection.

(a) Fraudulent recording. Fraudulent recording of required data or other forms and cards will be considered cause for suspension of inspection privileges.

(b) Proper forms. The emission inspection inspector shall enter required data for loading into the VIID and record required information on the proper and applicable report forms and place his signature in the appropriate columns designated. This shall be done immediately following the emission inspection.

(c) Certificate of waiver. The electronic waiver process shall be completed by the VIID. A waiver insert, as supplied by the Department, shall be placed on each emission certificate of inspection issued through the waiver process. The certificate of waiver form may be collected or the results of the electronic waiver process may be reviewed by the Department or its designee on an unannounced periodic basis.

(d) Nonrelated items. Gas, oil or other nonrelated items may not be included in the total charges for emission inspection.

(e) Supply. A supply of report sheets and other emission forms may be obtained from the Vehicle Inspection Division.

ON-ROAD TESTING

§ 177.301. Authorization to conduct on-road emission testing.

The Department will conduct on-road testing of subject vehicles as authorized in section 4704(a)(4) of the Vehicle Code (relating to inspection by police or Commonwealth personnel).

§ 177.302. On-road testing devices.

Testing may include the use of remote sensing devices or systematic roadside checks using tailpipe exhaust testing devices.

§ 177.304. Failure of on-road emission test.

The owner or operator of a subject vehicle that was required to have an emission inspection and that fails an on-road emission test shall have 30 days following notice of the failure in which to have the failed vehicle pass an emission inspection or to produce evidence that the subject vehicle has a valid emissions inspection waiver.

§ 177.305. Failure to produce proof of correction of on-road emission test failure.

If the owner of a subject vehicle fails to produce, within 30 days following notice of the failure of an on-road test, evidence that the vehicle has passed an emission inspection or evidence that the vehicle has a valid emissions inspection test waiver, the Department will recall the vehicle's registration. The vehicle may not be driven on the roads of this Commonwealth except as permitted under section 4703(b)(11) of the Vehicle Code (relating to operation of vehicle without official certificate of inspection).

Subchapter D.
OFFICIAL EMISSION INSPECTION STATION REQUIREMENTS

GENERAL

OBLIGATIONS AND RESPONSIBILITIES OF STATION OWNERS/AGENTS

§ 177.401. Appointment.

(a) Authority. For the purpose of establishing a system of official emission inspection stations, the Bureau will issue certificates of appointment to facilities within this Commonwealth that comply with the Vehicle Code and this title. Official emission inspection stations are authorized to conduct emission inspections and issue official certificates of emission inspection.

(b) Scope of certification. Until January 1, 2006, emission inspection station will not be issued a certificate of appointment unless it is capable of performing every type of emission inspection required for vehicles registered in the region in which the station is located.

(c) Certificate of appointment. The certificate of appointment for emission inspection stations will be issued only when the Bureau is satisfied that the station is properly equipped and employs certified emission inspectors, as applicable, to perform emission inspections required of vehicles registered in the region in which the station is located. Only those stations fulfilling Department requirements and complying with this chapter will be issued an emission certificate of appointment. Prior involvement with a suspended inspection station may be sufficient cause to deny appointment. The emission certificate of appointment shall be conspicuously displayed at the place for which issued, in accordance with section 4722 of the Vehicle Code (relating to certificate of appointment).

(d) Certificate not assignable. A certificate of appointment for an emission inspection station may not be assigned or transferred to another person, business entity or location and shall be valid only for the person or business entity in whose name it is issued and for transaction of business at the place designated therein.

(e) Valid certificate required. A person may not represent any place as an official emission inspection station unless the station is operating under a valid certificate of appointment issued by the Bureau.

(f) Inspection stations with common access. An emission inspection certificate of appointment will not be issued for operation of an official emission inspection station on a part of the premises of another official emission inspection station which utilizes the same access. This subsection does not apply where the stations have separate internal accesses, though sharing a common external access.

(g) Suspended inspection stations. An emission inspection certificate of appointment will not be issued for operation of an official emission inspection station on a part of the premises of an official emission inspection station which has been suspended if the owner of the suspended station continues to conduct any type of business which utilizes the same access. This subsection does not apply where the station and the other business each have a separate internal access, though sharing a common external access.

(h) Indefinite suspension of appointment. A certificate of appointment issued to an official emission station may be suspended indefinitely if the station no longer fulfills the requirements for appointment provided in this subchapter. Once the deficiency which prompted the suspension is cured, a station which has had its certificate of appointment indefinitely suspended may apply for re-appointment in accordance with the procedures in this subchapter.

§ 177.402. Application.

(a) Form. The applicant shall file one copy of the Official Emission Inspection Station Update/Official Emission Inspection Station Application, with the Bureau. A separate application shall be made for each place of business.

(b) Bond or proof of insurance.

(1) An applicant for a certificate of appointment shall furnish a bond, on a form prescribed by the Department, or proof of insurance as required by section 4722(c) of the Vehicle Code (relating to certificate of appointment).

(2) The bond or insurance shall be in the amount of $10,000 for each place of business and shall provide compensation to a vehicle owner for damage the vehicle may sustain while it is in the possession of the emission inspection station.

(3) The bond or insurance shall be renewed each year.

(4) Cancellation of the bond or insurance shall automatically void the certificate of appointment. Inspections shall cease until the Bureau receives a new bond or proof of insurance.

(c) Specification of type. The application shall indicate the type of emission inspection station authorization applied for, that is, Commonwealth, general or fleet.

(d) Applicant. The applicant shall be the owner of the business or, in the case of a corporation, some other person specifically authorized to sign the application:

(1) The applicant shall be 18 years of age or older.

(2) If the applicant is a corporation, co-partnership or association, the application shall be signed by an officer, partner or associate, or some other person specifically authorized to sign the application.

(i) The person who signs the application shall be 18 years of age or older.

(ii) Except in the case of an executive officer, partner or associate, written evidence of the authority of the person to sign the application shall be attached to the application and attested to by a partner, or corporation or association officer.

§ 177.403. Approval of emission inspection station.

(a) Investigation. A quality assurance officer or other authorized Commonwealth representative or agent will conduct an investigation of each applicant to determine full compliance with Chapter 47 of the Vehicle Code (relating to inspection of vehicles) and this chapter.

(b) English comprehension. The applicant and each certified emission inspector shall be sufficiently versed in the English language to understand the Vehicle Code and this chapter.

(c) Issuance and display of certificate. Upon approval of the application by the Bureau, a certificate of appointment will be issued to the applicant for the place of business within this Commonwealth as set forth in the application. Emissions inspections may not be performed unless a certificate of appointment has been issued to and is prominently displayed at the officially designated station.

§ 177.404. Required certificates and station signs.

After appointment the owner of an emission inspection station shall prominently display the following:

(1) A certificate of appointment for each type of emission inspection approved for the location.

(2) A sign clearly stating the Program Management Fee (PMF), the fees for exemptions (including labor) and for an inspection, that the inspection fee is the same whether the vehicle passes or fails, that the fee for inspection includes the cost of labor for the inspection, but not the cost of parts, repairs and adjustments, and that no additional charge shall be made by the inspecting station for one necessary reinspection within 30 days of the original inspection.

(i) The sign must list the fees in the order provided in the sample found in Appendix A as Exhibit B (relating to sample emissions test and exemption fees) and consist of letters and numbers at least 1 inch in height.

(ii) The sign must also indicate whether the emissions inspection station is able to deliver waivers and provide the telephone number of the Customer Hotline.

(iii) If lesser fees are charged to vehicle owner who is 65 years old or older, there shall be a corresponding posting of those fees as illustrated in Appendix A, Exhibit B.

(iv) Fleet and Commonwealth stations are exempt from this paragraph.

(3) The current list of certified emission inspectors.

(4) An approved official emission inspection sign outside of the garage that is clearly visible to the public. This sign must have a keystone design which is at least 24 inches high and 21 inches wide. The background must be navy blue with gold lettering. The station number plate must be at least 3 inches high and at least 13 inches wide. The background must be green with white station numbers. If a keystone designated sign is already present, the station number shall be placed below present plates. If hung from a bracket, the sign must be double faced. Fleet and Commonwealth emission inspection stations are exempt from this paragraph.

§ 177.405. Emission inspection areas.

(a) Emission inspections shall be conducted within approved enclosed or outside inspection areas that are safe, sound, well ventilated, and in good repair and condition.

(1) Emission inspections shall be conducted within an approved enclosed building when outside temperatures are below 35°F or above 110°F or relative humidity exceeds 85%, or when it is precipitating.

(2) Emission inspections may be conducted in an approved area outside an enclosed building when outside temperatures are between 35°F and 110°F with from 0 to 85% relative humidity and if there is no precipitation. The analyzer shall remain within the approved enclosed building at all times but the probe and exhaust gas hose may be extended outside to the vehicle being inspected.

(b) Anticipated alterations or changes affecting the condition, size or safety of inspection areas shall be reported to the Quality Assurance Officer within 5 days of the anticipated alteration or change.

(c) The floor shall be of a hard, clean surface and in sound, smooth condition. Dirt floors will not be approved.

(d) The inspection area shall be free of obstructions, including shelves, work benches, partitions, displays, machinery and stairways, unless, in the opinion of the quality assurance officer, the obstruction does not protrude into the area far enough to curtail or interfere with inspection.

(e) Emission inspection stations shall be at least 12 feet by 22 feet.

§ 177.406. Equipment.

(a) General requirements. Official emission inspection stations shall have tools and equipment in good satisfactory operating condition to be able to conduct emission inspections upon a subject vehicle. Equipment required shall include the following:

(1) Wheel chocks.

(2) Approved emission inspection and maintenance textbooks/workbooks or electronic or computerized medium with supplements and current changes and approved handbooks and manuals.

(3) Exhaust emission analyzer approved by the Bureau and certified by the manufacturer as meeting or surpassing specifications set forth in subsection (b), where applicable.

(4) Approved dynamometer, where applicable.

(5) Where applicable, OBD-I/M equipment as specified in § 177.501(a)(2) (relating to equipment approval procedures), approved by the Bureau.

(6) Where applicable, equipment for performing the gas cap test and visual inspection.

(b) Analyzer specifications. Exhaust emission analyzers approved by the Bureau shall meet the following requirements:

(1) Meet PA 97 equipment specifications, where applicable, as provided in Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standard, equipment specifications and quality control requirements) and meet section 207b of the Federal Clean Air Act (42 U.S.C.A. § 7541(b)) warranty specifications.

(2) Conform with the following minimum specifications:

(i) Upon the activation of the emission test, the Automatic data collection unit or VIID, as applicable, shall automatically set the standard required for comparison as defined in § 177.204 (relating to basis for failure). Standards shall be field programmed by the manufacturer or provided by the vehicle inspection information database, as applicable.

(ii) Approved exhaust emission analyzers shall be powered by alternating current.

(iii) The sample probe shall meet or surpass PA 97 sample probe requirements and be capable of being placed in the tailpipe a minimum of 10 inches with a device, if necessary, to preclude sample dilution.

(3) Field calibration gases. Field calibration gases shall be as specified in Appendix A (relating to acceleration simulation mode: Pennsylvania procedures, standard, equipment specifications and quality control requirements).

§ 177.407. Hours of operation.

Emission inspection stations shall be open for business a minimum of 5 days per week, 40 hours, Monday through Friday between 7 a.m. and 8 p.m. This section may be waived by the Bureau upon written request of the inspection station owner and prior approval of the quality assurance officer. To qualify for a waiver from the provisions of this section, the station shall be open for business at least 10 business hours during the normal work week (Monday through Friday) between 7 a.m. and 8 p.m. This section does not apply to:

(1) Commonwealth or fleet emission inspection stations.

(2) Emission inspection stations owned and operated by more than one owner to do test-only inspections.

§ 177.408. Certified emission inspectors.

(a) General rule. Personnel who perform emission inspections at each emission inspection station will be certified by the Department as emission inspectors. The emission inspection shall be completely performed by certified emission inspectors with a valid driver’s license.

(b) Multiple stations. A certified emission inspector may work at more than one emission inspection station.

(c) Certified emission inspector requirements. An inspector desiring to be certified to perform emission inspections shall:

(1) Be 18 years of age or older.

(2) Possess a valid Pennsylvania driver license.

(3) Have done the following:

(i) Completed an emission inspection training course, approved by the Department, that included, where applicable, information on the following:

(A) The air pollution problem, including its cause and effects.

(B) The purpose, function and goal of the inspection program.

(C) Emission inspection regulations and procedures of the Commonwealth.

(D) Technical details of the test procedures and the rationale for their design.

(E) Emission control device function, configuration and inspection.

(F) Test equipment operation, calibration and maintenance.

(G) Quality control procedures and their purpose.

(H) Public relations.

(I) Safety and health issues related to the inspection process.

(ii) Passed a required written test with a minimum of 80% correct test responses.

(iii) Proved, through means of a computer-based training/testing (CBT) or other Department approved procedure under supervision of a certified educational instructor or other qualified Commonwealth employee or agent, the ability to perform a complete emission inspection, to properly utilize test equipment and to follow other required test procedures as prescribed in § § 177.202, 177.202a, 177.202b, 177.203, 177.271 and 177.272, as applicable. The inability to properly conduct the test procedures shall constitute grounds for refusal of certification.

(4) Complete a refresher training course, under procedures established by the Department and pass the required test every 2 years.

(d) Identification. While conducting inspections, a certified emission inspector shall have in his possession a currently valid inspector emission inspection certification card issued by the Department.

(e) Names of inspectors. The names of certified emission inspectors and their inspector certification numbers shall be placed on the Current List of Certified Emission Inspectors form which shall be posted in a conspicuous location at the emission inspection station.

(f) Number of inspections. The number of inspections performed by a certified emission inspector may not exceed more than 12 subject vehicles per hour for the one or two-speed idle emission inspection, 6 inspections per hour utilizing ASM test equipment and procedures, or 12 OBD-I/M checks per hour.

OBLIGATIONS AND RESPONSIBILITIES OF STATION OWNERS/AGENTS

§ 177.421. Obligations and responsibilities of station owners/agents.

(a) Personal liability. It is the responsibility of the owner of an emission inspection station to:

(1) Conduct the business of the official emission inspection station honestly and in the best interests of the Commonwealth, under the Vehicle Code and this chapter and, except in the case of a fleet or Commonwealth emission inspection station, to make every reasonable effort to inspect upon request all vehicles which the station is equipped to inspect.

(2) Make official emission inspection regulations and supplements available for the use of all certified emission inspectors and other employees involved.

(3) Notify within 5 days the quality assurance officer and the Vehicle Inspection Division when a certified emission inspector is hired, resigns or is dismissed.

(4) Provide the emission inspection report to motorists after testing and to have the possible repair requirements stated on a form provided to the vehicle owner or operator.

(5) Keep, at the station, as applicable, for 2 years, duplicate copies of completed Certificate of Emission Requisition Forms, repair order forms related to waivers and the original Certificate of Waiver Forms, and other required forms.

(6) Assume full responsibility, with or without actual knowledge, for:

(i) Every emission inspection conducted at the emission inspection station.

(ii) Every emission inspection waiver delivered by a certified repair technician at the emission inspection station.

(iii) Every certificate of emission inspection issued to the emission inspection station.

(iv) Every violation of the Vehicle Code or this chapter related to emission inspections committed by an employee of the emission inspection station.

(v) Maintaining an adequate supply of current certificates of emission inspection and inserts for issuance.

(7) Perform, as applicable, required maintenance and calibration procedures of emission analyzers according to procedures established by the Department and perform electronic zero and span checks hourly during periods of operation and weekly leak checks.

(8) Place an emission analyzer out of service when calibration cannot be performed according to procedures established by the Department.

(9) Ensure that instrument calibration test results are entered into the VIID by the analyzer manufacturer or other approved service representative as directed by the Department.

(i) For basic emission inspection stations, the analyzer manufacturer or other approved service representative shall write maintenance and calibration information on the Emission Analyzer Maintenance and Calibration Report. This report shall be maintained at the station for 2 years.

(ii) For enhanced emission inspection stations, the information required in this paragraph shall be entered into the VIID by the analyzer manufacturer or other approved service representative as directed by the Department.

(10) Maintain adequate numbers of current certificates of emission inspection and inserts for issuance.

(i) Data entry errors. If a data entry error occurs, the error and the error correction shall be clearly noted.

(ii) Voided stickers. If it is necessary to void a sticker, the sticker number and the reason shall be clearly noted.

(b) Certificate of appointment. A certificate of appointment is not assignable and is valid only for the owner in whose name it is issued.

(1) If there is a change of ownership, the certificate of appointment, unissued certificates of inspection and inspection material shall be surrendered to the quality assurance officer within 5 days. If the new owner desires to continue providing emission inspections, the owner shall submit an Official Emission Inspection Station Update/Official Emission Inspection Station Application to the Bureau. An investigation of the premises will be conducted by the inspection station investigator.

(2) In the following circumstances, it is not necessary to surrender unissued certificates of emission inspection; however, inspections may not be conducted until the new ownership has been approved and a new certificate of appointment has been issued:

(i) Creation, modification or termination of a partnership.

(ii) Incorporation of a business.

(iii) Transfer of the controlling interest in a corporation.

(iv) Transfer of ownership to a spouse, child or parent.

(3) If there are changes of location of an emission inspection station:

(i) An Official Emission Inspection Station Update/Official Emission Inspection Station Application shall be completed and submitted to the Bureau.

(A) An investigation of the premises shall be conducted by the quality assurance officer.

(B) Certificates of inspections shall be audited by the quality assurance officer or his supervisor and will be retained by the station owner.

(ii) An emission inspection may not be made at the new location until it has been investigated, an approved emission analyzer has been installed and calibrated by an approved emission analyzer manufacturer or other approved service representative, and a new certificate of appointment has been issued by the Bureau.

(iii) A quality assurance officer will pick up all current emission certificates of inspection and retain them until the new location is approved, if the new location is not approved at the time of investigation.

(4) Emission inspections shall be discontinued if:

(i) The owner vacates, abandons or discontinues the inspection business with or without notice to the Bureau and the quality assurance officer and supervisor. The quality assurance officer or supervisor will pick up all certificates of emission appointment, records and all other emission inspection materials and return them to the Bureau.

(ii) The owner is deceased and if a member of the family or a partner wishes to continue the business, a new application for appointment shall be submitted to the Department.

(iii) If station owner does not pay for required services rendered by the vendor or other approved service provider, the vendor or other approved service representative may file a written complaint with the Department, and the Department, after providing the opportunity for a hearing, may suspend the certificate of appointment until payment has been made.

(5) The following events shall be reported at once to the quality assurance officer and the Bureau; however, it is not necessary to discontinue inspections:

(i) Whenever certificates of emission inspection are damaged, lost or stolen. Telephone communication to the Bureau within 5 days of the event shall be required providing the serial number of each missing emission certificate.

(ii) Whenever a certified emission inspector or a person authorized to purchase certificates of inspection is dismissed or resigns, as long as emission inspections are performed by another certified emission inspector.

(iii) Whenever changes in a post office address of an emission inspection station, not location, occur, they shall be reported in writing within 30 days to the quality assurance officer and the Bureau on an Official Emission Inspection Station Update/Official Emission Inspection Station Application.

(iv) Whenever changes of the company name, not ownership, occur, they shall be reported within 30 days on an Official Emission Inspection Station Update/Official Emission Inspection Station Application.

(v) Whenever a person who signs the Official Emission Inspection corporation is no longer in charge of the emission inspection station:

(A) A new Official Emission Inspection Station Update/Official Emission Inspection Station Application shall be submitted to the Bureau immediately.

(B) A new letter of authority shall be required for the person signing the Official Emission Inspection Station Update/Official Emission Inspection Station Application.

(6) Whenever a person, whose name is on the Authorized Agents For Receiving Stickers Form, resigns or is relieved of his emission inspection responsibilities, the owner shall complete a new Authorized Agents For Receiving Stickers Form and submit the completed form to the Bureau immediately.

(7) Customer relations shall be governed by the following:

(i) The garage owner or certified emission inspector shall consult the vehicle owner for permission before emission adjustments are made.

(A) Permission may be established at the time the vehicle is brought to the station or after it is determined to what extent adjustments are needed.

(B) The vehicle owner is allowed to perform his own adjustments, or to select anyone he chooses to do the work for him.

(ii) Parts replaced as a result of inspection shall be retained until the vehicle is returned to the customer. The customer shall have the right to examine replaced parts.

(iii) Inspection station owners and inspectors should be courteous and patient in explaining to the motorist that the requirements of emission inspection are designed to promote clean air. Employees should clearly understand that the function of an official emission inspection station is to perform emission inspections consistent with this chapter.

(iv) The garage owner, authorized manager or certified emission inspection inspector shall provide notice to customers of the location of the nearest quality assurance officer or the Vehicle Inspection Division.

§ 177.422. Commonwealth emission inspection stations.

(a) Eligibility. The designation, Commonwealth Emission Inspection Station, will be issued to stations owned and operated by the following:

(1) The Federal government.

(2) The Commonwealth.

(3) A political subdivision of this Commonwealth.

(b) General requirements. An applicant for a Commonwealth emission inspection station shall meet the requirements of this chapter, including the requirements for fleet stations.

(c) Certified emission inspector. Each official Commonwealth emission inspection station shall have at least one certified emission inspector.

(d) Method of inspection. A Commonwealth emission inspection station may, by mutual agreement with another governmental body, inspect and issue certificates of emission inspection to vehicles registered in the name of that governmental body. Inspection fees, as defined in this chapter, may be charged for the inspection. Charges may be collected for repairs.

§ 177.423. Fleet emission inspection stations.

(a) Eligibility requirements for fleet emission inspection stations are as follows:

(1) Minimum number of vehicles. A fleet emission inspection station owner shall own or lease at least 15 subject vehicles.

(2) Authorized subject vehicles. The certificate of appointment shall authorize emission inspection of subject vehicles registered or leased by the fleet emission inspection station owner. Privately owned or registered vehicles of company officers and employees may not be emission inspected at a fleet emission inspection station, even if they are used for business purposes.

(3) Certificate cancellation. The fleet emission inspection certificate shall be cancelled if the number of subject vehicles owned or leased falls below 15, except for a temporary delay in ordering or receiving additional vehicles to supplement the fleet.

(b) Each fleet emission inspection station shall have at least one certified emission inspector.

(c) Requirements for fleet inspection stations shall include the following:

(1) Applicants for a fleet emission inspection station shall comply with this chapter unless specifically exempted.

(2) Inspection areas shall be large enough to accommodate the largest subject vehicle to be inspected at the fleet emission inspection facility, in addition to meeting the minimum inspection area requirements of § 177.405 (relating to emission inspection areas).

