(c)(1) The manufacturer shall equip the vehicle with a maintenance indicator consisting of a light that shall activate automatically by illuminating the first time the minimum performance level is observed for all battery system components. Possible battery system components requiring monitoring are:

(i) Battery water level;

(ii) Temperature control;

(iii) Pressure control;

(iv) Other parameters critical for determining battery condition.

(2) The manufacturer of a hybrid electric vehicle shall equip the vehicle with a useful life indicator for the battery system consisting of a light that shall illuminate the first time the battery system is unable to achieve an all-electric operating range (starting from a full state-of-charge) that is at least 75% of the range determined for the vehicle in the All-Electric Range Test (see §86.1770) and submitted in the certification application.

(3) Hybrid electric vehicle battery system. Manufacturers shall maintain the battery system according to the requirements in paragraph (c)(1) of this section.

(d) When air conditioning SFTP exhaust emission tests are required, the manufacturer must document that the vehicle's air conditioning system is operating properly and that system parameters are within operating design specifications prior to testing. Required air conditioning system maintenance is performed as unscheduled maintenance that does not require the Administrator's approval.

[62 FR 31242, June 6, 1997. Redesignated and amended at 63 FR 986, Jan. 7, 1998]

§86.1726–01 [Reserved]

§86.1726–99 Mileage and service accumulation; emission measurements.

The provisions of §86.096–26 and subsequent model year provisions apply to this subpart, with the following exceptions and additions:

(a) The provisions of §86.096–26(a)(1) and subsequent model year provisions do not apply to this subpart. The following shall instead apply to this subpart:

(1) Section 86.096–26(a) and subsequent model year provisions applies to light-duty vehicles and light-duty trucks, except ZEVs which shall be exempt from all mileage and service accumulation, durability-data vehicle, and emission-data vehicle testing requirements.

(2) [Reserved]

(b) The provisions of §86.096–26(a)(2) and subsequent model year provisions do not apply to this subpart. The following shall instead apply to this subpart:

(1) The procedure for mileage accumulation shall be the Durability Driving Schedule as specified in appendix IV of this part. A modified procedure (Alternative Service Accumulation Durability Program, §86.094–13(e) and subsequent model year provisions) may also be used if approved in advance by the Administrator. All light-duty vehicles and light-duty trucks shall accumulate mileage at a measured curb weight that is within 100 pounds of the estimated curb weight. If the vehicle weight is within 100 pounds of being included in the next higher inertia weight class as specified in §86.129, the manufacturer may elect to conduct the respective emission tests at the higher weight. All mileage accumulation of hybrid electric vehicles shall be conducted with the battery pack at the manufacturer's indicated lowest state-of-charge at the beginning of the test cycle. At no time throughout mileage accumulation shall the battery pack be charged using any off-board charging source.

(2) [Reserved]

(c) The provisions of §86.096–26(a)(3)(i) and (ii) and subsequent model year provisions apply to this subpart, with the following addition:

(1) For vehicles certified to the SFTP exhaust emission standards, complete exhaust emission tests will include both the FTP and the SFTP tests. The Administrator will accept the manufacturer's determination of the mileage at which the engine-system combination is stabilized for emission data testing if (prior to testing) a manufacturer determines that the interval chosen yields emissions performance that is stable and representative of design

intent. Sufficient mileage should be accumulated to reduce the possible effects of any emissions variability that is the result of insufficient vehicle operation. Of primary importance in making this determination is the behavior of the catalyst, EGR valve, trap oxidizer or any other part of the ECS which may have non-linear aging characteristics. In the alternative, the manufacturer may elect to accumulate 4,000 mile +/− 250 miles on each test vehicle within an engine family without making a determination.

(2) [Reserved]

(d) The provisions of §86.096–26(a)(4)(i) and (ii) and subsequent model year provisions do not apply to this subpart. The following shall instead apply to this subpart:

(1) For Otto-cycle and diesel vehicles and battery assisted combustion engine vehicles that use Otto-cycle or diesel engines:

(i) Prior to initiation of mileage accumulation in a durability-data vehicle, manufacturers must establish the mileage test interval for durability-data vehicle testing of the engine family. Once testing has begun on a durability-data vehicle, the durability test interval for that family may not be changed. At a minimum, multiple tests must be performed at 5,000 miles, 50,000 miles, and the final mileage point as long as they meet the requirements of appendix XV of this part. The Administrator will accept durability test interval schedules determined by the manufacturer. The testing must provide a DF confidence level equal to or better than the confidence level using the former fixed mileage test and scheduled maintenance intervals. The procedure for making this determination is specified in appendix XV of this part. The mileage intervals between test points must be approximately of equal length. The ±250 mile test point tolerance and the requirement that tests be conducted before and after scheduled maintenance is still mandatory. Emission control systems for Otto-cycle engines that have step function changes designed into the control system must use the 5,000 mile test interval schedule.

(ii) Testing before and after scheduled (or unscheduled) maintenance points must be conducted, and these data are to be included in the deterioration factor calculation. Testing before unscheduled maintenance may be omitted with the prior consent of the Administrator when testing would be dangerous to a vehicle or an operator. The number of tests before and after scheduled maintenance and the mileage intervals between test points should be approximately equal. Durability test interval schedules with multiple testing at test points within 10,000 miles of or at the 50,000 mile and the final mileage test point must be submitted for approval. Multiple testing at maintenance mileage tests points within 10,000 miles of the 50,000 mile and the final mileage test points may be approved if it can be demonstrated by previously generated data that the emission effects of the maintenance are insignificant.

(iii) For engine families that are to be certified to the full useful life emission standards, each exhaust emission durability-data vehicle shall be driven with all emission control systems installed and operating, for the full useful life or such lesser distance as the Administrator may agree to as meeting the objective of this procedure. Durability tests shall be at every 5,000 miles, from 5,000 miles to the full useful life, however, the above procedures may be used to determine alternate test intervals subject to the following:

(A) For engine families that are to be certified to the full useful life emission standards, durability vehicles may accumulate less than the full useful life if the manufacturer submits other data or information sufficient to demonstrate that the vehicle is capable of meeting the applicable emission standards for the full useful life. At a minimum, 75% of the full useful life shall be accumulated.

(B) For the purpose of conducting mileage accumulation on light-duty hybrid electric vehicles, the full useful life of the auxiliary power unit shall be defined as 50,000 miles for a Type A hybrid electric vehicle, 75,000 miles for a Type B hybrid electric vehicle, and 100,000 miles for a Type C hybrid electric vehicle.

(iv) Alternative durability plans may also be used if the manufacturer provides a demonstration that the alternative plan provides equal or greater confidence that the vehicles will comply in-use with the emission standards. All alternative durability plans are subject to approval in advance by the Administrator.

(2) For diesel vehicles equipped with periodically regenerating trap oxidizer systems, at least four regeneration emission tests (see §§ 86.106 through 86.145) shall be made. The pollutant mass emission calculation procedures for vehicles equipped with periodically regenerating trap oxidizer systems are included in appendix XVI of this part. With the advance approval of