(d) Limited inspection periods and limitations on the length of service requirements are permitted if the station meets the following:

(1) Fleet vehicles subject to emission inspections are registered in the limited inspection periods, as defined in § 177.3 (relating to definitions).

(2) The station owner, in writing, requests the Department to permit a limited inspection period. This request shall specify the month in which emission inspections will be performed.

(3) The station owner submits a copy of the manufacturer/station agreement specifying regulation service commitments for the limited inspection period.

(4) The station owner is granted written Department approval after a station review and a fleet vehicle registration certification is completed. The approval will designate the months in which emission inspections shall be performed.

(5) The station owner performs emission inspections only during months designated by the Department.

(e) Limited inspection period emission analyzer service requirements with accompanying limitations as to the length of service requirements are as follows:

(1) Station owners shall ensure that required manufacturer/station service commitments are in force during this limited period.

(2) Station owners shall pay for costs to bring the approved analyzer into compliance and monthly or quarterly fees required by the manufacturer or other approved service representative during the limited inspection period.

(3) Station owners shall be responsible for notifying the quality assurance officer or the Vehicle Inspection Division of the starting and ending times for the limited inspection periods. Failure to notify the Department may result in cancellation of this privilege.

(4) Station owners may not permit emission inspections to be performed during the limited inspection period until the Department has been notified by the analyzer manufacturer or other approved Commonwealth agent or service representative that the analyzer is in compliance with all requirements and the Department so notifies the station owner. Failure to comply with this paragraph may result in cancellation of limited inspection period privileges.

§ 177.424. General emission inspection stations.

(a) Eligibility. The designation, general emission inspection station, will be issued to stations that emission inspect all subject vehicles, if the station is so equipped.

(b) General requirements. An applicant for a general emission inspection station shall comply with this chapter unless specifically exempted.

(c) Certified emission inspector. Each general emission inspection station shall have a certified emission inspector present during normal business hours.

(d) Method of inspection. Subject vehicles shall be inspected consistent with this chapter by a certified emission inspector.

§ 177.425. Security.

(a) Unlawful possession. A person may not knowingly possess certificates of emission inspection which have been illegally purchased, stolen or counterfeited.

(b) Not transferable. Emission inspection stickers are not transferable. They shall only be affixed to the subject vehicle as recorded on the Exhaust Emission Analyzer and the Vehicle Emission Inspection Report sheet or other approved recording medium.

(c) Removal. Certificates of emission inspection may not be removed from a vehicle for which the certificate was issued except to replace it with a new certificate of emission inspection issued under this chapter. This prohibition is not applicable to expired certificates of emission inspection on vehicles registered outside the designated areas. These expired certificates of emission inspection shall be removed only by a certified emission or safety inspector.

(1) A person replacing a windshield in a manner which requires removal of a certificate of emission inspection shall, at the option of the registrant of the vehicle, cut out the portion of the windshield containing the emission certificate and deliver it to the registrant of the vehicle or destroy the emission certificate. The vehicle may be driven up to 5 days if it displays the portion of the old windshield containing the emission certificate. Within the 5-day period an appropriate official emission inspection station may affix to the vehicle another certificate of emission inspection for the same period without reinspecting the vehicle in exchange for the portion of the old windshield containing the certificate of emission inspection. A labor fee of no more than $2 and the cost of the dial-up to the VIID may be charged for the exchanged certificate of emission inspection. The replacement may be made at any time prior to the expiration of the certificate of emission inspection.

(i) The portion of the windshield containing the certificate of emission inspection may be retained for audit by the quality assurance officer.

(ii) The replacement certificate of emission inspection shall be recorded on the appropriate record, either hard copy or VIID, showing all information except inspection items.

(iii) Replacement shall be marked on the reverse side of the replacement certificate of emission inspection.

(2) A certificate of emission inspection may not be removed from a vehicle until a complete inspection has been made.

(3) Only one current, valid certificate of emission inspection shall be visible on a vehicle. The old certificate of emission inspection shall be removed and completely destroyed before a new sticker can be affixed after an inspection and approval.

(d) Lock and key. Emission inspection stickers shall be kept under lock and key in a safe place. The station owner shall be solely responsible for their safety and shall account for all emission certificates of inspection issued to the station.

(e) Unused. Unused certificates of emission inspection for an expired period shall be retained by the emission inspection station until audited by the quality assurance officer. After an audit is completed, the quality assurance officer shall destroy them.

(f) Issuance of emission certificates of inspection. Certificates of emission inspection will not be issued by the Bureau to anyone that has not been listed on an executed Authorized Agents for Receiving Stickers Form.

(g) Authorized agents for receiving stickers. The Authorized Agents for Receiving Stickers Form shall be completed upon receipt as instructed on the back side of the form and submitted within 1 day of receipt to the Vehicle Inspection Division whenever:

(1) An employee, whose signature appears on the form, is no longer employed by the station.

(2) The card is defaced, torn or illegible.

(3) An authorized agent is to be added.

§ 177.426. Ordering certificates of emission inspection.

(a) Requisitions. A properly completed Requisition For Official Inspection Sticker Form for certificates of emission inspection and a Sticker Insert Requisition Form for emission inserts shall be submitted to the

Department. If certificates of emission inspection or sticker inserts are to be delivered to a mailing address instead of the inspection station address, the mailing address shall be included on every requisition submitted to the Department.

(b) Contents. The following information shall be entered on the order form:

(1) The correct name, address and station number, as shown on the certificate of appointment, shall be entered on every requisition form.

(2) If special delivery is desired, either shipping costs shall be paid by the station to the delivery agent upon receipt of the stickers, or if a sticker requisition is accompanied by a check for special delivery, the check shall be made payable to the Department of Transportation.

(3) The Official Inspection Sticker Form and Sticker Insert Requisition Form shall be completed and forwarded to the Department.

(4) A copy of the requisition or a Department receipt will be returned with the order of certificates of emission inspection shipped from the Department. Station copies of requisitions or Department receipts shall be kept on file at the station for 2 years and shall be made available for inspection upon request of the quality assurance officer or authorized representative of the Department.

(5) Certificates of emission inspection shall be ordered in multiples of 25, with a minimum order of 50 certificates, except that Commonwealth and fleet inspection stations shall order a minimum of 25 certificates.

(6) Incomplete or improper certificates of emission inspection requisitions shall be returned to the official emission inspection station for correction to avoid unnecessary inconvenience or delay. Information shall be rechecked very carefully.

(c) Inventory. Emission inspection stations should anticipate their need for additional certificates of emission inspection.

§ 177.427. Violations of use of certificate of emission inspection.

A person may not:

(1) Make, issue, transfer or possess any imitation or counterfeit of an official certificate of emission inspection.

(2) Display or cause to be displayed on a vehicle or have in possession a certificate of emission inspection knowing the same to be fictitious or stolen or issued for another vehicle or issued without an emission inspection having been made.

(3) Furnish, loan, give or sell certificates of emission inspection and approval to any official emission inspection station or other person except upon an emission inspection performed in accordance with this chapter.

QUALITY ASSURANCE

§ 177.431. Quality assurance.

The Department will conduct performance audits on a periodic basis to determine whether inspectors are correctly performing the tests and other required functions.

(1) Performance audits may be of two types:

(i) Overt performance audits which may include the following:

(A) A check for appropriate document security, as required by § 177.425(d) (relating to security).

(B) A check to see that required recordkeeping practices are being followed.

(C) A check for licenses or certificates and other required display information.

(D) Observation and written evaluation of each inspector's ability to properly perform an inspection.

(ii) Covert performance which may include the following:

(A) Remote visual observation of inspector and inspection station personnel performance, which may include the use of binoculars or video cameras.

(B) Site visits using covert vehicles.

(C) Other activities deemed appropriate by the Department as necessary to maintain the level of quality assurance for the emission inspection program required by Federal law.

(2) The station owner and the employees of the station owner shall make available information requested by the Department and shall fully cooperate with Department personnel who conduct the audits and other authorized Commonwealth representatives or agents.

(3) Each quality assurance officer shall be audited on an annual basis.

Subchapter E.
EQUIPMENT MANUFACTURERS' AND CONTRACTORS' REQUIREMENTS AND OBLIGATIONS

EQUIPMENT MANUFACTURERS' REQUIREMENTS

CONTRACTOR OBLIGATIONS

QUALITY ASSURANCE

§ 177.501. Equipment approval procedures.

(a) The manufacturer shall meet the following conditions for approval for participation in the emission inspection program.

(1) Emission inspection equipment. The following requirements shall be met for equipment approval in the emission inspection program:

(i) The manufacturer shall provide a certified copy of BAR 97 approved certification or a certified document stating complete testing compliance with BAR 97 test requirements by a reputable independent testing laboratory that completed the testing, or certify that the gas analyzer meets all performance standards of California BAR 97 as they apply to the PA gas analyzer.

(ii) The manufacturer shall certify that the approved test equipment will comply with the data collection requirements of this chapter.

(iii) The manufacturer shall provide a document that the dynamometer meets all State and California BAR requirements for ASM test equipment as specified in Appendix A and California BAR 97 specifications or certify that the dynamometer meets all performance standards of California BAR 97 as they apply to the PA dynamometer and ASM test equipment.

(iv) The manufacturer shall provide certification that the description of the methods the manufacturer or distributor will use shall meet or surpass all Department analyzer and dynamometer specifications, performance commitments, financial commitments, responsibilities and agreements as required by this chapter and the Department's procedures and policies.

(v) The manufacturer shall offer as an option an equipment lease arrangement of at least 10 years to prospective equipment purchasers.

(vi) The manufacturer shall offer as an option a "fee per test" equipment financing opportunity to prospective equipment purchasers.

(vii) The manufacturer shall offer as an option a provision for installation of emission inspection test equipment, at the request of prospective equipment purchasers.

(viii) The manufacturer shall clearly identify equipment features which are listed as options but which are essential to comply with the program and equipment specifications of this chapter.

(ix) Equipment manufacturers and providers shall receive prior approval from the Department for any costs associated with program software updates or revisions.

(2) OBD-I/M check equipment approval. The following requirements shall be met for approval of the OBDI/M check equipment:

(i) The manufacturer or distributor of an OBD scanner or scan tool must certify that the scan tool used for OBD-I/M checks complies with applicable versions of the following SAE standards:

(A) SAE J 1962 (Standardized Connector).

(B) SAE J 1978—OBDII (Scan Tool Functionality).

(C) SAE J 1979 (Diagnostic Test Modes (1-7)).

(D) SAE J 1850, ISO9141-2 & 14230-4 (Communication Protocols).

(E) SAE J 2012 (Standardized DTC usage).

(ii) The manufacturer or distributor shall certify that the OBD hand-held scan tool or OBD PC-based scan tool meets PA Equipment Specifications for OBD-I/M Checks, copies of which are available by contacting the Bureau.

(iii) The manufacturer or distributor shall certify that the emission-related parameters and emission related engine parameters displayed must be able to be automatically transmitted to the VIID.

(b) Certification. A manufacturer shall cause a corporate officer with administration/operations management responsibility, if a corporation; the general partners, if a partnership; or the owner, if a sole proprietorship, to certify in writing and attest in affidavit form to the Department that the exhaust emission analyzer and dynamometer, OBD scan tool and equipment for the gas cap test and visual inspection, as applicable, meets the specifications of this section and quality assurance and that the manufacturer meets or surpasses stated field requirements.

§ 177.502. Service commitment.

(a) Manufacturers and distributors shall provide the following service commitments:

(1) Supply equipment for sale, lease or rent as specified by the purchase order.

(2) Train, at no cost, on the initial visit for installation of the emission analyzer or dynamometer, or both, all certified emission inspection inspectors employed at the time of installation regarding the proper use of the analyzer or the dynamometer, or both, and provide, within 7 days of the request by a station owner or operator, onsite training for additional inspectors for a service fee.

(3) Provide or permit test standards or procedures utilized by test equipment to be modified consistent with Federal requirements for emission inspection programs.

(4) Provide maintenance on purchased or leased equipment within 1 business day of oral or written request from the station. A fee may be charged for this service.

(b) Manufacturers and distributors shall offer to equipment purchasers the ability to contract for the following services for additional fees:

(1) Provide service for faulty equipment.

(2) Provide replacement parts and equipment while servicing faulty equipment.

(3) Provide inspections, calibrations, training or maintenance or any combination thereof on a more frequent basis than specified in subsection (a).

(c) Manufacturers or distributors shall permit equipment purchasers to contract with other Department approved service providers for the services specified in subsection (b).

(d) Replacement parts or equipment provided shall be the same as or equivalent to the parts or equipment provided by the original equipment manufacturers.

(e) Department approved equipment service representatives shall provide the following service commitments:

(1) Maintenance on equipment within 1 business day of an oral or written request from the station. A fee may be charged for this service.

(2) Replacement equipment while servicing faulty equipment. A fee may be charged for this service.

§ 177.503. Performance commitment.

(a) The manufacturer or distributor shall agree that, if it decides to discontinue participation in the program, or if its name is removed from the list of approved manufacturers or distributors of emission analyzers, OBD-I/M check equipment or equipment for the gas cap test and visual inspection by the Department, it will buy back all emission analyzers, dynamometers, OBD-I/M check equipment or gas cap/visual inspection equipment from the inspection stations which purchased them for an amount equal to the unamortized cost based on straight line amortization over the expected useful life of the analyzer, dynamometer, OBD-I/M check equipment or gas cap/visual inspection equipment.

(b) The manufacturer or distributor shall agree to provide a specific performance bond, irrevocable letter of credit, a certified check, or bank cashier's check drawn to the order of the Pennsylvania Department of Transportation, or other suitable financial instrument acceptable to the Department:

(1) For analyzer and dynamometer manufacturers or distributors, in the amount of $1 million initially, and in the amount of an additional $400,000, for every 250 analyzers sold to Pennsylvania certified emission inspection stations.

(2) For OBD-I/M check equipment manufacturers or distributors, in the amount of $500,000.

(3) For gas cap/visual inspection equipment, in the amount of $200,000.

(c) This security will be used:

(1) To insure that money is available to reimburse certified emission inspection stations for the reasonable value of existing emission analyzers, dynamometers or OBD-I/M check equipment in the event that the manufacturer or distributor goes out of business in this Commonwealth or is removed by the Department from the list of approved manufacturers or distributors for substantial failure to comply with the terms and conditions of the agreement or this chapter.

(2) In part or in whole in the event of nonperformance or default of the manufacturer or distributor.

(d) Other Department-approved equipment service providers shall agree to provide a specific performance bond, irrevocable letter of credit, a certified check, or bank cashier's check drawn to the order of the Pennsylvania Department of Transportation, or other suitable financial instrument acceptable to the Department, in the amount of $200,000. These funds may be used in part or in whole in the event of nonperformance or default of the service provider.

§ 177.504. Revocation of approval.

(a) The Department may, at any time, on the basis of manufacturer or distributor failure to comply with this chapter, Chapter 41 of the Vehicle Code (relating to equipment standards), or any contract or agreement between the manufacturer and the Department, revoke or suspend the manufacturer's or distributor's approval to provide new or replacement emission analyzers and dynamometers to Pennsylvania emission inspection stations, and may remove the manufacturer or distributor's name from the list of approved emission analyzers and dynamometers if the manufacturer or distributor has failed to make satisfactory progress toward correcting notice of failure within 30 calendar days after having received written notice by the Department.

(b) The following shall constitute, together or individually, a default under this subsection and may be cause for revocation of approval, termination of an agreement or forfeiture of security provided in § 177.503(b) (relating to performance commitment):

(1) Failure of emission analyzer equipment or dynamometers, or both, provided by the manufacturer or distributor to certified emission inspection stations to comply with the manufacturer's or distributor's approved application.

(2) Failure, on the initial visit for installation of the emission analyzer or dynamometer, or both, to train all certified emission inspection inspectors employed by the emission inspection applicant stations.

(3) Failure to provide optional contracted services to stations provided any of the listed optional contracted services are specified in the station/manufacturer contract.

(c) Other Department approved equipment service providers shall agree to provide a specific performance bond, irrevocable letter of credit, certified check or bank cashier's check drawn to the order of the Pennsylvania Department of Transportation, or other suitable financial instrument acceptable to the Department in the amount of $200,000. The Department may, at any time, on the basis of the service provider's failure to comply with this chapter, revoke or suspend the approval of other service providers to provide service and parts to certified emission inspection stations.

CONTRACTOR OBLIGATIONS

§ 177.521. Contractor obligations and responsibilities.

(a) Services to be contracted. The Department intends to contract with a vendor to perform services, including but not limited to, inspection station audits, inspection test data collection, on-road testing and other quality assurance efforts needed to comply with Federal law. The vendor is responsible for providing all services as specified in contracts executed with the Department, which shall be available for public review.

(b) Subcontracts. The vendor may subcontract any of these services, with the approval of the Department, but the vendor shall be liable to the Department for the performance of the subcontractor.

(c) Personal liability. The contractor, or those acting as agents of the contractor, shall assume full responsibility for:

(1) Making records available to the Department quality assurance personnel and other authorized Commonwealth personnel during periodic audits.

(2) Providing to the Department, at no cost to the Department, the results of the emission tests conducted at emission inspection stations. The requirements for data collection and transmission shall be as specified in the contract between the Department and the contractor.

(3) Providing to the Department, at no cost to the Department, the results of inspection station audits and on-road testing. The requirements for data collection and transmission shall be as specified in the contract between the Department and the contractor.

(4) Maintaining copies of test results and other data in the event that there are problems with the online transmission. The copies may be discarded only after notification by the Department that data from the original transmission has been satisfactorily transferred for data processing.

(5) Using computer control of quality assurance checks and quality control charts whenever possible.

Subchapter F.
SCHEDULE OF PENALTIES AND HEARING PROCEDURE

SCHEDULE OF PENALTIES AND SUSPENSIONS

SCHEDULE OF PENALTIES FOR CERTIFIED REPAIR TECHNICIANS

DEPARTMENTAL HEARING PROCEDURE

RESTORATION AFTER SUSPENSION

REGISTRATION RECALL PROCEDURE FOR VIOLATION OF § § 177.301—177.305 (RELATING TO ON-ROAD TESTING)

SCHEDULE OF PENALTIES AND SUSPENSIONS

§ 177.601. Definitions

As used in this subchapter, the following words and terms have the following meanings unless the context clearly indicates otherwise:

Careless recordkeeping—Failure to sign the emission inspection test report, missing or omitting required documentation supporting the issuance of a waiver as required by § 177.281 (relating to issuance of waiver) or data entry errors proven to have no influence on the outcome of the inspection.

Faulty inspection—Failure to perform an emission inspection as required by this chapter or any other deviation in the testing procedure, provided that it can be demonstrated that the outcome of the inspection would have been different if the inspection had been performed properly.

Fraudulent recordkeeping—A recordkeeping entry not in accordance with fact, truth or required procedure that falsifies or conceals one or more of the following:

(i) That a certificate of inspection was issued without compliance with the required inspection procedure.

(ii) The number of inspections performed.

(iii) The individuals or station that performed the inspection.

Improper inspection—Failure to perform an emission inspection as required by this chapter or any other deviation in the testing procedure provided that it can be demonstrated that the outcome of the inspection would have been the same if the inspection had been performed properly.

Improper recordkeeping—A recordkeeping entry that is not in accordance with fact, truth or required procedure.

§ 177.602. Schedule of penalties for emission inspection stations.

(a) Schedule of penalties. The complete operation of an official emission inspection station shall be the responsibility of the owner. Failure to comply with the appropriate provisions of the Vehicle Code or this chapter will be considered sufficient cause for suspension of emission inspection privileges. In addition, violators are also subject to criminal prosecution. Every general, fleet or Commonwealth emission inspection station shall be subject to the following schedule of penalties and suspension:

Type of Violation	Duration of Suspension		
	1st Offense	2nd Offense	3rd and Subsequent Offenses
Category 1 (Fraudulent Activities)			
(i) Issuance or possession of altered, forged, stolen or counterfeit certificate of emission inspection	1 year and $2,500 fine	Permanent and $5,000 fine	
(ii) Furnish, lend, give, sell or receive a certificate of emission inspection without inspection	1 year and $2,500 fine	Permanent and $5,000 fine	
(iii) Fraudulent recordkeeping	1 year and $2,500 fine	Permanent and $5,000 fine	

Type of Violation	Duration of Suspension		
	1st Offense	2nd Offense	3rd and Subsequent Offenses
Category 2 (Improper Activities)			
(iv) Faulty inspection	3 months and $1,000 fine	1 year and $2,500 fine	3 Years and $5,000
(v) Inspecting more subject vehicles per hour per emission inspection inspector than permitted by § 177.408(g)	3 months	6 months	1 year
(vi) Failure to produce records upon demand by Department quality assurance officer or other authorized Commonwealth representative or agent	3 months or until produced, whichever is greater	6 months or until produced, whichever is greater	1 year or until produced, whichever is greater
(vii) Inspection by uncertified inspector	3 months	6 months and $1,000 fine	1 year and $2,500 fine
(viii) Improper recordkeeping	2 months	6 months	1 year
(ix) Improper inspection	Warning	2 months and $250 fine	6 months and $500 fine
(x) Requiring or indicating unnecessary repairs for purpose of inspection	3 months	6 months	1 year
(xi) Misstatement of fact	1 month	3 months	1 year
(xii) Improper assigning of certificate of inspection	1 month	3 months	1 year
(xiii) Failure to verify registration or emission inspecting a vehicle with an expired registration	2 months	4 months	6 months
(xiv) Failure to affix certificate of inspection immediately upon successful completion of the inspection	2 months	4 months	6 months

Type of Violation	Duration of Suspension		
	1st Offense	2nd Offense	3rd and Subsequent Offenses
Category 3 (Careless Activities)			
(xv) Inspection by emission inspector with suspended, revoked, cancelled, expired or recalled vehicle operating privilege	2 months	4 months	6 months
(xvi) Inspection by emission inspector with expired inspector certification	Warning	4 months	6 months
(xvii) Improper use of emission inspector certification	Warning	2 months and $250 fine	6 months and $500 fine
(xviii) Improper security of certificate of inspection	Warning	3 months	1 year
(xix) Unclean inspection area	Warning	Warning	3 months
(xx) Careless recordkeeping	Warning	Warning	3 months
(xxi) Missing or broken tools	Warning, if repaired or replaced; if not, suspension until tools are repaired or replaced	1 month or until tools are repaired or replaced, whichever is greater	6 months or until tools are repaired or replaced, whichever is greater
(xxii) Bad Check	Warning, if amount due is paid within 10 days from date notified. If not, suspension until amount is paid	3 months or until amount due is paid, whichever is greater	6 months or until amount due is paid, whichever is greater
Category 4 (Negligent)			
(xxiii) Failure to report discontinuance of business	1 year	2 years	Permanent
(xxiv) Failure to notify the Department of changes of ownership, location or other changes affecting an official inspection station	3 months	6 months	1 year
(xxv) Failure to make emission inspection test printout available to customer	Warning	Warning and $100 fine	1 month

(b) Assignment of points. If the station owner, manager, supervisor or other management level employee was without knowledge of the violation, the Department may permit the station owner to consent to the acceptance of a point assessment for the station in lieu of suspension.

(1) The station owner bears the burden of proving that the station owner provided proper supervision of the employee who committed the violation, but that the owner's supervision could not have prevented the violation.

(2) By accepting the assessment of points the station owner waives the right to appeal the Department's determination in the case to a court of record. If the station owner refuses to accept the point assessment, the Department will issue the suspension provided in this chapter for the offense committed.

(c) Point determination. When offering a point assessment, in lieu of a suspension, the Department will calculate points in the following manner:

(1) One point will be assessed for every month of suspension which the Department would otherwise impose.

(2) A point assessment will not exceed 8 points for a single violation.

(3) If an inspection station is currently serving a suspension for a violation of this chapter, no point assessment will be made.

(d) Point suspension. The Department will suspend the privileges of an official inspection station for an accumulation of points whenever the station accumulates 10 or more points.

(1) The first occurrence of an accumulation of 10 points or more shall result in a suspension for 2 months for each point over 9 points; the second occurrence of an accumulation of 10 points or more shall result in a suspension for 4 months for each point over 9 points; the third occurrence of an accumulation of 10 points or more shall result in a suspension for 6 months for each point over 9 points.

(2) The fourth occurrence for an accumulation of 10 or more points shall result in a permanent suspension.

(3) Only suspensions issued as the result of an accumulation of points shall be counted in determining whether a suspension for point accumulation's is a second, third or fourth suspension.

(4) If the point record of a station has been reduced to zero, a subsequent accumulation of points that will result in the suspension of the station will be considered first, second, third and fourth suspensions.

(e) Voluntary discontinuance. A certificate of appointment will be cancelled by the Department whenever the owner voluntarily discontinues the operation of an emission inspection station. Remaining emission inspection materials shall be returned to the quality assurance officer upon request of the Department.

(f) Abandonment. A certificate of appointment will be cancelled by the Department, and inspection materials confiscated when the owner of record abandons the place of business and cannot be located.

(g) Sale of business. If an emission inspection station is sold or leased to a new owner, an application will not be considered while the station is suspended or restored pending an appeal of a suspension.

§ 177.603. Schedule of penalties for emission inspectors.

Emission inspectors shall assume full responsibility for their acts as emission inspectors. Failure to comply with the appropriate provisions of the Vehicle Code or this chapter will be considered sufficient cause for suspension of emission inspection privileges. A violator may also be subject to criminal prosecution. After providing the emission inspector with an opportunity for a hearing, the Department may impose suspensions or penalties upon the emission inspector according to the following schedule of offenses for violations:

Type of Violation	Duration of Suspension		
	1st Offense	2nd Offense	3rd and Subsequent Offenses
Category 1 (Fraudulent Activities)			
(i) Issuance or possession of altered, forged, stolen or counterfeit certificate of emission inspection	1 year	Permanent	
(ii) Furnish, lend, give, sell or receive a certificate of emission inspection without inspection	1 year	Permanent	
(iii) Fraudulent recordkeeping	1 year	Permanent	
Type of Violation	**Duration of Suspension**		
	1st Offense	**2nd Offense**	**3rd and Subsequent Offenses**
Category 2 (Improper Activities)			
(iv) Faulty inspection	3 months	1 year	3 years
(v) Inspecting more subject vehicles per hour per emission inspection inspector than permitted by § 177.408(g)	3 months	6 months	3 year
(vi) Failure to produce records upon demand by Department quality assurance officer or other authorized Commonwealth representative or agent	3 months or until produced	6 months or until produced	1 year or until produced
(vii) Inspection by uncertified inspector	3 months and $100 fine	6 months and $1,000 fine	1 year and $1,000 fine
(viii) Improper recordkeeping	Warning	2 months	6 months
(ix) Improper inspection	Warning	2 months and $250 fine	6 months and $500 fine
(x) Requiring or indicating unnecessary repairs for purpose of inspection	3 months	6 months	1 year
(xi) Misstatement of fact	1 month	3 months	1 year
(xii) Improper assigning of certificate of inspection	Warning	2 months	6 months

Type of Violation	Duration of Suspension		
	1st Offense	2nd Offense	3rd and Subsequent Offenses
Category 2 (Improper Activities)			
(xiii) Failure to verify registration or emission inspecting a vehicle with an expired registration	2 months	4 months	6 months
(xiv) Failure to affix certificate of inspection immediately upon successful completion of the inspection	2 months	4 months	6 months
(xv) Improper security of certificate of emission inspection	Warning	2 months	4 months
Type of Violation	**Duration of Suspension**		
	1st Offense	**2nd Offense**	**3rd and Subsequent Offenses**
Category 3 (Careless Activities)			
(xvi) Inspection by emission inspector with suspended, revoked, cancelled, expired or recalled vehicle operating privilege	2 months	4 months	6 months
(xvii) Inspection by emission inspector with expired inspector certification	Warning	4 months	6 months
(xviii) Improper use of emission inspector certification	Warning	2 months and $250 fine	6 months and $500 fine
(xix) Improper security of certificate of emission inspection	Warning	2 months	4 months
(xx) Unclean inspection area	Warning	1 months	4 months
(xxi) Careless record keeping	Warning	1 months	4 months
(xxii) Failure to make vehicle emission inspection test printout available to customer	Warning	1 months	4 months

§ 177.604. Schedule of penalties for certified repair technicians.

Certified repair technicians shall assume full responsibility for their acts as repair technicians. Failure to comply with the appropriate provisions of the Vehicle Code or this chapter will be considered sufficient cause for suspension of certified repair technician privileges to process requests for and to deliver waivers. A violator may also be subject to criminal prosecution. After providing the certified repair technician with an opportunity for a hearing, the Department may impose suspensions or penalties upon the certified repair technician according to the following schedule of offenses for violations:

Type of Violation	Duration of Suspension		
	1st Offense	2nd Offense	3rd and Subsequent Offenses
Category 1 (Fraudulent Activities)			
(i) Fradulent delivery of emission inspection waiver	1 year	Permanent	
Category 2 (Careless Activities)			
(ii) Improper delivery of emission inspection waiver	3 months	6 months	1 year
(iii) Improper verification of repairs required for issuance of waiver	Warning	3 months	6 months

ADDITIONAL VIOLATIONS

§ 177.605. Subsequent violations.

Determination of second and subsequent violations is made on the basis of previous violations in the same category within a 3-year period.

§ 177.606. Multiple violations.

If multiple violations are reviewed and considered at one Departmental hearing, the Department will impose separate penalties for each violation as required by the schedule of penalties. The Department may direct that a suspension be served concurrently or consecutively. Violations affecting more than one vehicle will be treated as separate violations.

DEPARTMENTAL HEARING PROCEDURE

§ 177.651. Notice of alleged violation and opportunity to be heard prior to immediate suspension.

Prior to the immediate suspension of any official emission inspection station, certificate of appointment, emission inspector certification or certified repair technician, the Department shall, within 3 days, provide written notice of the alleged violation and the opportunity to be heard.

§ 177.652. Official documents.

(a) Whenever an emission inspection station, inspector or certified repair technician is suspended or cancelled, the Department may order the surrender, upon demand, to a quality assurance officer or authorized representative of the Department, of the following items:

(1) Inspector certification card.

(2) Other items pertaining to the certification of the emission inspector to conduct vehicle emission inspections.

(3) Inspection records.

(4) Certificate of appointment.

(5) Signature cards.

(6) Unused certificates of emission inspection

(7) Unused I/M monthly inserts.

(b) Certificates of emission inspection and records confiscated as the result of an investigation will be retained by the quality assurance officer. Certificates of emission inspection and records confiscated as the result of a suspension will be returned to the Department. They will be returned if inspection privileges are restored or the station is reappointed.

RESTORATION AFTER SUSPENSION

§ 177.671. Restoration of certification of an emission inspector after suspension.

An emission inspector who has had the privilege to conduct emission inspections suspended shall have the certification restored as follows:

(1) A certified emission inspector who has been suspended for a Category 1 violation or on two or more occasions for a violation of Category 2 or Category 3 under this chapter may not have the certification restored unless the emission inspector obtains classroom instruction and passes a written test and a tactile test according to procedures established by the Department.

(2) A certified emission inspection inspector who has not been previously suspended for a violation of Category 2 or Category 3 under this chapter will have the certification restored at the termination of the suspension.

§ 177.672. Restoration of certification of an emission inspection station after suspension.

(a) Restoration after suspensions. Stations that have had their privilege to inspect suspended shall be restored as follows:

(1) Stations that have been suspended as a result of a point accumulation will have their point total reduced to six points upon restoration.

(2) Additional points assessed against the station since the last violation resulting in a suspension will be added to the point record unless the station has served an additional suspension under § 177.602(c)(3) (relating to schedule of penalties for emission inspection stations).

(b) Removal of points. Points assessed against a station shall be removed at the rate of two points for each 12 consecutive months in which the station has not had any additional violations charged against it that could result in additional points. The 12-month period starts at the date of the last violation resulting in points or from the date of restoration of a suspension resulting from an accumulation of points, whichever occurred last.

(c) Subsequent violations. Determination of second and subsequent violations is made on the basis of previous violations in the same category within a 3-year period.

(d) Multiple violations. In the case of multiple violations, considered at one time, the Department will impose separate penalties for each violation as required by the schedule. The Department may direct that a suspension be served concurrently. If the Department permits a station to accept points in lieu of a suspension, the points will be assigned for the more serious violation affecting each vehicle. Violations affecting more than one vehicle will be treated as separate violations.

(e) Application process. After a suspension has been served, inspection privileges will not be restored until an Official Emission Inspection Update/Official Emission Inspection Station Application has been received and processed by the Department. Upon receipt of an application for reappointment following a suspension of more than 3 months, a complete and thorough investigation by the quality assurance officer will be conducted to determine if the applicant qualifies for reappointment under the requirements of the Department. Other applications for reappointment are subject to investigation at the discretion of the Department.

§ 177.673. Restoration of certification of certified repair technician after suspension.

A certified repair technician who has had the privilege to process requests for waivers suspended shall have the certification restored as follows:

(1) A certified repair technician who has been suspended for a Category 1 violation or on two or more occasions for a violation of Category 2 under this chapter may not have the privilege to process requests for and deliver waivers restored unless the certified repair technician passes written tests according to procedures established by the Department.

(2) A certified repair technician who has been suspended for a Category 2 violation and has not been previously suspended for a violation of Category 2 under this chapter will have the privilege to process requests for and deliver waivers restored at the termination of the suspension.

REGISTRATION RECALL PROCEDURE FOR VIOLATION OF § § 177.301—177.305 (RELATING TO ON-ROAD TESTING)

§ 177.691. Registration Recall Committee.

(a) Composition. The Registration Recall Committee (Committee) of the Department will consist of a Vehicle Registration Section manager, an Emission Inspection Section manager and the Director of the Bureau or a designee.

(b) Frequency of meetings of Committee. The Committee will meet on the first Monday of each month and as needed.

(c) Basis of recalling registrations. The Committee will recall the vehicle registration when the following conditions are met:

(1) The contractor forwards documentation to the Department that a subject vehicle has failed to pass an on-road emissions test.

(2) The vehicle owner or operator of the vehicle has failed to produce within 30 days of the failure of the on-road emission test evidence that the vehicle has passed a retest or evidence of an emission test waiver.

(d) Determination of the Committee. Upon a determination by the Committee that the subject vehicle had failed an on-road emission test and that the owner or operator of the subject vehicle had failed to produce evidence of a correction of the failure or a waiver, the Committee will issue a letter to the owner or operator of the subject vehicle recalling the vehicle registration until proof of passing an emission test or receiving a waiver has been submitted to the Department.

(e) Appeal. An appeal from the recall of vehicle registration under this section shall be commenced consistent with Chapter 491 (relating to administrative practice and procedure).

APPENDIX A

Acceleration Simulation Mode: Pennsylvania Procedures, Standards, Equipment Specifications and Quality Control Requirements

§ 1. ASM Exhaust Emission Standards and Calculations.

(a) ASM Emissions Standards

(1) ASM Start-Up Standards. The following standards shall be used for ASM tests performed until notice by the Department that the standards in subsection (2)(i) or (2)(ii) shall apply. The exhaust emission standards for the following model years are cross referenced by the number in the column in (a)(3) below:

(A) Light Duty Vehicles

	Hydrocarbons	Carbon Monoxide	Oxides of Nitrogen
Model Year	**Table § 1(a)(3)(I)**	**Table § 1(a)(3)(II)**	**Table § 1(a)(3)(III)**
1996+ TIER 1	1	21	41
1991-1995	2	22	42
1983-1990	4	23	43
1981-1982	4	26	43
1980	4	26	48
1977-1979	11	30	48
1975-1976	11	30	50

(B) Light Duty Trucks 1 (less than 6,000 pounds GVWR).

	Hydrocarbons	Carbon Monoxide	Oxides of Nitrogen
Model Year	**Table § 1(a)(3)(I)**	**Table § 1(a)(3)(II)**	**Table § 1(a)(3)(III)**
1996+ TIER 1			
(‹3750 LVW)	1	21	41
(›3750 LVW)	2	22	42
1991-1995	5	26	43
1988-1990	7	29	44
1984-1987	7	29	49
1979-1983	11	31	49
1975-1978	12	32	50

(C) Light Duty Trucks 2 (greater than 6,000 pounds GVWR).

	Hydrocarbons	Carbon Monoxide	Oxides of Nitrogen
Model Year	**Table § 1(a)(3)(I)**	**Table § 1(a)(3)(II)**	**Table § 1(a)(3)(III)**
1996+ TIER 1			
(‹=5750 LVW)	2	22	42
(›5750 LVW)	5	26	45
1991-1995	5	26	46
1988-1990	7	29	47
1984-1987	7	29	49
1979-1983	11	31	49
1975-1978	12	32	50

(2) ASM final standards.

(i) ASM equivalent test weight methodology. Upon notice by the Department in the Pennsylvania Bulletin, the following exhaust emission standards will be used for ASM tests performed. The exhaust emissions standards for the following model years are cross-referenced by the number in the column in (a)(3) below:

(A) Light Duty Vehicles

	Hydrocarbons	Carbon Monoxide	Oxides of Nitrogen
Model Year	**Table § 1(a)(3)(I)**	**Table § 1(a)(3)(II)**	**Table § 1(a)(3)(III)**
1996+ TIER 1	1	21	41
1983-1995	1	21	41
1981-1982	1	23	41
1980	1	23	45
1977-1979	6	27	45
1975-1976	6	27	48

(B) Light Duty Trucks 1 (less than 6,000 pounds GVWR).

	Hydrocarbons	Carbon Monoxide	Oxides of Nitrogen
Model Year	**Table § 1(a)(3)(I)**	**Table § 1(a)(3)(II)**	**Table § 1(a)(3)(III)**
1996+ TIER 1			
(‹=3750 LVW)	1	21	41
(›3750 LVW)	1	21	41
1988-1995	3	24	42
1984-1987	3	24	46
1979-1983	8	28	46
1975-1978	9	29	48

(C) Light Duty Trucks 2 (greater than 6,000 pounds GVWR).

	Hydrocarbons	Carbon Monoxide	Oxides of Nitrogen
Model Year	**Table § 1(a)(3)(I)**	**Table § 1(a)(3)(II)**	**Table § 1(a)(3)(III)**
1996+ TIER 1			
(‹=5750 LVW)	1	21	41
(›5750 LVW)	1	21	41
1988-1995	3	24	44
1984-1987	3	24	46
1979-1983	8	28	46
1975-1978	9	29	48

(ii) ASM vehicle engine displacement methodology. Upon notice by the Department in the Pennsylvania Bulletin, the exhaust emission standards used for ASM tests performed shall be in accordance with the following tables:

LDV Exhaust Emission Standards for the ASM 5015 test

	HC	CO	NOx
5015 LDV MY 1980 and newer	275 liters* ppm		
5015 LDV MY 1980 to 1982		1.3 liters*%	
5015 LDV MY 1983 and newer		1.1 liters*%	
5015 LDV MY 1980 only			8,500 liters* ppm
5015 LDV MY 1981 and newer			3,600 liters* ppm

LDT Exhaust Emission Standards for the ASM 5015 test

	HC	CO	NOx
5015 LDT MY 1980 to 1983	1,140 liters* ppm		
5015 LDT MY 1984 to 1995	537 liters* ppm		
5015 LDT MY 1996 and newer	275 liters* ppm		
5015 LDT MY 1980 to 1983		9.7 liters*%	
5015 LDT MY 1984 to 1995		5.4 liters*%	
5015 LDT MY 1996 and newer		1.1 liters*%	
5015 LDT MY 1980 to 1987			14,145 liters* ppm
5015 LDT MY 1988 to 1995			7,380 liters* ppm
5015 LDT MY 1996 and newer			6,150 liters* ppm

All 5015 cut points are applied by the following method: The vehicle's engine displacement in liters multiplied by the exhaust constituent (HC, CO, or NOx) levels in concentration (HC and NOx in ppm; CO in % ten second average values). This liter*concentration value is compared to the appropriate cut point and if the value is above the cut point the vehicle is considered having failed the test.

(3) ASM 2525 and 5015 concentration tables follow (although both 2525 and 5015 standards are shown, the Pennsylvania test consists only of the 5015 mode):

(i) ASM2525 and ASM5015 hydrocarbon (PPM C6) Table

Column Number	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
Vehicle ETW	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525
1750	142	136	224	216	257	249	291	282	324	315	374	364	390	381	407	397
1875	134	129	212	205	243	236	275	266	306	297	353	344	368	359	384	375
2000	127	123	201	194	230	223	260	252	289	281	333	325	348	339	363	354
2125	121	116	191	184	219	212	246	239	274	267	316	308	329	321	343	335
2250	115	111	182	175	208	201	234	227	260	253	299	292	312	305	325	318
2375	109	106	173	167	198	192	223	216	247	241	284	277	297	290	309	302
2500	105	101	166	160	189	183	212	206	236	230	271	264	283	276	294	288
2625	100	97	159	153	181	175	203	197	225	219	259	252	270	263	281	274
2750	96	93	152	147	173	168	194	189	216	210	247	241	258	252	269	262
2875	92	89	146	141	167	161	187	181	207	201	237	231	247	241	257	251
3000	89	86	141	136	160	155	180	174	199	194	228	222	237	232	247	241
3125	86	83	136	132	155	150	173	168	191	186	219	214	228	223	238	232
3250	83	80	132	127	149	145	167	162	185	180	211	206	220	215	229	224
3375	81	78	128	123	145	140	162	157	179	174	204	199	213	208	221	216
3500	78	76	124	120	140	136	157	152	173	169	198	193	206	201	214	209
3625	76	74	120	117	136	132	152	148	168	164	192	187	200	195	207	203
3750	74	72	117	114	133	129	148	144	163	159	186	182	194	189	201	197
3875	72	70	114	111	129	125	144	140	159	155	181	177	188	184	196	191
4000	71	68	112	108	126	122	140	137	155	151	176	172	183	179	191	186
4125	69	67	109	106	123	119	137	133	151	147	172	168	179	175	186	181
4250	67	65	107	103	120	117	134	130	147	143	167	164	174	170	181	177
4375	66	64	104	101	118	114	131	127	144	140	164	160	170	166	177	173
4500	65	63	102	99	115	112	128	124	141	137	160	156	166	162	172	169
4625	63	61	100	97	113	109	125	122	137	134	156	152	162	159	169	165
4750	62	60	98	95	110	107	122	119	134	131	153	149	159	155	165	161
4875	61	59	96	93	108	105	120	117	132	128	149	146	155	152	161	157
5000	60	58	94	92	106	103	117	114	129	126	146	143	152	148	157	154
5125	58	57	93	90	104	101	115	112	126	123	143	139	148	145	154	150
5250	57	56	91	88	102	99	112	110	123	120	140	136	145	142	150	147
5375	56	55	89	86	100	97	110	107	121	118	137	133	142	139	147	144
5500	55	54	87	85	98	95	108	105	118	115	134	130	139	136	144	141
5625	54	53	86	83	96	93	106	103	116	113	131	128	136	133	141	138
5750	53	52	84	82	94	91	104	101	113	111	128	125	133	130	138	135
5875	52	51	83	80	92	90	102	99	111	108	125	122	130	127	135	132
6000	51	50	81	79	90	88	100	97	109	106	123	120	127	124	132	129
6125	50	49	80	78	89	86	98	95	107	104	120	118	125	122	129	126
6250	50	48	79	76	87	85	96	94	105	102	118	115	123	120	127	124
6375	49	48	77	75	86	84	95	92	103	101	116	113	120	118	125	122
6500	48	47	76	74	85	83	93	91	102	99	114	112	119	116	123	120
6625	48	46	76	74	84	82	92	90	101	98	113	110	117	114	121	119
6750	47	46	75	73	83	81	91	89	100	97	112	109	116	113	120	117
6875	47	46	75	73	83	81	91	89	99	97	111	109	115	113	119	117
7000	47	46	74	72	83	80	91	88	99	96	111	108	115	112	119	116
7125	47	46	74	72	82	80	90	88	98	96	111	108	115	112	119	116
7250	47	46	74	72	82	80	90	88	98	96	111	108	115	112	119	116
7375	47	46	74	72	82	80	90	88	98	96	111	108	115	112	119	116
7500	47	46	74	72	82	80	90	88	98	96	111	108	115	112	119	116

ASM2525 and ASM5015 Hydrocarbon (ppm C6) Table (cont.)

Column Number	9	9	10	10	11	11	12	12	13	13
Vehicle ETW	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525
1750	457	447	706	694	774	761	843	828	1118	1098
1875	431	421	665	653	729	717	794	780	1052	1034
2000	407	398	627	616	688	676	749	736	992	975
2125	385	376	592	582	650	638	707	695	938	921
2250	365	357	560	551	615	604	669	658	887	872
2375	346	339	531	522	583	573	635	624	841	827
2500	329	322	505	496	554	544	603	593	800	786
2625	314	307	481	472	528	518	574	564	761	748
2750	300	294	459	451	503	495	548	539	726	714
2875	287	281	439	431	481	473	524	515	695	683
3000	276	270	420	413	461	453	502	493	666	654
3125	265	260	404	397	443	435	482	474	639	628
3250	256	250	388	382	426	419	464	456	615	604
3375	247	241	374	368	411	404	447	440	593	583
3500	239	234	362	355	397	390	432	424	573	563
3625	231	226	350	344	384	377	418	411	554	544
3750	224	220	339	333	372	365	405	398	537	527
3875	218	213	329	323	361	355	393	386	521	512
4000	212	208	320	314	351	345	382	375	506	497
4125	206	202	311	305	341	335	371	365	492	484
4250	201	197	303	297	332	326	361	355	479	471
4375	196	192	295	290	323	318	352	346	467	459
4500	192	188	287	282	315	310	343	337	455	447
4625	187	183	280	275	308	302	335	329	444	436
4750	183	179	273	269	300	295	327	321	433	425
4875	179	175	267	262	293	288	319	313	423	415
5000	175	171	260	256	286	281	311	305	412	405
5125	171	167	254	250	279	274	304	298	402	395
5250	167	163	248	244	272	267	296	291	393	386
5375	163	159	242	238	266	261	289	284	383	376
5500	159	156	236	232	259	255	282	277	374	367
5625	156	152	231	226	253	248	276	271	365	359
5750	152	149	225	221	247	243	269	264	357	350
5875	149	146	220	216	241	237	263	258	348	342
6000	146	143	215	211	236	232	257	252	341	334
6125	143	140	210	206	231	227	251	247	333	327
6250	140	137	206	202	226	222	246	242	326	320
6375	138	135	202	198	222	218	242	237	320	314
6500	136	133	199	195	218	214	238	233	315	309
6625	134	131	196	192	215	211	234	230	310	304
6750	132	129	194	190	213	209	232	227	307	301
6875	132	129	193	189	211	207	230	225	305	299
7000	131	128	192	188	211	207	229	225	304	298
7125	131	128	192	188	211	206	229	225	304	298
7250	131	128	192	188	211	206	229	225	304	298
7375	131	128	192	188	211	206	229	225	304	298
7500	131	128	192	188	211	206	229	225	304	298

(ii) ASM2525 and ASM5015 Carbon Monoxide (%CO) Table

Column Number	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28	28
Vehicle ETW	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525
1750	0.80	0.77	1.26	1.22	1.64	1.83	2.02	2.43	2.21	2.73	2.78	3.64	2.97	3.94	3.16	4.24
1875	0.75	0.73	1.19	1.16	1.55	1.72	1.91	2.29	2.09	2.58	2.63	3.43	2.81	3.71	2.98	4.00
2000	0.71	0.69	1.13	1.09	1.47	1.63	1.81	2.17	1.97	2.43	2.48	3.24	2.65	3.51	2.82	3.77
2125	0.68	0.66	1.07	1.04	1.39	1.54	1.71	2.05	1.87	2.30	2.35	3.06	2.51	3.32	2.67	3.57
2250	0.64	0.62	1.02	0.99	1.32	1.47	1.62	1.94	1.77	2.18	2.23	2.90	2.38	3.14	2.53	3.38
2375	0.61	0.59	0.97	0.94	1.26	1.39	1.54	1.85	1.69	2.07	2.12	2.76	2.26	2.98	2.40	3.21
2500	0.59	0.57	0.93	0.90	1.20	1.33	1.47	1.76	1.61	1.97	2.02	2.62	2.15	2.84	2.29	3.05
2625	0.56	0.54	0.89	0.86	1.15	1.27	1.41	1.68	1.53	1.88	1.92	2.50	2.05	2.70	2.18	2.91
2750	0.54	0.52	0.85	0.82	1.10	1.21	1.34	1.60	1.47	1.80	1.84	2.39	1.96	2.58	2.09	2.78
2875	0.52	0.50	0.82	0.79	1.05	1.16	1.29	1.54	1.41	1.72	1.76	2.29	1.88	2.47	2.00	2.66
3000	0.50	0.48	0.79	0.76	1.01	1.12	1.24	1.48	1.35	1.66	1.69	2.19	1.80	2.37	1.92	2.55
3125	0.48	0.46	0.76	0.73	0.98	1.08	1.19	1.42	1.30	1.59	1.63	2.11	1.74	2.28	1.84	2.45
3250	0.46	0.45	0.73	0.71	0.94	1.04	1.15	1.37	1.26	1.53	1.57	2.03	1.67	2.20	1.78	2.36
3375	0.45	0.43	0.71	0.69	0.91	1.00	1.11	1.32	1.21	1.48	1.52	1.96	1.62	2.12	1.72	2.28
3500	0.44	0.42	0.69	0.67	0.88	0.97	1.08	1.28	1.17	1.43	1.47	1.89	1.56	2.05	1.66	2.20
3625	0.42	0.41	0.67	0.65	0.86	0.94	1.05	1.24	1.14	1.39	1.42	1.84	1.52	1.98	1.61	2.13
3750	0.41	0.40	0.65	0.63	0.83	0.92	1.02	1.20	1.11	1.35	1.38	1.78	1.47	1.92	1.56	2.07
3875	0.40	0.39	0.63	0.61	0.81	0.89	0.99	1.17	1.08	1.31	1.34	1.73	1.43	1.87	1.52	2.01
4000	0.39	0.38	0.62	0.60	0.79	0.87	0.96	1.14	1.05	1.28	1.31	1.68	1.39	1.82	1.48	1.95
4125	0.38	0.37	0.60	0.58	0.77	0.85	0.94	1.11	1.02	1.24	1.27	1.64	1.36	1.77	1.44	1.90
4250	0.37	0.36	0.59	0.57	0.75	0.83	0.92	1.08	1.00	1.21	1.24	1.60	1.32	1.72	1.40	1.85
4375	0.36	0.35	0.58	0.56	0.74	0.81	0.89	1.06	0.97	1.18	1.21	1.56	1.29	1.68	1.37	1.81
4500	0.36	0.35	0.57	0.55	0.72	0.79	0.87	1.03	0.95	1.16	1.18	1.52	1.26	1.64	1.34	1.76
4625	0.35	0.34	0.55	0.54	0.70	0.77	0.85	1.01	0.93	1.13	1.15	1.48	1.23	1.60	1.30	1.72
4750	0.34	0.33	0.54	0.53	0.69	0.76	0.84	0.99	0.91	1.10	1.13	1.45	1.20	1.57	1.28	1.68
4875	0.34	0.33	0.53	0.52	0.67	0.74	0.82	0.97	0.89	1.08	1.10	1.42	1.17	1.53	1.25	1.64
5000	0.33	0.32	0.52	0.51	0.66	0.73	0.80	0.95	0.87	1.05	1.08	1.38	1.15	1.49	1.22	1.60
5125	0.32	0.31	0.51	0.50	0.65	0.71	0.78	0.92	0.85	1.03	1.05	1.35	1.12	1.46	1.19	1.57
5250	0.32	0.31	0.50	0.49	0.63	0.70	0.77	0.90	0.83	1.01	1.03	1.32	1.10	1.43	1.16	1.53
5375	0.31	0.30	0.49	0.48	0.62	0.68	0.75	0.89	0.81	0.99	1.01	1.29	1.07	1.39	1.14	1.50
5500	0.30	0.30	0.48	0.47	0.61	0.67	0.73	0.87	0.80	0.97	0.99	1.26	1.05	1.36	1.11	1.46
5625	0.30	0.29	0.47	0.46	0.59	0.65	0.72	0.85	0.78	0.94	0.97	1.24	1.03	1.33	1.09	1.43
5750	0.29	0.29	0.46	0.45	0.58	0.64	0.70	0.83	0.76	0.92	0.94	1.21	1.01	1.30	1.07	1.40
5875	0.29	0.28	0.45	0.44	0.57	0.63	0.69	0.81	0.75	0.91	0.92	1.18	0.98	1.27	1.04	1.37
6000	0.28	0.28	0.44	0.44	0.56	0.62	0.67	0.80	0.73	0.89	0.91	1.16	0.96	1.25	1.02	1.34
6125	0.28	0.27	0.44	0.43	0.55	0.61	0.66	0.78	0.72	0.87	0.89	1.13	0.94	1.22	1.00	1.31
6250	0.27	0.27	0.43	0.42	0.54	0.60	0.65	0.77	0.71	0.85	0.87	1.11	0.93	1.20	0.98	1.28
6375	0.27	0.26	0.42	0.42	0.53	0.59	0.64	0.76	0.69	0.84	0.86	1.09	0.91	1.18	0.96	1.26
6500	0.26	0.26	0.42	0.41	0.52	0.58	0.63	0.74	0.68	0.83	0.84	1.08	0.90	1.16	0.95	1.24
6625	0.26	0.26	0.41	0.41	0.52	0.57	0.62	0.73	0.67	0.82	0.83	1.06	0.88	1.14	0.94	1.23
6750	0.26	0.26	0.41	0.41	0.51	0.57	0.61	0.73	0.67	0.81	0.82	1.05	0.88	1.13	0.93	1.21
6875	0.26	0.25	0.40	0.40	0.51	0.56	0.61	0.72	0.66	0.80	0.82	1.04	0.87	1.12	0.92	1.20
7000	0.25	0.25	0.40	0.40	0.51	0.56	0.61	0.72	0.66	0.80	0.82	1.04	0.87	1.12	0.92	1.20
7125	0.25	0.25	0.40	0.40	0.51	0.56	0.61	0.72	0.66	0.80	0.81	1.04	0.87	1.12	0.92	1.20
7250	0.25	0.25	0.40	0.40	0.50	0.56	0.61	0.72	0.66	0.80	0.81	1.04	0.86	1.12	0.92	1.20
7375	0.25	0.25	0.40	0.40	0.50	0.56	0.61	0.72	0.66	0.80	0.81	1.04	0.86	1.12	0.92	1.20
7500	0.25	0.25	0.40	0.40	0.50	0.56	0.61	0.72	0.66	0.80	0.81	1.04	0.86	1.12	0.92	1.201

(ASM2525 and ASM5015 Carbon Monoxide (%CO) Table (cont.)

Column Number	29	29	30	30	31	31	32	32	33	33	34	34
Vehicle ETW	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525
1750	3.54	4.85	3.92	5.45	4.31	6.06	5.07	7.26	5.26	7.44	8.02	9.90
1875	3.34	4.57	3.70	5.14	4.06	5.70	4.78	6.84	4.96	7.05	7.56	9.90
2000	3.16	4.31	3.49	4.85	3.83	5.38	4.51	6.45	4.68	6.68	7.14	9.90
2125	2.99	4.08	3.31	4.58	3.63	5.09	4.26	6.10	4.43	6.34	6.75	9.66
2250	2.83	3.86	3.13	4.34	3.44	4.82	4.04	5.78	4.20	6.00	6.40	9.14
2375	2.69	3.66	2.98	4.12	3.26	4.57	3.83	5.48	3.98	5.69	6.07	8.67
2500	2.56	3.48	2.83	3.91	3.10	4.35	3.65	5.21	3.79	5.41	5.78	8.25
2625	2.44	3.32	2.70	3.73	2.96	4.14	3.48	4.96	3.61	5.15	5.51	7.85
2750	2.33	3.17	2.58	3.56	2.83	3.95	3.32	4.73	3.45	4.92	5.26	7.50
2875	2.23	3.03	2.47	3.41	2.71	3.78	3.18	4.53	3.30	4.70	5.03	7.17
3000	2.14	2.91	2.37	3.27	2.60	3.62	3.05	4.34	3.17	4.51	4.83	6.87
3125	2.06	2.79	2.28	3.14	2.50	3.48	2.93	4.17	3.04	4.33	4.64	6.60
3250	1.99	2.69	2.20	3.02	2.40	3.35	2.82	4.01	2.93	4.17	4.47	6.35
3375	1.92	2.60	2.12	2.91	2.32	3.23	2.72	3.87	2.83	4.02	4.31	6.13
3500	1.86	2.51	2.05	2.82	2.24	3.12	2.63	3.74	2.73	3.88	4.17	5.92
3625	1.80	2.43	1.99	2.73	2.17	3.02	2.55	3.62	2.65	3.76	4.04	5.73
3750	1.74	2.36	1.93	2.64	2.11	2.93	2.47	3.51	2.57	3.64	3.91	5.55
3875	1.69	2.29	1.87	2.57	2.05	2.85	2.40	3.40	2.49	3.54	3.80	5.39
4000	1.65	2.22	1.82	2.49	1.99	2.77	2.33	3.31	2.43	3.44	3.70	5.24
4125	1.61	2.16	1.77	2.43	1.94	2.69	2.27	3.22	2.36	3.34	3.60	5.09
4250	1.56	2.11	1.73	2.36	1.89	2.62	2.21	3.13	2.30	3.25	3.51	4.96
4375	1.53	2.06	1.68	2.31	1.84	2.55	2.16	3.05	2.24	3.17	3.42	4.83
4500	1.49	2.01	1.64	2.25	1.80	2.49	2.11	2.98	2.19	3.09	3.34	4.71
4625	1.46	1.96	1.61	2.19	1.76	2.43	2.06	2.90	2.14	3.02	3.26	4.60
4750	1.42	1.91	1.57	2.14	1.72	2.37	2.01	2.83	2.09	2.95	3.18	4.49
4875	1.39	1.87	1.53	2.09	1.68	2.32	1.96	2.77	2.04	2.87	3.11	4.38
5000	1.36	1.82	1.50	2.04	1.64	2.26	1.92	2.70	1.99	2.81	3.03	4.28
5125	1.33	1.78	1.46	2.00	1.60	2.21	1.87	2.64	1.95	2.74	2.97	4.18
5250	1.30	1.74	1.43	1.95	1.56	2.16	1.83	2.58	1.90	2.68	2.90	4.08
5375	1.27	1.70	1.40	1.90	1.53	2.11	1.79	2.51	1.86	2.61	2.83	3.98
5500	1.24	1.66	1.37	1.86	1.49	2.06	1.75	2.46	1.82	2.55	2.77	3.89
5625	1.21	1.62	1.34	1.82	1.46	2.01	1.71	2.40	1.77	2.49	2.70	3.80
5750	1.19	1.59	1.31	1.78	1.43	1.96	1.67	2.34	1.74	2.43	2.64	3.71
5875	1.16	1.55	1.28	1.74	1.40	1.92	1.63	2.29	1.70	2.38	2.59	3.62
6000	1.14	1.52	1.25	1.70	1.37	1.88	1.60	2.24	1.66	2.33	2.53	3.54
6125	1.11	1.49	1.23	1.66	1.34	1.84	1.57	2.19	1.63	2.28	2.48	3.47
6250	1.09	1.46	1.20	1.63	1.31	1.80	1.54	2.15	1.60	2.23	2.43	3.40
6375	1.07	1.43	1.18	1.60	1.29	1.77	1.51	2.11	1.57	2.19	2.39	3.34
6500	1.06	1.41	1.16	1.57	1.27	1.74	1.48	2.07	1.54	2.15	2.35	3.28
6625	1.04	1.39	1.15	1.55	1.25	1.72	1.46	2.04	1.52	2.12	2.32	3.23
6750	1.03	1.37	1.14	1.54	1.24	1.70	1.45	2.02	1.50	2.10	2.29	3.20
6875	1.02	1.36	1.13	1.52	1.23	1.68	1.44	2.00	1.49	2.08	2.28	3.17
7000	1.02	1.36	1.12	1.52	1.23	1.68	1.43	2.00	1.49	2.08	2.27	3.17
7125	1.02	1.36	1.12	1.52	1.22	1.68	1.43	2.00	1.49	2.08	2.27	3.17
7250	1.02	1.36	1.12	1.52	1.22	1.68	1.43	2.00	1.49	2.08	2.27	3.17
7375	1.02	1.36	1.12	1.52	1.22	1.68	1.43	2.00	1.49	2.08	2.27	3.17
7500	1.02	1.36	1.12	1.52	1.22	1.68	1.43	2.00	1.49	2.08	2.27	3.17

(iii) ASM2525 and ASM5015 Nitric Oxide (PPM NO) Table

Column Number	41	41	42	42	43	43	44	44	45	45	46	46	47	47	48	48
Vehicle ETW	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525	5015	2525
1750	1212	1095	1819	1642	2272	2114	2725	2587	3178	3060	3631	3532	4084	4005	4990	4950
1875	1142	1031	1713	1547	2181	1991	2649	2435	3117	2879	3586	3323	4054	3767	4990	4655
2000	1077	973	1616	1460	2058	1877	2499	2295	2941	2713	3383	3131	3824	3548	4707	4384
2125	1018	920	1527	1380	1944	1774	2360	2167	2776	2561	3192	2955	3609	3348	4441	4136
2250	964	871	1446	1307	1839	1678	2232	2050	2625	2422	3018	2794	3411	3165	4197	3909
2375	915	827	1372	1240	1744	1592	2115	1943	2487	2295	2859	2646	3231	2998	3974	3701
2500	869	786	1304	1179	1657	1512	2009	1845	2361	2179	2714	2512	3066	2845	3771	3512
2625	828	749	1242	1123	1577	1440	1912	1756	2246	2073	2581	2389	2916	2706	3585	3339
2750	791	715	1186	1072	1504	1374	1823	1675	2142	1976	2460	2277	2779	2579	3416	3181
2875	756	684	1134	1026	1438	1313	1742	1601	2046	1888	2350	2175	2654	2463	3261	3037
3000	725	656	1088	984	1378	1258	1668	1533	1959	1808	2249	2082	2539	2357	3120	2906
3125	696	630	1045	945	1323	1208	1601	1471	1879	1734	2157	1997	2435	2260	2992	2787
3250	670	607	1006	910	1273	1163	1539	1415	1806	1667	2073	1920	2340	2172	2874	2677
3375	647	585	970	878	1227	1121	1483	1363	1740	1606	1997	1849	2253	2092	2767	2577
3500	625	566	937	848	1184	1082	1432	1316	1679	1550	1926	1784	2174	2018	2668	2486
3625	605	547	907	821	1146	1047	1384	1273	1623	1498	1862	1724	2100	1950	2578	2401
3750	586	531	879	796	1110	1014	1340	1233	1571	1451	1802	1669	2033	1887	2494	2323
3875	569	515	853	773	1077	984	1300	1195	1523	1407	1747	1618	1970	1829	2417	2251
4000	553	501	829	751	1046	956	1262	1161	1479	1365	1695	1570	1912	1775	2345	2184
4125	538	487	807	731	1017	930	1227	1128	1437	1327	1647	1526	1857	1724	2277	2122
4250	524	475	786	712	990	905	1194	1098	1398	1291	1602	1484	1806	1677	2214	2063
4375	510	463	766	694	964	882	1162	1069	1360	1257	1559	1444	1757	1632	2154	2007
4500	498	451	747	677	939	859	1132	1042	1325	1224	1518	1406	1711	1589	2096	1953
4625	486	440	728	661	916	838	1104	1015	1291	1193	1479	1370	1666	1548	2042	1903
4750	474	430	711	645	893	818	1076	990	1259	1163	1441	1336	1624	1508	1989	1854
4875	463	420	694	630	872	798	1049	966	1227	1134	1405	1302	1583	1470	1938	1806
5000	452	410	677	615	850	778	1023	942	1196	1106	1369	1269	1542	1433	1889	1760
5125	441	400	661	600	830	760	998	919	1167	1078	1335	1237	1503	1397	1840	1715
5250	431	391	646	586	810	741	974	896	1138	1051	1301	1206	1465	1362	1793	1672
5375	420	382	631	573	790	723	950	874	1109	1025	1269	1176	1428	1327	1747	1629
5500	410	373	616	559	771	706	926	853	1082	1000	1237	1147	1392	1294	1703	1587
5625	401	364	601	546	752	689	904	832	1055	975	1206	1118	1357	1261	1659	1547
5750	391	356	587	534	734	673	882	812	1029	951	1176	1090	1323	1230	1617	1508
5875	383	348	574	522	717	657	860	793	1004	928	1147	1064	1290	1199	1577	1471
6000	374	340	561	510	701	642	840	774	980	906	1120	1039	1259	1171	1539	1435
6125	366	333	549	499	685	628	822	757	958	886	1094	1015	1230	1144	1503	1401
6250	359	326	538	489	671	615	804	741	937	867	1070	993	1203	1119	1469	1371
6375	352	320	528	480	658	604	788	727	919	850	1049	973	1179	1096	1439	1343
6500	346	315	519	473	647	593	775	714	902	835	1030	956	1158	1077	1413	1318
6625	341	311	512	466	638	585	763	704	889	823	1014	941	1140	1060	1391	1298
6750	338	307	507	461	631	578	755	696	879	813	1003	931	1127	1048	1374	1283
6875	335	305	503	458	626	574	749	691	872	807	995	924	1118	1040	1364	1273
7000	335	305	502	457	624	573	747	689	870	805	992	921	1115	1037	1360	1269
7125	335	305	502	457	625	573	747	689	870	805	992	921	1115	1037	1360	1269
7250	335	305	502	457	625	573	747	689	870	805	992	921	1115	1037	1360	1269
7375	335	305	502	457	625	573	747	689	870	805	992	921	1115	1037	1360	1269
7500	335	305	502	457	625	573	747	689	870	805	992	921	1115	1037	1360	1269

ASM2525 and ASM5015 Hydrocarbon (ppm C6) Table (cont.)

Column Number	49	49	50	50	51	51
Vehicle ETW	5015	2525	5015	2525	5015	2525
1750	4990	4960	4990	4980	4990	4990
1875	4990	4738	4990	4906	4990	4990
2000	4778	4535	4919	4838	4990	4990
2125	4578	4349	4853	4776	4990	4990
2250	4395	4179	4792	4720	4990	4990
2375	4228	4024	4736	4668	4990	4990
2500	4076	3881	4685	4620	4990	4990
2625	3936	3752	4639	4577	4990	4990
2750	3809	3579	4596	4374	4990	4772
2875	3669	3417	4484	4176	4892	4556
3000	3510	3270	4290	3996	4680	4359
3125	3366	3135	4114	3832	4488	4180
3250	3234	3012	3952	3681	4311	4016
3375	3113	2899	3804	3544	4150	3866
3500	3002	2796	3669	3418	4002	3728
3625	2900	2701	3544	3302	3867	3602
3750	2806	2614	3429	3195	3741	3485
3875	2719	2533	3323	3096	3625	3377
4000	2638	2457	3224	3003	3517	3276
4125	2562	2387	3131	2917	3416	3182
4250	2490	2320	3044	2836	3321	3094
4375	2423	2258	2961	2759	3230	3010
4500	2359	2198	2883	2686	3145	2930
4625	2297	2140	2807	2616	3063	2854
4750	2238	2085	2735	2549	2983	2780
4875	2180	2032	2665	2483	2907	2709
5000	2125	1980	2597	2420	2833	2640
5125	2070	1930	2530	2359	2760	2573
5250	2017	1881	2466	2298	2690	2507
5375	1966	1833	2403	2240	2621	2443
5500	1916	1786	2341	2183	2554	2381
5625	1867	1740	2282	2127	2489	2321
5750	1820	1697	2224	2074	2426	2262
5875	1774	1654	2168	2022	2366	2206
6000	1731	1614	2116	1973	2308	2152
6125	1690	1577	2066	1927	2254	2102
6250	1653	1542	2020	1884	2204	2056
6375	1619	1510	1979	1846	2159	2014
6500	1590	1483	1943	1813	2119	1977
6625	1565	1460	1913	1785	2087	1947
6750	1546	1443	1890	1764	2062	1924
6875	1534	1432	1875	1750	2046	1909
7000	1530	1428	1870	1745	2040	1904
7125	1531	1428	1874	1745	2045	1904
7250	1531	1428	1874	1745	2045	1904
7375	1531	1428	1874	1745	2045	1904
7500	1531	1428	1874	1745	2045	1904

(b) ASM Test Score Calculation

(1) Exhaust gas measurement calculation.

(i) System response time

The analysis and recording of exhaust gas concentrations shall begin 12 seconds after the applicable test mode begins, or sooner if the system response time is less than 12 seconds. The analyzing and recording of exhaust gas concentrations shall not begin sooner than the time period equivalent to the response time of the slowest transducer.

(ii) Sample rate

Exhaust gas concentrations shall be analyzed at a minimum rate of once per second.

(iii) Emission measurement calculations.

Partial stream (concentration) emissions shall be calculated based on a running 10-second average. The values used for HC(J), CO(J), and NO(J) are the raw (uncorrected) tailpipe concentrations.

$$\mathrm{AVGHC} = \frac{\sum_{j-10}^{j} \mathrm{HC(j)} * \mathrm{DCF(j)}}{10}$$

(a)

$$\mathrm{AVGCO} = \frac{\sum_{j-10}^{j} \mathrm{CO(j)} * \mathrm{DCF(j)}}{10}$$

(b)

$$\mathrm{AVGNO} = \frac{\sum_{j-10}^{j} \mathrm{NO(j)} * \mathrm{K(h)} * \mathrm{DCF(j)}}{10}$$

(c)

(iv) Dilution correction factor.

The analyzer software shall multiply the raw emissions values by the dilution correction factor (DCF) during any valid ASM emissions test. The DCF accounts for exhaust sample dilution (either intentional or unintentional) during an emissions test. The analyzer software shall calculate the DCF using the following procedure, and shall select the appropriate vehicle fuel formula. If the calculated DCF exceeds 3.0 then a default value of 3.0 shall be used.

(a) $$\mathrm{X} = \frac{[CO_2]_{\mathrm{MEASURED}}}{[CO_2]_{\mathrm{MEASURED}}\,[\mathrm{CO}]_{\mathrm{MEASURED}}}$$

Where [CO2]MEASURED and [CO]MEASURED are the instantaneous ASM emissions test readings.

(b) Calculate [CO2]adjusted using the following formulas.

(1) For gasoline:

$$[CO_2]_{adjusted} = \left(\frac{X}{4.644 + 1.88x}\right) * 100$$

(2) For Methanol or Ethanol:

$$[CO_2]_{adjusted} = \left(\frac{X}{4.73 + 1.88x}\right) * 100$$

(3) For Compressed Natural Gas (CNG):

$$[CO_2]_{adjusted} = \left(\frac{X}{4.64 + 1.88x}\right) * 100$$

(4) For Liquid Propane Gas (LPG):

$$[CO_2]_{adjusted} = \left(\frac{X}{5.39 + 1.88x}\right) * 100$$

(c) Calculate the DCF using the following formula.

$$DCF - \frac{[CO]_{ADJUSTED}}{[CO]_{MEASURED}}$$

(v) K_h = No Humidity correction factor.
(a)

$$K_H = \frac{1}{[1 - 0.0047(H-75)]}$$

(b) H = Absolute humidity in grain of water per pound of dry air.

$$= \frac{(43.478)RA * PD)}{P_B - (PD*RA/100)]}$$

(c) RA = Relative humidity of the ambient air percent.

(d) PD = Saturated vapor pressure, MM HG at the ambient dry bulb temperature. If the temperature is above 86°F, then it shall be used in lieu of the higher temperature, until EPA supplies final correction factors.

(e) PB = Barometric pressure, MM HG.

(2) Pass/fail determination.

A pass or fail determination shall be made for each applicable test mode based on a comparison of the applicable short test standards and the measured value for HC, CO, and NO as described in Paragraph (b)(1)(iii) of this section. A vehicle shall pass the test mode if the emission values for HC, CO, and NO are simultaneously below or equal to the applicable short test standards for all three pollutants. A vehicle shall fail the test mode if the values for HC, CO, or NO, or any combination of the three, are above the applicable standards at the expiration of the test time.

§ 2. ASM short test procedure.

(a) General requirements

(1) Vehicle characterization.

(i) Vehicle type: LDGV, LDGT1, LDGT2, HDGT, and others as needed;

(ii) Chassis model year;

(iii) Make;

(iv) Model;

(v) Number of cylinders;

(vi) Cubic inch or liters displacement of the engine;

(vii) Transmission type; and

(viii) Equivalent test weight.

(2) Ambient conditions.

The ambient temperature, relative humidity and barometric pressure shall be recorded continuously during the test cycle or as a single set of readings up to 4 minutes before the start of the driving cycle.

(3) Restart.

If shut off, the vehicle shall be restarted as soon as possible before the test and shall be running at least 30 seconds prior to the start of the ASM driving cycle.

(4) Void test conditions.

The test shall immediately end and any exhaust gas measurements shall be voided if the instantaneous measured concentration of CO plus CO2 falls below 6% or the vehicle's engine stalls at any time during the test sequence.

(5) Test time limit.

The test shall be aborted or terminated upon reaching the overall maximum test time.

(b) Pre-inspection and preparation.

(1) Accessories.

All accessories (air conditioning, heat, defogger, radio, automatic traction control if switchable, and the like) shall be turned off (if necessary, by the inspector).

(2) Exhaust leaks.

The vehicle shall be inspected for exhaust leaks by test personnel. Audio assessment while blocking exhaust flow shall be acceptable. Vehicles with leaking exhaust systems shall be rejected from testing.

(3) Fluid leaks.

Vehicles with excessive leaking engine oil, transmission fluid or coolant shall be rejected from testing.

(4) Mechanical condition.

Vehicles with obvious mechanical problems (engine, transmission, brakes or exhaust) that either create a safety hazard or could bias test results shall be rejected from testing.

(5) Operating temperature.

The vehicle shall be at proper operating temperature prior to the start of the test. The vehicle temperature gauge, if equipped and operating, shall be checked to assess temperature. Vehicles in overheated condition shall be rejected from testing.

(6) Tire condition.

Vehicles shall be rejected from testing if tread indicators, tire cords, bubbles, cuts or other damage are visible. Vehicles shall be rejected from testing if they have space-saver spare tires or if they do not have reasonably sized tires on the drive axle or axles. Vehicles may be rejected if they have different sized tires on the drive axle or axles. In test-and-repair facilities, drive wheel tires shall be checked with a gauge for adequate tire pressure. In test-only facilities, drive wheel tires shall be visually checked for adequate pressure level. Drive wheel tires that appear low shall be inflated to approximately 30 PSI, or to tire side wall pressure, or vehicle manufacturer's recommendation. Alternatively, vehicles with apparent low tire pressure may be rejected from testing.

(7) Emission sample system purge/hang-up.

While a lane is in operation, the sample system shall be continuously purged after each test for at least 15 minutes if not taking measurements. If the HC reading, when the probe is sampling ambient air, exceeds 7 PPM C6 on an instantaneous measure, testing shall be prohibited. Testing may proceed after a determination is made that hang-up is less than 7 PPM C6 (that is, by eliminating the ambient background contribution to the measurement).

(8) Roll rotation.

The vehicle shall be maneuvered onto the dynamometer with the drive wheels positioned on the dynamometer rolls, prior to restraining the vehicle and test initiation. The rolls shall be rotated until the vehicle laterally stabilizes on the dynamometer. Vehicles that cannot be stabilized on the dynamometer shall be rejected from testing. Drive,wheel tires shall be dried if necessary to prevent slippage.

(9) Cooling system.

When ambient temperatures exceed 72°F, testing shall not begin until the cooling system is positioned and activated. The cooling system blower shall be positioned to direct air to the vehicle cooling system, but shall not be directed at the catalytic converter.

(10) Vehicle restraint.

Testing shall not begin until the vehicle is restrained. Any restraint system shall meet the requirements of § 3(a)(5)(ii). In addition, the parking brake shall be set for front wheel drive vehicles prior to the start of the test, unless parking brake functions on front axle or if it is automatically disengaged when in gear.

(11) Dynamometer warm-up.

The dynamometer shall be in a warmed-up condition prior to official testing and use shall be locked out until it is warmed up. Dynamometers resting (not operated for at least 30 seconds and at least 15 mph) for more than 30 minutes shall pass the coast-down check specified in § 4(b)(1) prior to use in testing. Control charts may be used to demonstrate the need for less frequent warm- up.

Testing cannot occur below 41°F.

(12) Analyzer warm-up.

An emissions test shall not begin before the analyzer has been adequately warmed up. Turning on the analyzer for a time period of at least 4 times the period of time required to reach stability as demonstrated in the equipment certification (see § 7) shall constitute ‘‘warmed-up.’’

(c) Test sequence.

(1) The test sequence shall consist of a single ASM mode described in § 2(d) of this subpart. Vehicles that fail the first chance test as described in § 2(d) of this subpart shall receive a second chance test under § 2(e) of this subpart. The second chance test shall consist of a repetition of the mode or modes that were failed in the first chance test according to the conditions in § 2(e) of this subpart.

(2) The test sequence shall begin only after the following requirements are met:

(i) Load setting.

Prior to each mode, the system shall automatically select the load setting of the dynamometer from a supplied look-up table.

(ii) Accessories.

The vehicle shall be tested in as-received condition with all accessories turned off. The engine shall be at normal operating temperature.

(iii) Gear selection.

The vehicle shall be operated during each mode of the test with the gear selector in drive for automatic transmissions and in second (or third if more appropriate) for manual transmissions for the loaded modes. Engine RPM shall be measured per § 3(d)(6).

(iv) Sample probe.

The sample probe shall be inserted into the vehicle's tailpipe to a minimum depth of 10 inches. If the vehicle's exhaust system prevents insertion to this depth, a tailpipe extension shall be used.

(v) Multiple exhaust pipes.

Exhaust gas concentrations from vehicle engines equipped with functionally independent multiple exhaust pipes shall be sampled simultaneously.

(vi) Automatic gas zero.

The analyzer shall conduct an automatic zero adjustment using the zero gas specified in § 4(d)(iii).

(vii) Automatic zero adjustment.

The zero adjustment shall include HC, CO, CO2 and NO channels.

(viii) Ambient air and HC hang-up determination.

The analyzer shall perform the automatic zeroing, O2 calibration (if included) and ambient air reading, followed by an HC hang-up check. This process shall begin after initiation of data entry into the analyzer computer. The analyzer shall be locked out from testing until: (1) the ambient air (sampled through the probe) has less than 15 PPM HC and (2) the residual HC in the sampling system (probe sample—port sample) is less than 7 PPM.

(ix) Engine speed.

For 1996 and newer vehicles equipped with Federal OBD systems or California OBD II systems, engine speed in RPM may be monitored by the standardized plug throughout the test. RPM readings shall be recorded on a second-by-second basis. In test-and-repair stations, engine speed shall also be monitored on all pre-1996 vehicles and recorded in the test record. For vehicles that are not equipped for OBD measurement, an alternative means of measuring engine speed (RPM) shall be provided.

(d) Overall test procedure.

The test timer shall start (TT=0) when the conditions specified in paragraph (c)(2) are met. The dynamometer roll reach 1.0 MPH due to the test vehicle's initial acceleration for testing purposes, and the mode timer initiates as specified in paragraph (d)(2). The test sequence shall have an overall maximum test time of 290 seconds (TT-290). The test shall be immediately terminated or aborted upon reaching the overall maximum test time. The test mode in § 2(d)(3) may precede the test mode in § 2(d)(2).

(1) Preconditioning cycle.

Vehicle preconditioning shall be performed prior to start of an official test. The preconditioning cycle must be approved by the Department. A state may waive the preconditioning requirement if it ensures that all vehicles are adequately warmed up prior to taking the final emissions measurements as described at § 1(b)(iii). The following preconditioning cycle is approved:

(i) The preconditioning timer shall start once the dynamometer has reached a speed of 15 or 25 mph (PT=0), consistent with the speed of the first test mode. The vehicle will continue to be operated

for a maximum of 30 seconds at this speed within ±5 MPH and within ±10% of the wheel force tolerance specified in § 2(d)(2). The duration of the preconditioning cycle may be adjusted if a Department determines through the use of statistical process control methods that an alternative preconditioning cycle duration is adequate to ensure that vehicles are fully warmed up prior to testing. If the speed or wheel force fall above or below the tolerance, the preconditioning timer will reset to zero. Preconditioning time shall not be included in the overall maximum test time.

(2) ASM5015 mode.

(i) Mode timer.

The mode timer shall start (MT=0) when the dynamometer speed (and corresponding wheel force) are maintained within 15±1.0 miles per hour for 5 continuous seconds. If the inertia simulation exceeds the tolerance specified in § 3(a)(4)(ii)(b) for more than 5 consecutive seconds after the mode timer is started, the test mode timer shall be set to TT=0. If this happens a second time, the test shall be aborted. The dynamometer shall apply the correct wheel force based on the required ASM horsepower load at 15 mph across the testing speed window (15±1.0 miles per hour) (that is, constant load over the speed range). The wheel force torque tolerance shall be ±5% of the correct wheel force at 15 MPH.

(ii) Look-up table.

The dynamometer power shall be automatically selected from an EPA-supplied or EPA-approved look-up table, based upon the vehicle identification information described in § 2(a)(1). Vehicles not listed in the look-up table and for which ETW is not available shall be tested using the following default settings:

Number of Cylinders & Vehicle Type	**Default ASM5015 actual horsepower settings for 8.6" dynamometers HP5015 8**				
	3	4	5 & 6	8	>8
Sedan	7.9	11.4	13.8	16.4	16.0
Station wagons	8.1	11.7	13.8	16.1	16.1
Mini-vans	10.2	14.1	15.8	17.9	18.2
Pickup trucks	9.6	13.1	16.4	19.2	21.1
Sport/utility	10.1	13.4	15.5	19.4	21.1
Full vans	10.3	13.9	17.7	19.6	20.5

Number of Cylinders & Vehicle Type	**Default ASM5015 actual horsepower settings for 20" dynamometers HP5015 8**				
	3	4	5 & 6	8	>8
Sedan	8.1	11.8	14.3	16.9	16.6
Station wagons	8.3	12.1	14.2	16.6	16.6
Mini-vans	10.4	14.5	16.3	18.5	18.7
Pickup trucks	9.8	13.4	16.8	19.8	21.7
Sport/utility	10.5	13.8	15.9	19.9	21.7
Full vans	10.8	14.4	18.2	20.2	21.1

If the dynamometer speed or wheel force falls outside the speed or wheel force tolerance for more than 2 consecutive seconds, or for more than 5 seconds total, the mode timer shall reset to zero and resume timing. The minimum mode length shall be determined as described in paragraph (d)(2)(iii). The maximum mode length shall be equal to 90 seconds elapsed time (MT = 90).

If the speed at the end of the 10 second period is more than 0.5 mph less (absolute drop, not cumulative) than the speed at the start of the 10 second period, testing shall continue until the speed stabilizes enough to meet this criterion.

(iii) Pass/fail determination.

The pass/fail analysis shall begin after an elapsed time of 22 seconds (MT = 22. A pass or fail determination shall be made for the vehicle and the mode shall be terminated as follows:

(a) The vehicle shall pass the ASM5015 mode and the mode shall be immediately terminated if, at any point between an elapsed time of 22 seconds (MT = 22) and 90 seconds (MT = 90), the 10 second running average measured values for each pollutant are simultaneously less than or equal to the applicable test standards described in paragraph (a).

(b) The vehicle shall fail the ASM5015 mode and the mode shall be terminated if paragraph (d)(2)(iii)(a) is not satisfied by an elapsed time of 90 seconds (MT = 90).

(iv) If ASM5015 is the first test mode, upon termination of the ASM5015 mode, the vehicle shall immediately begin accelerating to the speed required for the ASM2525 mode, if applicable. The dynamometer shall smoothly transition during the acceleration period and shall automatically reset to the load required for the ASM 2525 mode, if applicable, once the roll speed is achieved.

(e) Second chance tests.

If a vehicle fails the 5015 test mode and completes all required test modes with emissions values for HC, CO and NO not greater than 150% of the applicable standard, the vehicle shall receive a second chance test for each failed test mode.

(1) If the vehicle fails the first-chance test, the test timer shall reset to zero (TT=0) and a second-chance test shall be performed, except as noted below. The second-chance test shall have an overall maximum test time of 110 seconds (TT=110) if one mode is repeated.

NOTE: Maximum mode time: 90 sec.
+Maximum transition: 15 sec.
+DYNE stabilization: 5 sec.
110 sec.

12 sec. transport and 10 sec. averaging are included in the mode time as in the initial test.

(2) Repetition of failed modes for single mode ASM tests.

(i) If the vehicle is failing at the end of the mode, then the test mode shall not end at 90 seconds but shall continue for up to 180 seconds.

§ 3. ASM short test equipment.

(a) Dynamometer specifications.

(1) General requirements

(i) Capacity

The dynamometer structure (for example, bearings, rollers, pit plates, and the like) shall accommodate all lightduty vehicles and light-duty trucks up to 9,000 pounds GVWR.

(ii) ASM load

Dynamometer ASM load horsepower (HP5015YY) shall be automatically selected based on the vehicle parameters in the test record.

(iii) Alternative design

Alternative dynamometer specification or designs may be allowed upon a determination by the Department that, for the purpose of properly conducting an approved short test, the evidence supporting these deviations will not cause improper vehicle loading.

(2) Power absorption.

(i) Vehicle loading.

The vehicle loading used during the ASM driving cycles shall follow the equation in paragraph (a)(2)(ii) of this section at 15. Unless otherwise noted, any horsepower displayed during testing shall be HP5015YY.

(ii) HP calculation

IHPXXXXYY = THPXXXX-PLHPZZ-YY -GTRL@ZZ MPH-YY- HPXXXXYY = IHPXXXXYY + PLHPZZ-YY

(iii) Range of power absorber.

The range of the power absorber shall be sufficient to test all light-duty vehicles and light-duty trucks up to 9,000 pounds GVWR, using both the ASM5015 and ASM2525. The absorption shall be adjustable in 0.1 hp increments at both 15 mph and 25 mph.

(iv) Parasitic losses.

The parasitic losses (PLHP) in each dynamometer system (such as windage, bearing friction and system drive friction) shall be characterized at 25 and 15 mph upon initial acceptance, and during each dynamometer calibration if required.

(v) Power absorber.

Only electric power absorbers shall be used unless alternatives are approved by the Department.

(vi) Power absorber accuracy.

The accuracy of the power absorber shall be 6.25 pounds of wheel force at 15 mph and 3.75 pounds of wheel force at 25 mph or ±2% of required wheel force, whichever is greater, in direction of rotation.

(3) Rolls

(i) Size and type.

The dynamometer shall be equipped with twin rolls. The rolls shall be coupled side-to-side. In addition, the front and rear rolls shall be coupled. The dynamometer roll diameter shall be between 8.5 and 21.0 inches. The spacing between the roll centers shall comply with the equation in paragraph (a)(3)(ii) to within 0.5 inch and -0.25 inch of the calculated value. The parasitic power losses shall be determined as indicated in § 4(b)(1)(iv). Fixed dynamometer rolls shall have an inside track width of no more than 30 inches and outside track width of at least 100 inches. Rolls moveable from side-to-side may be used if adequate measures are taken to prevent tire damage from lateral vehicle movement and the dynamometer sufficiently accommodates track widths of the full range of vehicles to be tested on the dynamometer. Alternative coupling methods, track widths, roll sizes and number of rolls may be used if approved by the Department and the Environmental Protection Agency and if adequate measures are taken to prevent tire damage from lateral vehicle movement and the dynamometer sufficiently accommodates track widths of the full range of vehicles to be tested on the dynamometer. General tire roll interface losses must be determined for alternative roll sizes, configurations and spacing.

(ii) Roll spacing

Roll spacing = (24.375+D) *SIN 31.5153

D = Dynamometer roll diameter.

Roll spacing and roll diameter are expressed in inches.

(iii) Design.

The roll size, surface finish and hardness shall be such that tire slippage is minimized under all weather conditions; that water removal is maximized; that the specified accuracy of the distance and speed measurements are maintained; and that tire wear and noise are minimized.

(4) Inertia.

The dynamometer shall have a total test inertia weight of 2,000 pounds ±40 pounds. Any deviation from the 2,000 pound base inertia shall be quantified and the coast-down time shall be corrected accordingly. Any deviation from the stated inertia shall be quantified and the inertia simulation shall be corrected accordingly.

(i) Mechanical inertia.

Dynamometers shall be equipped with additional flywheel weights or diagnostic level inertia simulation, for transient simulations of up to +3.3 mph/s acceleration at 500 pound increments of mechanical inertia weight or 1 pound increments of electrically simulated positive inertia, to a total of 5,500 pounds up to speeds of 57 mph with a minimum load (power) of 25 horsepower at 14 mph over the inertia weight range of 2,000 to 6,000 pounds. A deviation from the stated inertia shall be quantified and the inertia simulation shall be corrected accordingly. Mechanical or electrical inertia simulation, or a combination of both, may be used, subject to review and approval.

(ii) Electrical inertia simulation.

Electrical inertia simulation, or a combination of electrical and mechanical simulation may be used in lieu of mechanical flywheels, provided that the performance of the electrically simulated inertia complies with the following specifications. Exceptions to these specifications may be allowed upon a determination by the Department that the exceptions would not significantly increase vehicle loading or emissions for the purpose of properly conducting an approved short test.

(a) System response. The torque response to a step change shall be at least 90% of the requested change within 300 milliseconds after a step change is commanded by the dynamometer control system, and shall be within 2% of the commanded torque by 300 milliseconds after the command is issued. Any overshoot of the commanded torque value shall not exceed 25% of the torque value.

(b) Simulation error. An inertia simulation error (ISE) shall be continuously calculated any time the actual dynamometer speed is between 10 mph and 60 mph. The ISE shall be calculated by the equation in § 3(a)(4)(ii)(c), and shall not exceed 3% of the inertia weight selected (IWS) for the vehicle under test.

(c) ISE = [(IWS-IT)/(IVS)] * 100

(d)

$$I_T = I_M \frac{1}{V} \int_0^T (F_M - F_{RL})DT$$

Where:

IT = Total inertia being simulated by the dynamometer (kg)

IT (LB force) = IT(KG) * 2.2046

IM = Base (mechanical inertia of the dynamometer (kg)

V = Measured roll speed (M/S)

FM = Force measured by the load cell (translated to the roll surface) (N)

FRL = Road load force (N) required by IHPXXXXYY at the measured roll speed (v)

T = Time (sec)

(5) Other requirements.

(i) Vehicle speed and speed response.

The measurement of roll speed shall be accurate within 0.1 mph between speeds of 10 and 30 mph. The dynamometer controller shall be able to detect and resolve speed variations in less than 500 milliseconds to 0.10 mph/sec accuracy.

(ii) Vehicle restraint.

The vehicle shall be restrained during the ASM driving cycle. The restraint system shall be designed to insure that vertical and horizontal force on the drive wheels does not significantly affect emission levels. The restraint system shall allow unobstructed vehicle ingress and egress and shall be capable of safely restraining the vehicle under all reasonable operating conditions.

(iii) Vehicle cooling.

The test operator shall prevent overheating of the vehicle. The test shall be conducted with the hood open when the ambient temperature exceeds 72°F. The cooling method used shall direct air to the test vehicle's cooling system. The cooling system capacity shall be at least 3,000 SCFM within 12 inches of the intake to the vehicle's cooling system. The cooling system shall avoid i improper cooling of the catalytic converter.

(iv) All-wheel drive.

If used, four-wheel drive dynamometers shall insure the application of correct vehicle loading as defined in paragraph (a)(2) and shall not damage the four wheel drive system of the vehicle. Front and rear wheel rolls shall be coupled and maintain speed synchronization within 0.2 mph. The four wheel drive system shall be able to uncouple the rear roll set so as to function as a two wheel drive system.

(v) Installation.

In all cases, installation must be performed so that the test vehicle is approximately level (±5°) while on the dynamometer during testing.

(b) Emission sampling system

(1) Materials and design.

The sampling system shall be designed to insure durable, leak free operation and be easily maintained. Materials that are in contact with the gases sampled shall not contaminate or change the character of the gases to be analyzed, including gases from vehicles not fueled by gasoline. The system shall be designed to be corrosionresistant and be able to withstand typical vehicle exhaust temperatures when the vehicle is driven through the ASM5015 test cycle for 290 seconds.

(2) Sampling system.

The sampling system shall draw exhaust gas from the vehicle, shall remove particulate matter and aerosols from the sampled gas, shall drain condensed water from the sample if necessary, and shall deliver the resultant gas sample to the analyzers/sensors for analysis and then deliver the analyzed sample outside the building. The sampling system shall, at a minimum, consist of a tailpipe probe, flexible sample line, water removal system, a particulate trap, sample pump and flow control components.

(3) Sample probe.

(i) Insertion.

The sample probe shall allow at least a 16 inch insertion depth of the sample point into the vehicle's exhaust. In addition, the probe shall be inserted at least 10 inches into the vehicle's

exhaust. Use of a tailpipe extension is permitted as long as the extension does not change the exhaust back pressure by more than 1 inch of water pressure.

(ii) Retention.

The probe shall incorporate a positive means of retention to prevent it from slipping out of the tailpipe during use.

(iii) Flexibility.

The probe shall be designed so that the tip extends 16 inches into the tailpipe. The probe tip shall be shielded so that debris is not scooped up by the probe when it is inserted into the tailpipe.

(iv) Probe tip.

Probe tips shall be designed and constructed to prevent sample dilution.

(v) Materials.

All materials in contact with exhaust gas prior to and throughout the measurement portion of the system shall be unaffected by and shall not affect the sample (that is, the materials shall not react with the sample, and they shall not taint the sample). Acceptable materials include stainless steel, teflon, silicon rubber and TEDLAR®. Dissimilar metals with thermal expansion factors of more than 5% shall not be used in either the construction of probes or connectors. The sample probe shall be constructed of stainless steel or other noncorrosive, nonreactive material which can withstand exhaust gas temperatures at the probe tip of up to 1,100°F.

(vi) System hoses and connections.

Hoses and all other sample handling components must be constructed of, or plated with a nonreactive, noncorrosive, high temperature material which will not affect, or be affected by, the exhaust constituents and tracer gases.

(vii) Dual exhaust.

The sample system shall provide for the testing of dual exhaust equipped vehicles. When testing a vehicle with functional dual exhaust pipes, a dual sample probe of a design certified by the analyzer manufacturer to provide equal flow in each leg shall be used. The equal flow requirement is considered to be met if the flow rate in each, leg of the probe has been measured under two sample pump flow rates (the normal rate and a rate equal to the onset of low flow), and if the flow rates in each of the legs are found to be equal to each other (within 15% of the flow rate in the leg having lower flow).

(4) Particulate filter.

The particulate filter shall be capable of trapping 97% of all particulate and aerosols 5 microns or larger. The filter element shall not absorb or adsorb hydrocarbons. The filter housing shall be transparent or translucent to allow the operator to observe the filter elements condition without removing the housing. The filter element shall be easily replaceable and shall provide for reliable sealing after filter element changes.

(5) Water trap.

The water trap shall be sized to remove exhaust sample water from vehicles fueled with gasoline, propane, compressed natural gas, reformulated gasoline, alcohol blends or neat, and oxygenated fuels. The filter element, bowl and housing shall be inert to these fuels as well as to the exhaust gases from vehicles burning these fuels. The condensed water shall be continuously drained from the water trap’s bowl. Sufficient water shall be trapped, regardless of fuel, to prevent condensation in the sample system or in the optical bench’s sample cell.

(6) Low flow indication.

The analyzer shall be prevented from performing an emissions test when the sample flow is below the acceptable level. The sampling system shall be equipped with a flow meter (or equivalent) that shall indicate sample flow degradation when measurement error exceeds 3% of the gas value used for checking, or causes the system response time to exceed 13 seconds to 90% of a step change in input (excluding no), whichever is less.

(7) Exhaust ventilation system.

The high quantities of vehicle emissions generated during loaded mode testing shall be properly vented to prevent buildup of hazardous concentrations of HC, CO, CO2 and NOx. Sufficient ventilation shall be provided in the station to maintain HC, CO, CO2 and no levels below OSHA standards.

(i) Ventilation system.

The ventilation system shall discharge the vehicle and analyzer exhaust outside the building.

(ii) Exhaust collection system.

The flow of the exhaust collection system shall not cause dilution of the exhaust at the sample point in the probe.

(iii) Exhaust collection system flow.

The flow of the exhaust collection systems shall not cause a change of more than 1.0 inch of water pressure in the vehicle's exhaust system at the exhaust system outlet.

(c) Analytical instruments.

(1) General requirements.

(i) Analyzers.

The analyzer system shall consist of analyzers for HC, CO, NO and CO2. And digital displays for exhaust concentrations of HC, CO, NO and CO2, and for vehicle speed.

(ii) Alternative analytical equipment.

Alternative analytic equipment specification, materials, designs or detection methods may be allowed upon a determination by the Department and the Environmental Protection Agency, that for the purpose of properly conducting an approved short test, the evidence supporting such deviations will not significantly affect the proper measurement of emissions.

(iii) Sample rate.

The analyzer shall be capable of measuring exhaust concentrations of gases specified in this section at a minimum rate of once per second.

(2) Performance requirements.

(i) Temperature operating range.

The analyzer system and all associated hardware shall operate within the performance specifications described in § 2 of this subpart at ambient air temperatures ranging from 41°F to 110°F. Analyzers shall be designed so that adequate air flow is provided around critical components to prevent overheating (and automatic shutdown) and to prevent the condensation of water vapor which could reduce the reliability and durability of the analyzer. The analyzer system shall otherwise include necessary features to keep the sampling system within the specified range.

(ii) Humidity operating range.

The analyzer system and all associated hardware shall operate within the performance specifications described in § 2 of this subpart at a minimum of 85% relative humidity throughout the required temperature range.

(iii) Interference effects.

The interference effects for non-interest gases shall not exceed ±4 ppm for hydrocarbons, ±0.02% for carbon monoxide, ±0.20% for carbon dioxide, and ±20 ppm for nitric oxide when using the procedure specified in § 4(d)(6)(iv). Corrections for collision broadening effects of combined high CO and CO2 concentrations shall be taken into account in developing the factory calibration curves, and are included in the accuracy specifications.

(iv) Barometric pressure compensation.

Barometric pressure compensation shall be provided. Compensation shall be made for elevations up to 6,000 feet (above mean sea level). At any given altitude and ambient conditions specified in (iv) and (v), errors due to barometric pressure changes of ±2 inches of mercury shall not exceed the accuracy limits specified in paragraph (2).

(v) System lockout during warm-up.

Functional operation of the gas sampling unit shall remain disabled through a system lockout preventing the system from performing emission tests until the instrument meets stability and warm-up requirements. The instrument shall be considered ‘‘warmed up’’ when the zero and span readings for HC, CO, NO, and CO2 have stabilized, within the accuracy values specified in § 3(c)(3) for 5 minutes without adjustment. Turning on the analyzer for a time period of at least 4 times the period of time required to reach stability as demonstrated in the equipment certification (see § 7) shall constitute ‘‘warmed-up.’’

(vi) Zero drift lockout.

If zero or span drift cause the optical bench signal levels to move beyond the adjustment range of the analyzer, the system shall be prevented from performing an emissions test. (vii) Electromagnetic isolation and interference. Electromagnetic signals found in an automotive service environment shall not cause malfunctions or changes in the accuracy in the electronics of the analyzer system. The instrument design shall ensure that readings do not vary as a result of electromagnetic radiation and induction devices normally found in the automotive service environment, including high energy vehicle ignition systems, radio frequency transmission radiation sources, and building electrical systems. Certification acceptance test is described in § 7.

(viii) Vibration and shock protection.

System operation shall be unaffected by the vibration and shock encountered under the normal operating conditions encountered in an automotive service environment.

(ix) Propane equivalency factor.

The PEF range shall be between 0.470 and 0.560. For each audit/calibration point, the nominal PEF shall be conveniently displayed for the quality assurance inspector and other authorized personnel, in a manner acceptable to the program. If an optical bench must be replaced in the field, the manufacturer’s field service representative (FSR) shall change any external labels to correspond to the nominal PEF of the new bench. The analyzer shall incorporate an algorithm relating PEF to HC concentration. Corrections shall be made automatically.

(x) System response requirements.

The response time from the probe to the display for HC, CO and CO2 analyzers shall not exceed 8 seconds for 90% of a step change in input. The response time for a step change in O2 from 20.9% O2 to 0.1% O2 shall be no longer than 40 seconds. For no analyzers, the response time shall not exceed 12 seconds for 90% of a step change in input. The response time for a step change in NO from a stabilized reading to 10% of that reading shall be no longer than 12 seconds.

(3) Detection methods, instrument ranges, accuracy and repeatability.

(i) Hydrocarbon analysis.

Hydrocarbon (HC) analysis shall be determined by nondispersive infrared (NDIR) analyzer. The analyzer shall cover at least the range of 0 PPM HC to 2000 PPM HC, where PPM HC is parts per million of hydrocarbon volume as hexane. The accuracy of the instrument between 1400 PPM HC and 2000 PPM HC shall be at lease 5.0% of point. The accuracy of the instrument from 0-1400 PPM HC shall be ±4 PPM C6 or 3% of point, whichever is greater. The calibration curve must comply with the quality control specifications in § 4(d)(2) for calibration curve verification.

(ii) Carbon monoxide analysis.

Carbon monoxide (CO) analysis shall be determined by nondispersive infrared (NDIR) analyzer. The analyzer shall cover at least the range of 0.00% CO to 9.99% CO, where % CO is % volume CO. The accuracy of the instrument between 0.01% and 7.00% CO shall be ±3% or 0.02% CO, whichever is greater. The accuracy of the instrument between 7.01% and 10.00% shall be at least 5.0% of point. The calibration curve must comply with the quality control specifications in § 4(d)(2) for calibration curve generation.

(iii) Carbon dioxide analysis.

Carbon dioxide (CO2) analysis shall be determined by nondispersive infrared (NDIR) analyzer. The analyzer shall cover at least the range of 0.0% CO2 to 16.0% CO2. The accuracy of the instrument between 0.01% and 16% CO2 shall be at least ±0.3% CO2 or 3% of point which ever is greater. The accuracy of the instrument between 16.01% and 18% shall be at least 5.0% of point. The calibration curve must comply with the quality control specifications in § 4(d)(2) for calibration curve generation.

(iv) Nitric oxide analysis.

The analyzer shall cover at least the range of 0 PPM NO to 5000 PPM NO, where PPM NO is parts per million nitric oxide. The accuracy of the instrument between 0 and 4000 PPM shall be at least ±4.0% of point or 25 PPM NO, whichever is greater. The accuracy of the instrument between 4001 and 5000 PPM shall be ±5.0%. The calibration curve must comply with the quality control specifications in § 4(d)(2) for calibration curve generation.

(v) Oxygen analysis (optional).

If an oxygen analyzer is included, the analyzer shall cover at least the range of 0.0% O2 to 25.0% O2. The accuracy of the instrument over this range shall be at least 5% of point or ±0.1% O2, whichever is greater. The calibration curve must comply with the quality control specifications in § 4(d)(2) for calibration curve generation.

(vi) Repeatability.

The repeatability for the HC analyzer in the range of 0-1400 PPM HC shall be 2% of point or 3 PPM HC absolute, whichever is greater. In the range of 1400-2000 PPM HC, the repeatability shall be 3% of point. The repeatability for the CO analyzer in the range of 0-700% CO shall be 2% of point or 0.02% CO absolute, whichever is greater. In the range of 7.00% to 10.00% CO, the repeatability shall be 3% of point. The repeatability for the CO2 analyzer in the range of 0-10.0% CO2 shall be 2% of point or 0.1% CO absolute, whichever is greater. In the range of 10.0% to 16.0% CO2, the repeatability shall be 3% of point. The repeatability of the NO analyzer shall be 3% of point or 20 PPM NO, whichever is greater. The repeatability of the O2 analyzer shall be 3% of point or 0.1% O2, whichever is greater.

(4) Ambient conditions.

The current relative humidity, dry-bulb temperature, and barometric pressure shall be measured and recorded prior to the start of every inspection in order to calculate KH (nitric oxide correction factor, see § 1(b)(v)).

(i) Relative humidity.

The relative humidity measurement device shall cover the range from 5% to 95% RH, and 35°F—110°F, with a minimum accuracy of °5% RH. Wet bulb thermometers shall not be used.

(ii) Dry-bulb temperature.

The dry-bulb temperature device shall cover the range from 35°F—110°F-with a minimum accuracy of ±3°F.

(iii) Barometric pressure.

The barometric pressure measurement device shall cover the range from 610 MM HG—810 MM HG, and 35°F—110°F, with a minimum accuracy of ±3% of point.

(d) Automated test process software and displays.

(1) Software.

The testing process, data collection and quality control features of the analyzer system shall be automated to the greatest degree possible. The software shall automatically select the emission standards and set the vehicle loadbased on a Department-provided or approved look-up table. Vehicle identification information may be derived from a database accessed over a real-time data system to a host computer system. Entry of license plate and all or part of the VIN shall be sufficient to access the vehicle record. Provision shall be made for manual entry of datafor vehicles not in the host computer system.

(2) Test and mode timers.

The analyzer shall be capable of simultaneously determining the amount of time elapsed in a test, and in a mode within that test.

(3) Clocks and timers.

The clock used to check the coast-down time shall be accurate to within 0.1% of reading between 0.5 and 100 seconds, with a resolution of 0.001 seconds. The ASM test mode timers used shall be accurate to within 0.1% of reading between 10 and 1,000 seconds with a resolution of 0.1 seconds.

(4) Display refresh rate.

Dynamic information being displayed shall be refreshed at a minimum rate of twice per second.

(5) Minimum analyzer display resolution.

The analyzer electronics shall have sufficient resolution to achieve the following:

HC	1 PPM HC as hexane
NO	1 PPM NO
C	0.01 % CO
CO2	0.1 % CO2
O2	0.1 % O2
RPM	10 RPM
HC	1 PPM HC as hexane
Speed	0.1 MPH
Wheel Force	0.1 LB
Relative Humidity	1 %RH
Dry bulb temperature	1 °F
Barometric pressure	1 MM HG

(6) Engine speed detection.

The system shall be capable of detecting engine speed in revolutions per minute (RPM) with a 0.5 second response time and an accuracy of ±3% of the true RPM.

(7) Display during testing.

The display during testing shall read ‘‘test in progress’’ and shall digitally display the vehicle’s speed in mph. Emissions values shall not be displayed during official testing.

§ 4. ASM quality control requirements.

(a) General requirements

(1) Minimums.

The frequency and standards for quality control specified here are minimum requirements, unless modified as specified in paragraph (2). Greater frequency or tighter standards may be used as needed.

(2) Statistical process control.

Reducing the frequency of the quality control checks, modifying the procedure or specification, or eliminating the quality control checks altogether may be allowed if the Department determines, for the purpose of properly conducting an approved short test, that sufficient statistical process control (SPC) data exist to make a determination, that the SPC data support such action, and that taking such action will not significantly reduce the quality of the emissions measurements. If emission measurement performance or quality deteriorate as a result of allowing such actions, the approval shall be suspended and the frequencies, procedures specifications, or checks specified here or otherwise approved shall be reinstated, pending further determination by the Department.

(b) Dynamometer

(1) Coast down check.

(i) Coast down frequency.

The calibration of each dynamometer shall be automatically checked every 72 hours in low volume stations (less than 4,000 tests per year) and daily in high volume stations, when the dynamometer is in active service, by a dynamometer coast-down procedure equivalent to § 86.118-78 (for reference see EOD test procedure TP-302A and TP-202) between the speeds of 30-20 mph and 20-10 mph. All rotating dynamometer components shall be included in the coast-down check. Speed windows smaller than ±5 mph may be used provided that they show the same calibration capabilities.

(ii) Coast down HP settings.

The base dynamometer inertia (2,000 pounds) shall be checked at two random horsepower settings for each speed range. The two random horsepower settings shall be between 8.0 to 18.0 horsepower. Use of a shunt resistor for a load cell performance check is not permissible because it does not verify the performance of the actual load cell, only the signal processing portion of the system.

(iii) Coast down procedure.

The coast-down procedure shall use a vehicle off-dynamometer type method or equivalent, using a vehicle to bring the dynamometer up to speed and removing the vehicle before the coast-down shall not be permitted. If either the measured 30-20 mph coast-down time or 20-10 mph coast-down time is outside the window bounded by DET (seconds) ±7% then it shall be locked out for official testing purposes until recalibration allows a passing value.

(a) Randomly select an IHP2525 value that is between 8.0 hp and 18.0 hp and set dynamometer PAU to this value.

Coast-down dynamometer from 30-20 mph.

$$\mathrm{DET}_{@25\mathrm{mph}\text{ - yy}} = \frac{\left(\frac{0.5 * \mathrm{DIW}}{32.2}\right) * (\mathrm{V}_{30}^2 - \mathrm{V}_{20}^2)}{550 * (\mathrm{IHP2525}_{\mathrm{yy}} + \mathrm{PLPH}_{25\text{-}\mathrm{yy}})}$$

Where:

DIW = Dynamometer inertia weight, total ‘‘inertia’’ weight of all rotating components in dynamometer.

V30 = Velocity in feet/sec at 30 mph.

V20 = Velocity in feet/sec at 20 mph.

IHP2525YY = Randomly selected ASM2525 indicated horsepower.

PLHP25-YY = Parasitic horsepower for specific dynamometer at 25 mph.

(b) Randomly select an IHP5015 value that is between 8.0 hp and 18.0 hp and set dynamometer PAU to this value.

Coast-down dynamometer from 20-10 mph.

Where:

DIW = Dynamometer inertia weight. Total ‘‘inertia’’ weight of all rotating components in dynamometer.

V20 = Velocity in feet/sec at 20 mph.

V10 = Velocity in feet/sec at 10 mph.

IHP5015YY = Randomly selected ASM5015 indicated horsepower.

PLHP15-YY = Parasitic horsepower for specific dynamometer at 15 mph.

(iv) Parasitic value calculations.

If the coast-down values does not verify in § 2(b)(iii).

$$\mathrm{DET}_{@15\mathrm{mph}\text{ - yy}} = \frac{\left(\frac{0.5 * \mathrm{DIW}}{32.2}\right) * (\mathrm{V}_{20}^2 - \mathrm{V}_{10}^2)}{550 * (\mathrm{IHP5015}_{\mathrm{yy}} + \mathrm{PLPH}_{15\text{-}\mathrm{yy}})}$$

Parasitic losses shall be calculated using the following equations at 25 and 15 mph. The indicated horsepower shall be set to zero for these tests.

$$\mathrm{PLHP}_{25\text{-}\mathrm{yy}} = \frac{\left(\frac{0.5 * \mathrm{DIW}}{32.2}\right) * (\mathrm{V}_{30}^2 - \mathrm{V}_{20}^2)}{550 * (\mathrm{CDT})}$$

(a) Parasitic losses at 25 mph for a dynamometer with YY diameter rollers.

Where:

DIW = Dynamometer inertia weight. Total ‘‘inertia’’ weight of all rotating components in dynamometer.

V30 = Velocity in feet/sec at 30 mph.

V20 = Velocity in feet/sec at 20 mph.

CDT = Coast-down time required for dynamometer to coast from 30 to 20 mph.

(b) Parasitic losses at 15 mph for a dynamometer with YY diameter rollers.

$$PLHP_{15\text{-}yy} = \frac{\left(\frac{0.5 * DIW}{32.2}\right) * (V_{20}^2 - V_{10}^2)}{550 * (CDT)}$$

Where:

DIW = Dynamometer inertia weight. Total ‘‘inertia’’ weight of all rotating components in dynamometer.

V20 = Velocity in feet/sec at 20 mph.

V10 = Velocity in feet/sec at 10 mph.

CDT = Coast-down time required for dynamometer to coast from 20 to 10 mph.

(2) Roll speed.

Roll speed and roll counts shall be checked at least once per week by an independent means (for example, photo tachometer). Deviations greater than ±0.2 mph or a comparable tolerance in roll counts shall require corrective action. Alternatively, a redundant roll speed transducer independent of the primary transducer may be used in lieu of the daily comparison. Accuracy of redundant systems shall be checked quarterly.

(c) Emission sampling system.

(1) Leak check.

The entire sample system shall be checked for vacuum leaks on a daily basis and for proper flow on a continuous basis. The sample system leak check shall be performed using the manufacturer’s recommended procedure. The allowed maximum leak rate and minimum flow rate shall be those determined in the equipment certification procedure (see § 7).

(d) Analytic instruments.

(1) General requirements.

The analyzer shall, to the extent possible, maintain accuracy between gas calibrations taking into account all errors, including noise, repeatability, drift, linearity, temperature and barometric pressure.

(i) Calibration method.

(2) Two-point gas calibration.

Analyzers shall automatically require a two point gas calibration for HC, CO, CO2 and NO. Gas calibration shall be accomplished by introducing span gases that meets the requirements of (d)(3)(iv) in this section into the calibration port. The pressure in the sample cell shall be the same with the calibration gas flowing as with the sample gas flowing during sampling. When a calibration is initiated, the analyzer channels shall be adjusted to the center of the allowable tolerance range.

(ii) Calibration frequency.

Analyzers shall be calibrated within 72 hours before each official test. The Department may adjust the calibration check frequency as necessary based on a statistical process control algorithm approved by the Department. If the system does not calibrate or is not calibrated, the analyzer shall lock out from testing until corrective action is taken.

(iii) Working zero and span gases.

The following gases shall be used for the calibration check.

(a) Zero gas

O2 = 20.9%
HC ‹ 1 PPM THC AS C-1
CO ‹ 1 PPM
CO2 ‹ 400 PPM
NO ‹ 1 PPM
N2 = Balance 99.99% pure

(b) Working span gas

HC = 3,200 PPM propane
CO = 8%
CO2 = 12%
NO = 3,000 PPM
N2 = Balance 99.99% pure

(iv) Traceability. The span gases used for the gas calibration and the gas audit shall be traceable to National Institute of Standards and Technology (NIST) standards ±1%, and, in the case of low volume stations shall have a zero blend tolerance.

Alternatively, 5% blend tolerance gases may be used if the system reads the bar-coded calibration gas bottle specifications and adjusts the calibration accordingly.

(3) Five-point gas audit.

(i) Audit frequency.

Analyzers shall successfully pass a five point gas audit for HC, CO, NO and CO2. Analyzers shall undergo the audit procedure minimally every 6 months. For either type of station, the analyzer shall be adjusted or repaired if the requirements of § 3(c)(2) are not met.

(ii) Audit method.

The gas calibration audit shall be accomplished by introducing span gas that meets the requirements of § (d)(3)(iv). The pressure in the sample cell shall be the same with the calibration audit gas flowing as with the sample gas flowing during sampling.

(iii) Audit gases.

The following gases shall be used for the calibration check. Other calibration gas values may be acceptable when a ‘‘gas blender’’ apparatus is used if approved by the Department.

(a) Zero gas

O2 = 20.9% (if O2 span is desired)
HC ‹ 1.0 PPM THC
CO ‹ 1.0 PPM
CO2 ‹ 1 PPM
NO ‹ 1.0 PPM
N2 = Balance 99.99% pure

(b) Low range calibration gas

HC = 200 PPM propane
CO = 0.5%
CO2 = 6.0%
NO = 300 PPM
N2 = Balance 99.99% pure

(c) Low-middle range calibration gas

HC = 960 PPM propane
CO = 2.4%
CO2 = 3.6%

NO = 900 PPM
N2 = Balance 99.99% pure

(d) High-middle range calibration gas

HC = 1920 PPM propane
CO = 4.8%
CO2 = 7.2%
NO = 1800 PPM
N2 = Balance 99.99% pure

(e) High range calibration gas

HC = 3200 PPM propane
CO = 8.0%
CO2 = 12.0%
NO = 3000 PPM
N2 = Balance 99.99% pure

(iv) Traceability. The span gases used for the gas calibration and the gas audit shall be traceable to National Institute of Standards and Technology (NIST) standards ±1% and, in the case of low volume stations shall have a zero blend tolerance. Alternatively, 5% blend tolerance gases may be used if the system reads the bar-coded calibration gas bottle specifications and adjusts the calibration accordingly.

(v) Audit specifications. The analytical system shall read the audit gas within 5% of labeled value. The analyzer shall be adjusted or repaired if the accuracy specifications are not met.

(4) Service and repair calibration.

(i) In-field calibration.

Each time an analyzer's emissions measurement system, sensor or other electronic components are repaired or replaced, a minimum of a five-point gas audit such as (d)(3) shall be performed prior to returning the unit to service.

(ii) Leak check

Each time the sample line integrity is broken, a leak check shall be performed prior to testing.

§ 5. ASM test record information.

(a) General requirements

(1) Test data.

In addition to the information required to uniquely identify the testing station, technician and vehicle, the following data shall also be recorded.

(i) General records

a. Test record number

b. Inspection station and inspector numbers

c. Test system number

d. Dynamometer site

e. Date of test

f. Emission test start time and the time the final emission scores are determined

g. Vehicle identification number

h. License plate number

i. Test certificate number

j. Vehicle model year, make and type

k. Number of cylinders or engine displacement

l. Transmission type

m. Odometer reading

n. Type of test performed (that is, initial test, first retest or subsequent retest)

(ii) Ambient test conditions

a. Relative humidity (%)

b. Dry-bulb temperature (°F)

c. Atmospheric pressure (MM HG)

d. No correction factor

e. System response time for each instrument (Transport +T90)

(iii) ASM5015 mode

a. ASM5015 final HC running average (AVGHC) (PPM).

b. ASM5015 final CO running average (AVGCO) (%).

c. ASM5015 final NO running average (AVGNO) (PPM).

d. Total ASM5015 horsepower used to set the DYNE (THP5015) (HP).

e. Engine RPM running average corresponding to the final test score.

f. Dilution correction factor (DCF).

(iv) Diagnostic/quality assurance information.

a. Test time (SEC).

b. Mode time (SEC).

c. Vehicle speed (MPH) for each second of the test.

d. Engine RPM running average.

e. Dynamometer load (pounds) for each second of the test.

f. HC concentration (PPM) for each second of the test.

g. CO concentration (%) for each second of the test.

h. No concentration (PPM) for each second of the test.

i. CO2 concentration (%) for each second of the test.

j. O2 concentration (%) for each second of the test (optional).

§ 6. ASM terms and definitions.

HPXXXXYY = The ASM actual horsepower value contained in the look up table for a vehicle being tested (using the ASM5015 or 2525) on a dynamometer with YY inch diameter rollers. The actual horsepower is the sum of the indicated horsepower and the parasitic losses (PLHPZZ-YY).

IHPXXXXYY = The ‘‘indicated’’ ASM horsepower value set on the dynamometer.

THPXXXX = The ‘‘total’’ horsepower for an ASM test includes indicated, tire losses and parasitics. This value is independent of roll size.

ETW = Equivalent test weight. Weight class of vehicle for testing, defined as curb weight plus 300 pounds. For

ASM testing, it is rounded to the nearest 125 pound increment.

GTRL@ZZ MPH-YY = Generic tire-roll interface horsepower losses at ZZ mph on a dynamometer with YY inch diameter rollers.

PLHPZZ-YY = Parasitic losses (horsepower) due to internal dynamometer friction. A value is specific to each individual dynamometer and speed.

AT = 1st curve coefficient used to characterize tire/roll losses. Different values depending on dynamometer roller diameter.

BT = 2nd curve coefficient used to characterize tire/roll losses. Different values depending on dynamometer roller diameter.

CT = 3rd curve coefficient used to characterize tire/roll losses. Different values depending on dynamometer roller diameter.

XXXX = Place holder for ASM test mode, ASM5015 or ASM 2525.

YY = Place holder for dynamometer roll diameter. Usually 8.6 or 20 inches.

ZZ = Place holder for dynamometer speed. Usually 15 mph or 25 mph.

§ 7. Equipment certification procedures.

I. Dynamometer.

A. Load cell verification (if equipped).

This test confirms the proper operation of the dynamometer load cell and associated systems. Weights in the proper range shall be supplied by the system supplier. Weights shall be NIST traceable to 0.1% of point.

(1) Calibrate the load cell according to the manufacturer’s direction.

(2) Using a dead weight method, load the test cell to 20%, 40%, 60% and 80% (in ascending order) of the range used for ASM testing. Record the readings for each weight.

(3) Remove the weights in the same steps (descending order) and record the results.

(4) Perform steps A through B two more times (total of three).

(5) Calculate the average value for each weight.

(6) Multiply the average weight from E by the length of the torque arm.

Acceptance criteria: The difference for each reading from the weight shall not exceed 0.1% of full scale.

B. Speedometer verification.

This test confirms the accuracy of the dynamometer’s speedometer.

(1) Set dynamometer speed to 15 MPH.

(2) Independently measure and record dynamometer speed.

(3) Repeat at 25 mph.

Acceptance criteria: The difference for each reading from set dynamometer speed shall not exceed 0.2 mph.

C. Parasitic verification.

Parasitic losses shall be calculated using the following equations at 25 and 15 mph. The indicated horsepower (IHPXXXXYY) shall be set to zero for these tests. Using time versus speed data from the system, calculate PLHPYY for 15 mph and 25 mph.

(1) Parasitic losses at 25 mph for a dynamometer with YY diameter rollers.

$$PLHP_{25\text{-}yy} = \frac{\left(\frac{0.5 * DIW}{32.2}\right) * (V_{30}^2 - V_{20}^2)}{550 * (CDT)}$$

Where:

DIW = Dynamometer inertia weight. Total ‘‘inertia’’ weight of all rotating components in dynamometer.

V30 = Velocity in feet/sec at 30 mph.

V20 = Velocity in feet/sec at 20 mph.

CDT = Coast-down time required for dynamometer to coast from 30 to 20 mph.

(2) Parasitic losses at 15 mph for a dynamometer with YY diameter rollers.

$$PLHP_{15\text{-}yy} = \frac{\left(\frac{0.5 * DIW}{32.2}\right) * (V_{20}^2 - V_{10}^2)}{550 * (CDT)}$$

Where:

DIW = Dynamometer inertia weight. Total ‘‘inertia’’ weight of all rotating components in dynamometer.

V20 = Velocity in feet/sec at 20 mph.

V10 = Velocity in feet/sec at 10 mph.

CDT = Coast-down time required for dynamometer to coast from 20 to 10 mph.

Acceptance criteria: The difference between the external calculated value and the machine calculated value shall not exceed 0.25 HP (or 6.25 lb. wheel force a 15 MPH and 3.75 lb. wheel force at 25 mph).

D. Verify coast-down.

The coast-down procedure shall use a vehicle off-dynamometer type method or equivalent. Using a vehicle to bring the dynamometer up to speed and removing the vehicle before the coast-down shall not be permitted.

(1) Randomly select an IHP2525 value that is between 8.0 hp and 18.0 hp and set dynamometer PAU to this value.

Coast-down dynamometer from 30-20 mph.

$$DET_{@25mph\text{-}yy} = \frac{\left(\frac{0.5 * DIW}{32.2}\right) * (V_{30}^2 - V_{20}^2)}{550 * (IHP2525_{yy} + PLHH_{25\text{-}yy})}$$

Where:

DIW = Dynamometer inertia weight. Total ‘‘inertia’’ weight of all rotating components in dynamometer.

V30 = Velocity in feet/sec at 30 mph.

V20 = Velocity in feet/sec at 20 mph.

IHP2525YY = Randomly selected ASM2525 indicated horsepower.

PLHP25-YY = Parasitic horsepower for specific dynamometer at 25 mph.

(2) Randomly select an IHP5015 value that is between 8.0 hp and 18.0 hp and set dynamometer PAU to this value.

Coast-down dynamometer from 20-10 mph.

$$DET_{@15mph\text{-}yy} = \frac{\left(\frac{0.5 * DIW}{32.2}\right) * (V_{20}^2 - V_{10}^2)}{550 * (IHP5015_{yy} + PLHP_{15\text{-}yy})}$$

Where:

DIW = Dynamometer inertia weight. Total ‘‘inertia’’ weight of all rotating components in dynamometer.

V20 = Velocity in feet/sec at 20 mph.

V10 = Velocity in feet/sect at 10 mph.

IHP5015YY = Randomly selected ASM5015 indicated horsepower.

PLHP15-YY = Parasitic horsepower for specific dynamometer at 15 mph.

Acceptance criteria: The measured 30-20 mph coast-down time and the 20-10 mph coast-down time must be inside the window bounded by DET (seconds ±7%.

II. Analyzer system:

A. Analyzer warm-up.

The analyzer shall be turned off and at a room temperature not greater than 41°F for a time period of at least 4 hours.

Analyzer warm-up acceptance criteria. The analyzer shall reach stability in less than 30 minutes at 41°F from start-up. If an analyzer does not achieve stability within the allotted time frame, it shall be locked out from testing. The instrument shall be considered ‘‘warmed up’’ when the zero and span readings for HC, CO, NO and CO2 have stabilized, within the accuracy values specified in § 3(c)(2) for 5 minutes without adjustment.

B. Leak rate.

A needle valve teed into the line upstream of the sample pump inlet shall be used to induce a leak which reduces the readings by 3%. Perform a leak check using the manufacturer’s recommended procedures. The unit under test shall fail the leak check and prevent further testing until corrective action is performed. Leak rate acceptance criteria. The analyzer shall not allow a deviation of more than 3% of the readings obtained using the mid-range span gas described in paragraph (d)(3)(iii)(c) of § 4.

C. Flow restrictions.

(1) Using the mid-range span gas described in Paragraph (d)(3)(iii)(c) of § 4 entering the sample probe at atmospheric pressure, take a base reading with no restriction in the line. Insert a throttling valve in the vacuum side of the sampling system. With the gas flowing (still at atmospheric pressure), restrict the sample flow until: (1) the low flow indication is activated, (2) the response time of the slowest NDIR channel exceeds 11 seconds to 90% of the base reading, or (3) the actual gas reading differs from the base reading on any channel by more than 3% of the base reading.

Acceptance criteria: The low flow indication is activated and the response times of all NDIR channels are 13 seconds or less to 90% of the base readings, and the actual gas readings differ from the base readings by 3% of the base readings or less.

(2) If the low flow sensor is activated by pressure (or vacuum), insert A 0-10 PSIG (0-30 in. HG) gauge between the throttling valve and the inlet O the low flow sensor. Use the throttling valve to activate and deactivate the low flow indication. Measure the pressure (or vacuum) at which activation and deactivation occur. Perform this test three times.

Acceptance criteria: The difference between the activation point and deactivation point shall be no greater than 3% of the activation point pressure (or vacuum).

D. Dilution.

The procedure for measuring flow rate dilution shall be as follows:

(1) Set vehicle with 1.6 liter maximum engine displacement at factory-recommended idle speed. OEM configuration exhaust system, transmission in neutral, hood up (a fan to cool the engine may be used if needed). Set idle speed not to exceed 920 RPM. (Set for 900 RPM with a tolerance ± 20 RPM.)

(2) With a laboratory grade analyzer system, sample the exhaust at 40 centimeters depth with a flow sample rate below 320 liters per hour. Allow sufficient time for this test. Record all HC, CO, NO, CO2 and O2 readings. A chart recorder or electronically stored data may be used to detect the point of stable readings.

(3) While operating the candidate analyzer system in a mode which has the same flow rate as the official test mode. Record the levels of HC, CO, NO, CO2 and O2. Ensure that the probe is installed correctly.

(4) Repeat step (II).

Acceptance criteria: The flow rate on the analyzer shall not cause more than 10% dilution during sampling of exhaust of a 1.6 liter engine a normal idle. Ten percent dilution is defined as a sample of 90% exhaust and 10% ambient air. If the difference of the readings between (ii) and (iv) exceed 5% of the average of (ii) and (iv), repeat (ii), (iii), and (iv); otherwise average (ii) and (iv) and compare with (iii). If (iii) is within 10% of the average of (ii) and (iv), then the equipment meets the dilution specification.

E. Analyzer accuracy.

This test confirms the ability of the candidate instruments to read various concentrations of gases within the tolerances required by this specification. The test compares the response of the candidate instrument with that of standard instruments, and also estimates the uncertainty of the readings.

The analyzer shall be zeroed and span gas calibrated using the working gases. The instrument shall be tested using propane, carbon monoxide, carbon dioxide and nitric oxide in nitrogen, with a certified accuracy of ±1%, in the following concentrations: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% of full scale for the analyzers. Full scale is defined in § 3(c)(3).

(1) Introduce the gases in ascending order of concentrations, through the probe, beginning with the zero gas. Record the readings of the standard and candidate instruments to each concentration value.

(2) After the highest concentration has been introduced and recorded, introduce the same gases to the standard and candidate analyzers in descending order, including the zero gas. Record the reading of analyzers to each gas, including negatives (if any).

(3) Repeat steps A and B for the candidate only, four more times (total of five times).

(4) Calculations:

a. Calculate the average value of each concentration for the readings of the standard instruments.

b. Calculate the mean and standard deviation of each candidate's readings for each concentration. Include both upscale and down scale readings for the same gas concentration. (All calculations may not be possible for zero concentrations.)

c. For each concentration, calculate the difference between the candidate mean and the standard average.

d. For each concentration, compute the following:

(i) Y1 = X + KSD

(ii) Y2 = X - KSD
Where:

KSD = STD DEV * 3.5 for zero and the highest concentration value.

KSD = STD DEV * 2.5 for all other concentration values, and

X = Mean (arithmetic average) of the set of candidate readings.

e. Compute the uncertainty (U) of the calibration curve for each concentration as follows:

(i) U1 = Concentration value - Y1

(ii) U2 = Concentration value - Y2

Acceptance criteria: (1) for each concentration, the differences calculated in Step 3 shall be no greater than the accuracy tolerances specified in § 3(c)(3). (2) for each concentration, the uncertainties, (U1 and U2) shall be no greater than the accuracy tolerances required in § 3(c)(3).

F. Analyzer system repeatability.

This test characterizes the ability of the instrument to give consistent readings when repeatedly sampling the same gas concentration.

(1) Using an 80% full scale gas, introduce the gas through the sample probe. Record the readings.

(2) Purge with ambient air for at least 30 seconds but no more than 60 seconds.

(3) Repeat steps (1) and (2) above four more times.

(4) Repeat steps (1), (2) and (3), introducing the gas through the sample probe.

Acceptance criteria: The differences between the highest and lowest readings from both ports shall not exceed the value specified in § 3(c)(3).

G. Analyzer system response time.

This test determines the speed of response of the candidate instrument when a sample is introduced at the sample probe.

(1) Gas calibrate the candidate instrument per the manufacturer's instructions.

(2) Using a solenoid valve or equivalent selector system, remotely introduce an 80% full scale gas to the probe. The gas pressure at the entrance to the probe shall be equal to room ambient.

(3) Measure the elapsed time required for the instrument display to read 90% of the final stabilized

reading for HC, CO, CO2 and NO. (Optional: also, measure the time required for the O2 analyzer to read 0.1% O2). Alternatively, the bench outputs may be recorded against a time base to determine the response time. Record all times in seconds.

(4) Switch the solenoid valve to purge with zero air for at least 40 seconds but no more than 60 seconds.

(5) Measure the elapsed time required for the NO instrument display to read 10% of the stabilized reading in Step (3).

(6) Repeat steps (1), (2) and (3), two more times (total three times).

Acceptance criteria: The response (drop time for O2 and NO. Rise time for HC, CO, CO2 and NO) time shall meet the requirement specified in § 3(c)(2)(X). The response time shall also be within ± 1 second of the nominal response time supplied by the equipment supplier for use in § 5(1)(a)(i)(e).

H. Analyzer interference effects.

The following acceptance test procedure shall be performed at 45°F, 75°F and 105°F conditions, except as noted.

(1) Zero and span the instrument.

(2) Sample the following gases for at least 1 minute. Record the response of each channel to the presence of these gases.

a. 16% carbon dioxide in nitrogen.

b. 1600 PPM hexane in nitrogen.

c. 10% carbon monoxide in nitrogen.

d. 3000 PPM nitric oxide in nitrogen.

e. 75 PPM sulfur dioxide (SO2) in nitrogen.

f. 75 PPM hydrogen sulfide (H2S) in nitrogen.

(3) Water-saturated hot air. The water-saturated hot air shall be drawn through the probe from the top of a sealed vessel partially filled with water through which ambient air will be bubbled. The water shall be maintained at a temperature of 122°F ±9°F. This test shall be performed at only the 75°F, and 105°F conditions.

Acceptance criteria: The interference effects shall not exceed the limits specified in § 3(c)(2)(iii).

I. Electromagnetic isolation and interference.

This test shall measure the ability of the candidate instrument to withstand electromagnetic fields which could exist in vehicle testing and repair facilities. For all tests described below, sample ‘‘low-middle calibration gas’’ specified in § 4(d)(3)(iii)(c), at atmospheric pressure, through the sample probe. Record analyzer reading during test periods.

(1) Radio frequency interference test.

a. Use a test vehicle with an engine having a high energy ignition system (or equivalent), a solid core coil wire and a 3/8" air gap. Leave engine off.

b. Locate the candidate instrument within 5 feet of the ignition coil. Gas calibrate the candidate instrument.

c. Sample gas specified above. Wait 20 seconds, and record analyzer readings.

d. Start engine. With the hood open, cycle the engine from idle through 2500 RPM. With the gas flowing record the analyzer readings.

e. Relocate the instrument to within 6 inches of one side of the vehicle near the engine compartment. Repeat Step 4.

f. Relocate the instrument to within 6 inches of the other side of the vehicle near the engine compartment. Repeat Step 4.

Acceptance criteria: The analyzer readings shall deviate no more than 0.5% full scale.

(2) Induction field test. Use a variable speed (commutator type) hand drill having a plastic housing and rated at 3 amps or more. While the analyzer is sampling the gas, vary the drill speed from zero to maximum while moving from the front to the sides of the instrument at various heights.

Acceptance criteria: The analyzer readings shall deviate no more than 0.5% full scale.

(3) Line interference test. Plug the drill used in Part B above into one outlet of A #16-3 wire extension cord approximately 20 feet long. Connect the instrument into the other outlet of the extension cord. Repeat Part B above.

Acceptance criteria: The analyzer readings shall deviate no more than 0.5% full scale.

(4) VHF band frequency interference test. Locate both a citizens ban radio (CB), with output equivalent to FCC legal maximum, and a highway patrol transmitter (or equivalent) within 50 feet of the instrument. While the analyzer is sampling the gas, press and release transmit button of both radios several times.

Acceptance criteria: The analyzer readings shall deviate no more than 0.5% full scale.

(5) Ambient conditions instruments. Upon installation and every 6 months, the performance of the ambient conditions instruments shall be cross checked against a master weather station.

Acceptance criteria: The individual instruments shall be within the tolerance specified in § 3(c)(4).

§ 8. Software specifications and emission inspection waiver procedure.

(a). Software specifications.

(1) General.

(i) The software shall prompt the test personnel to restrain the vehicle. The test system does not need to have a feedback to detect the presence of the restrain system. (Shop requirement).

(ii) At each calibration called for in § 4(d)(2)(i), the system shall automatically record the date, time, the gas readings for HC, CO, NO and CO2 prior to adjustment to the labeled gas values of the calibration gases, and the gas readings after adjustment. This data shall be readily accessible for purposes of statistical process control analysis.

(iii) Software shall be developed and provided to permit statistical process control procedures to be utilized to determine calibration lengths and intervals and other procedures as specified in § 4(a) and as otherwise determined by the Commonwealth.

(2) Software shall be developed and provided to permit the use of the enhanced waiver procedure described in subsection 8(b) of this appendix.

(3) Emission inspection equipment software for the Pennsylvania emission inspection program shall be approved by the Department or its designee prior to installation and use in emission inspection equipment installed at certified emission inspection stations.

(4) An emission inspection test report, meeting the requirements of § 177.252(b), shall be generated by the analyzer. A sample is attached as Exhibit A.

(b) Emission inspection waiver procedure.

(1) After failing initial I/M test, vehicle will receive vehicle repair form.

(i) This form must be completed by person repairing vehicle.

(ii) Completed form will include repairs done and cost of such repairs.

(2) When repairs are completed, vehicle shall be returned to a certified emission inspection.

(3) When retest is begun, repairs made and cost of repairs will be entered into the inspection equipment.

(i) If vehicle fails retest, screen will prompt inspector ‘‘Do you wish waiver?’’

(ii) If no, retest will be aborted.

(iii) If yes, inspector will be presented with waiver screen.

(iv) This screen will ask for certified repair technician number (it may be read by bar code reader or manually entered).

(4) The vehicle inspection information data base (VIID) will be queried and the repair data, including cost, will be examined.

(5) The VIID will review the transmitted data.

(i) The repairs will be compared with the cause of the failure to ensure that they were appropriate to the failure.

(ii) the cost of the repairs will be examined to ensure that cost meets minimum requirements for a waiver.

(6) If the VIID determines that the waiver requirements as specified in § 177.281 and § 177.282 have not been satisfied, the VIID will return a ‘‘NO’’ to request for waiver.

(7) If all waiver requirements under § 177.281 and § 177.282 are met, the VIID will transmit a unique waiver transaction approval number to the certified repair technician approving the waiver.

(8) The waiver sticker may then be placed on the vehicle.

(9) Copies of all repair receipts must be kept by the inspection station issuing waiver.

(i) All waiver repair receipts will be examined by quality assurance officers during normal record audits.

(ii) Waiver repair receipts may also be examined at any time by quality assurance officers or other qualified Commonwealth employees.

§ 9. Hardware specifications.

(a) General.

(1) Tamper control

—Keys allowed…Yes

—Solenoid required…Optional

—Switches required…Yes

—Secure user floppy…No

—Allow DOS access…No

—Gas analyzer…Yes

—Detect power off…Yes

(2) Computer requirements

Processor (minimum):…Pentium

OS system:…Latest version of commercially available OS

RAM required (minimum):…16 MB

Minimum RAM upgrade capability…32 MB

Secured floppy drive (3.5"):…1

Hard drive size (minimum):…1.2 GB

2nd HD expansion required:…Yes

2nd 3.5" expansion required:…Yes

CD required (4X minimum):…Optional
16 BIT sound card (minimum)…Optional

Modem speed (minimum):…28.8

Free slots required:…2

Mouse upgrade:…Optional

(3) Ports/connectors:

—Parallel (minimum):…2

—Serial (free port)…1

(BAUD 300-115.2)…111 MAX

(DB25 connector):…Yes

—Special serial port:*…1

(4) Special COMM PORTS CPC

—12V switched power…Yes

—12V protected…Yes

* An additional RS232 serial port shall be provided specifically to conduct either a gas cap test or a tank integrity test (pressure test) and a purge test when the appropriate test(s) or alternate tests are developed and approved by the Federal Environmental Protection Agency (EPA).

(5) Bar code scanner…2D

—User replaceable…Yes

(6) Printer (Laser):…1

—User replaceable:…Yes

(7) Keyboard:…101

—User replaceable…Yes

(8) Video CRT:…14"

—User replaceable…Yes

—Memory (minimum):…1 MB

—Resolution:…SVGA

(9) Other devices required:

—Opacity…Future

—OBD II Port…Future upgrade

—Gas cap tester…Yes

—Tachometer number…3

—Conventional…1

—Non-intrusive…1
—OBD II…1, when available

Notes:

A. Operating system (OS) must be upgradable to Windows 95, if required by Department at a later date.

B. Manufacturer must demonstrate a working unit to the Department of Transportation or designee. Unit must provide minimum capabilities listed with costing for all options, including future upgrades.

(b) Gas analyzers.

(1) Bench performance (minimum):…Pennsylvania (East Coast)

Specification

—Measured gases (standard):…4

—NO…Standard

—Humidity compensated…Standard

—PEF range (.XX format)…47-56

—Warmup time…15 minutes

—Ranges

HC PPM…0-10,000

CO%…0-14.0

CO2%…0-18.0

NO PPM…0-5,000

O2%…0-25.0

—Zero set two point…Yes

(2) Sample system

—Dual probes required:…Yes

—25' sample hose required:…Yes

(3) Calibration system

—Zero gas required…Yes

—Calibration frequency…3 days

—Calibration…Single

—Second gas…Optional

—Third gas…Open

—Calibration gas specifications

Accuracy…+/- 1%

Blend tolerance…+/- 5%

Type, blend…TRI/QUAD*

Values

CO%…3.5%

HC propane…2,000

CO2…14.0

NO…2,000

(4) 3 ports shall be provided for calibration gas: 1 port shall be for zero gas, 1 port shall be used for calibration gas and 1 port shall be for a spare. Hardware shall be included to activate the third port.

(5) Vented storage required…N/S

(6) ASM areas will use QUAD blend, idle test areas will use tri blend

(c) ASM dynamometer

(1) Base specification…Pennsylvania

—Upgrade…Standard

(2) Identification Plate…N/S

(3) MAX vehicle test weight…9000 GVWR

(4) Absorber accuracy…+/- 2%

(5) Base inertia…2000 +/- 40

Inertia simulation range…2-6

—Mechanical increments…500

—Electrical increments…1

(6) Roll diameter…8.5-21

(7) Testable track width…30-100

(8) Coast down CK…3 day

(9) Vehicle weight measurement…No

(10) Vehicle restraint monitor…No

(11) Aximum allowed incline…5%

(12) Automatic lift…Yes

—Power failure backup…No

(13) Remote control…N/S

(14) Fan required…No

—Remote control…N/S

(15) Augmented braking…No

(16) 12V PC controlled power switched…

Notes: The fan in the Pennsylvania/East Coast specification is a shop requirement.

EXHIBIT A
SAMPLE

COMMONWEALTH OF PENNSYLVANIA
VEHICLE EMISSIONS INSPECTION REPORT

Test Date/Time: 04/23/2014 @ 14:03

VEHICLE INFORMATION

Year:	2012	Make:	TESTVEHICLE	Model:	TESTED
VIN:	12345678912345678	Engine Size (cc):	3800	Cylinders:	6
Odometer:	123456	GVWR:	00000	Estimated Test Weight:	00000
License:	123456	Inspection Type:	INITIAL	Record Number:	1253
County:	DAUPHIN				

EMISSIONS CONTROL SYSTEMS VISUAL/FUNCTIONAL INSPECTION

Air Inj. System:	**N/A**	Catalytic Converter:	**N/A**	Fuel Cap Integrity:	**PASS**
EGR System:	**N/A**	Evaporative Control System:	**N/A**		
PCV System:	**N/A**	Fuel Inlet Restrictor	**N/A**		

OBD EMISSIONS INSPECTION

MIL BULB KOEO:	**PASS**	OBD FAULT CODE RESULT:	**PASS**
MIL BULB KOER:	**PASS**	OBD READINESS RESULT:	**PASS**
MIL COMMAND STATUS:	**PASS**	OBD-I/M CHECK RESULT:	**PASS**

OVERALL TEST RESULTS: **PASSED**

Emissions Control Systems Visual/Functional Inspection: **PASS**
OBD Emissions Inspection: **PASS**
Sticker: **IM40000000**
TIN: **506105107**

RETAIN THIS DOCUMENT FOR YOUR RECORDS.

Vehicle tested in accordance with Pa. Code Title 67, Chapter 177

EMISSIONS INSPECTION STATION

STATION #:	F802	INSPECTOR NAME:	MECHANIC TEMP
STATION NAME:	PA TEST LAB	EQUIPMENT #:	080202
ADDRESS:			
	HARRISBURG PA 17111		
PHONE:		SOFTWARE VERSION:	1201

VEHICLE EMISSIONS INSPECTION QUESTIONS: For additional information, please contact the Customer Hotline at (800) 265-0921.

Inspector's Signature:_____

Appendix A

Exhibit B
SAMPLE

Emissions Test and Exemption Fees

All test fees include the cost of labor for the inspection, but not the cost of parts, repairs and adjustments. No additional charge shall be made for one re-inspection, if necessary, within 30 days of the original inspection at this station.	
All prices include a Program Management Fee (PMF) of $	
EMISSIONS INSPECTION PASS OR FAIL	EMISSIONS INSPECTION FEES FOR VEHICLE OWNERS 65 YEARS OLD OR OLDER PASS OR FAIL
Tailpipe Test	Tailpipe Test
Tailpipe with Dynamometer	Tailpipe with Dynamometer
On-Board-Diagnostic (OBD) Test	On-Board-Diagnostic (OBD) Test
Visual Inspection	Visual Inspection
New Car Exemption	New Car Exemption
5,000 Mile Exemption	5,000 Mile Exemption
This station has personnel authorized to deliver waivers. Customer Hotline Telephone Number—1-800-265-0921	

APPENDIX B

Department Procedures and Specifications

§1. Evaporative System Function Test.

The evaporative system pressure test procedure shall be as follows:

(1) Conform, as applicable, to the following requirements:

(i) Meet the specifications set forth in California BAR Exhaust Gas Analyzer Specifications, 1979 (Bar 80) and this section.

(ii) Meet Section 207B of the Federal Clean Air Act (42 U.S.C.A. § 7541(b)) warranty specifications.

(2) Conform with the following minimum automatic data collection (ADC) specifications:

(i) The ADC unit shall be completely compatible with the analytical equipment portion, known as the bench, of the exhaust emission analyzer.

(ii) There shall be an alpha-numeric keyboard capable of entering the following types of data for permanent transfer to a storage medium, and as set forth in subparagraph (IX). The system shall automatically enter data indicated (auto). Data shall be entered and stored to capture the following minimum information in the following steps:

(A) Date of test (auto)—mandatory entry, field programmed by manufacturer.

(B) Station number (auto)—mandatory entry, permanently set, 5 alpha-numeric characters, field programmed by manufacturer.

(C) Inspector number—mandatory entry, 9 numeric characters.

(D) Vehicle ID number—mandatory entry, title number or VIN, maximum characters used is 26.

(E) Test type—mandatory entry, initial test indicator, retest indicator.

(F) Vehicle year or engine year—mandatory entry.

(G) Cylinder code—mandatory entry, indicator to key in number of cylinders on the vehicle; rotary engines shall be coded as 2 cylinder engines.

(H) Vehicle type—mandatory entry, two categories designated for: passenger cars and trucks under 6,000 pounds GVWR and trucks 6,000 to 9,000 pounds GVWR. At this segment of the emission inspection, the emission inspection inspector shall proceed with the hang-up check. Upon successful completion of this check, the test may no longer be aborted requiring the emission inspector to insert the tailpipe probe and activate the Pennsylvania Emission Test automatically selecting the HC and CO standard required, plus the RPM and CO values required. Sample collection shall require 17 seconds; validation of the sample shall require 5 seconds; and emission sampling immediately after validation shall require 10 seconds.

(I) RPM reading (auto)—actual reading, display suppressed during emission test.

(J) Hydrocarbon (HC, auto)—reading in PPM, display suppressed during emission test.

(K) Carbon Monoxide (CO, auto)—reading in %, display suppressed during emission test.

(L) Carbon Dioxide (CO, auto)—reading in %, display suppressed during emission test.

(M) Invalid test (auto)—display suppressed, during emission test.

Four categories designated for:

CO pass/RPM pass;

CO pass/RPM fail;

CO fail/RPM pass;

CO fail/RPM fail.

(N) Pass/fail (auto)—display suppressed, during emission test.

Four categories designated for:

HC pass/CO pass;

HC pass/CO fail;

HC fail/CO pass;

HC fail/CO fail.

The automatic test results (auto) suppressed during the Pennsylvania emission test may be displayed after the information is automatically stored. This is an optional feature which may be provided by the manufacturer.

(O) Emission inspection fee—mandatory entry.

(P) Emission adjustment or repair performed—adjustment or repair indicator (Mandatory entry for retest entry, displayed only if retest is entered).

(Q) Waiver issued—yes indicator or no indicator (mandatory entry for retest entry, displayed only if retest is entered).

(R) Sticker number or training number—mandatory entry for pass or if waiver used, 11 alpha-numeric characters (display and entry required for passing test or waiver).

(S) Manufacturer's ID (auto)—2 alpha-numeric characters assigned by the Department.

(iii) Data shall be entered by a Certified Emission Inspection Inspector by the alpha-numeric keyboard in the sequence specified:

Mandatory entry data shall be completed before being allowed to proceed to the next data entry item, nonmandatory entry data are only required as specified. After completing the vehicle type entry the HC hang-up check shall be activated. Upon successful completion of this check the Emission Inspector may no longer abort the test and shall insert the probe into the subject vehicle's tailpipe and activate the Pennsylvania Emission Test. This shall automatically activate the collection, validation and emission sampling, and automatically key appropriate HC, CO, CO2 and RPM limits, for pass/fail and invalid test decisions. The entry items designated display suppressed during emission test may not be shown on the display until the test is completed. Test data shall be automatically entered directly into storage and printed on the consumer reports. Data entry items designated field programmed by manufacturer shall be capable of programming changes to meet Emission I/M program required changes.

(iv) The analyzer shall be capable of use as a diagnostic tool and shall also be capable of testing for RPM, HC, CO and CO2, providing corresponding screens for diagnostic use when not activated in the Pennsylvania Emission Test.

(v) The keyboard shall be designed to accommodate the working environment of inspection facilities and to allow for wearing of gloves and contact with grease and oil compounds. The unit shall have the capacity to accommodate 16 present emission standards which may be changed by regulation.

(vi) The keyboard shall provide a capability function so that as data is improperly entered it can be corrected. The automatically-auto-entered data may not be affected by this function.

(vii) When the data is transferred from the storage medium, the unit shall provide the following test after loading the replacement storage medium.

(a) Record a predetermined test record as in subparagraph (ii) in which all number fields are filled with the number ‘‘one’’ and all alpha and alpha-numeric field are filled with the letter ‘‘A.’’

(b) Stop recording.

(c) Read the predetermined test record now on the storage medium.

(d) Compare the predetermined test record on the storage medium with the predetermined record in memory:

(e) Prohibit the instrument from further recording on the storage medium and cause the instrument to indicate this storage medium failure to the operator if the predetermined test record does not correspond directly to that in the memory.

(f) Permit the system to proceed if the predetermined test record in the storage medium corresponds directly to that in the memory.

(viii) The hydrocarbon (HC) hang-up reading in the sampling system may not exceed 20 PPM hexane before each test as measured by the analyzer zeroed on room air. The analyzer shall be designed for automatic HC hang-up checks of the sampling system using room air. The analyzer shall have a selector switch, button with indicator light labeled ‘‘hang-up check’’ or other equivalent display prompter/indicator. Hang-up activation shall cause the analyzer to automatically sample room air through the sample line and probe. The check system shall continue to sample room air until the HC response is below 20 PPM hexane. When the HC level stabilizes below this value, an indication that testing may begin shall be displayed. The analyzer shall be precluded from operating until the HC level is met. The analyzer shall also be locked out unless a successful hang-up check has been performed since the last activation of the test sequence or the HC analyzer has not experienced an HC level greater than that specified in this subparagraph.

(ix) Engine tachometer/idle lockout shall be treated as follows:

(a) A digital tachometer shall be integrated with the console for the purposes of measuring engine speed according to the number of cylinders indicated 1 through 12 cylinder vehicles, in the data entry section. The hook-up to the engine shall be by means of an inductive pick-up.

(b) The following table provides maximum engine RPMs allowable according to number of cylinders:

(i) Maximum idle speeds (shall be field programmed by the manufacturer).

(ii) More than 4 cylinders 1200 RPM maximum.

(iii) Four or less cylinders 1600 RPM maximum.

(c) A lock-out feature shall apply only to vehicles tested in the inspection mode and shall be provided in the tachometer that will cause an ‘‘invalid test’’ to occur and to be displayed, printed and stored if the test idle speed range is exceeded or if the speed fluctuates in excess of 20% of the reading. This data shall be field programmed by the manufacturer.

(x) The analyzer shall be equipped with an antidilution feature to identify vehicle exhaust system leaks and sample dilution. The technique for identifying leaks is monitoring the CO2 levels in the exhaust. If the CO2 reading is less than the lower limit, the analyzer shall display, print and store ‘‘invalid’’ test indication. The minimum acceptable CO2 values shall be field programmed by the manufacturer. At least two lower-limit CO2 values shall be capable of being used:

(a) Vehicle equipped with air pump: 4%.

(b) Vehicle without air pump: 6%.

(xi) In the record mode, if the space on the storage medium available for recording is not sufficient to record the entire test and information as specified in subparagraph (ii), the test may not proceed

and the analyzer shall immediately lock out the testing mode of the analyzer until the manufacturer or service provider replaces the storage medium. The emission inspector shall be prohibited from replacing the storage medium.

(xii) The data collection system shall provide to the emission inspection inspector a visual display of the data as it is being entered, except for that data which is required under aubparagraph (ii) to be suppressed during the emission test.

(xiii) The analyzer system shall have the capability to provide an electronic-mechanical span/zero check every hour. If the check is not made or fails either span or zero (gas calibration or electrical component failure), the analyzer shall automatically lock out any capability of activating an emission test until the analyzer is properly adjusted or repaired. In addition, gas span checks or leak checks, checked on a weekly basis (180 calendar hours), which fail shall cause the analyzer to automatically lock out any capability of activating an enhanced emission test until the analyzer is properly adjusted or repaired.

(3) Vehicles shall fail the evaporative system pressure test if the system cannot maintain a system pressure above 8 inches of water for 2 minutes after being pressurized to 14 +/- 0.5 inch of water or if no pressure drop is detected when the gas cap is loosened as described in this section. Additionally, vehicles shall fail the evaporative test if the canister is missing or obviously damaged, if hoses are missing or obviously disconnected, or if the gas cap is missing.

§ 2. Evaporative System Function Tests.

(a) Evaporative system pressure test, the evaporative system pressure test procedure shall be as follows:

(1) An evaporative system pressure test shall be performed on 1981 and newer model year subject vehicles.

(2) The test sequence shall consist of the following steps:

(i) Test equipment shall be connected to the fuel tank canister hose at the canister end. The gas cap shall be checked to ensure that it is properly, but not excessively tightened, and shall be tightened if necessary.

(ii) The system shall be pressurized to 14 +/- 0.5 inch of water without exceeding 26 inches of water system pressure.

(iii) The pressure source shall be closed off, the evaporative system sealed and pressure decay monitored for 2 minutes.

(iv) The gas cap shall be removed after 2 minutes and the evaporative system monitored for a sudden pressure drop, indicating that the fuel tank was pressurized.

(v) The inspector shall be responsible for ensuring that items that are disconnected in the conduct of the test procedure are properly reconnected at the conclusion of the test procedure. Damage done to the evaporative emission control system during this test shall be repaired at the expense of the inspection station.

(3) Vehicles shall fail the evaporative system pressure test if the system cannot maintain a system pressure above 8 inches of water for 2 minutes after being pressurized to 14 +/- 0.5 inch of water or if no pressure drop is detected when the gas cap is loosened as described in this section. Additionally, vehicles shall fail the evaporative test if the canister is missing or obviously damaged, if hoses are missing or obviously disconnected, or if the gas cap is missing.

(b) Fuel filler (gas) cap test. The fuel filler (gas) cap test procedure shall be as follows:

(1) A fuel filler (gas) cap integrity test shall be performed on 1981 and newer vehicle either as part of the evaporative system pressure test or as a stand alone test.

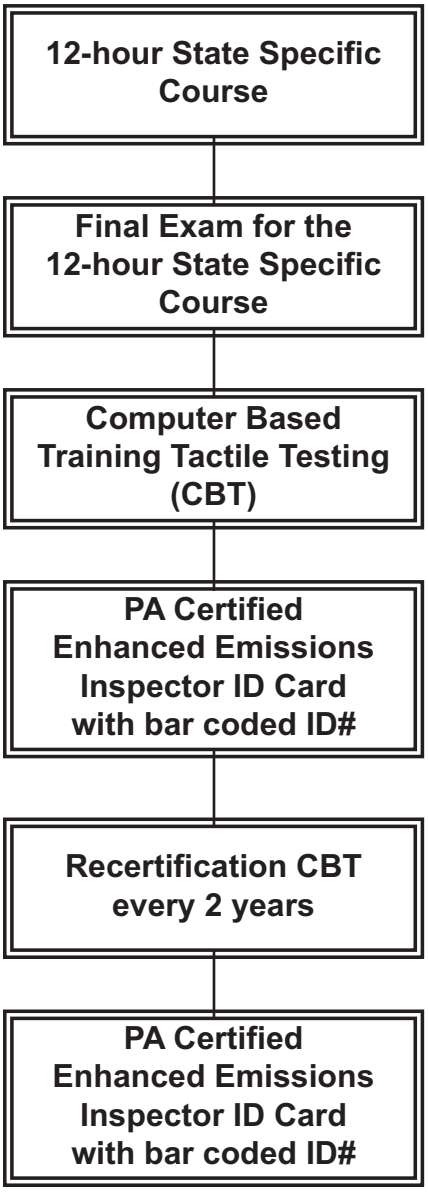
(2) The stand alone test will be conducted using test equipment approved by the Department.

(3) If the fuel filler (gas) cap was tested using stand alone test equipment, the cap shall be pressurized to a pressure of 28 inches, +/- 1.0 inches.

(4) The flow shall be turned off and the decay or pressure monitored for up to 2 minutes.

(5) If at any time during the 2 minutes of the fuel filler (gas) cap test the pressure drops from the starting pressure by more than 6 inches of water, the test shall be terminated and the vehicle shall be determined to fail the fuel filler (gas) cap test. If the pressure does not drop more than 6 inches during the test, the vehicle shall pass the gas cap test.

(c) Subsequent test procedures and equipment approved by the EPA. If the EPA develops or approves other emission test procedures or equipment, including test procedures or equipment prescribed in this section, the Department may adopt the subsequently approved emission test procedures and equipment consistent with section 4706(e) of the Vehicle Code (relating to prohibition of expenditures for the Emission Inspection Program.



PA Enhanced Emissions Inspector Training, Certification and Recertification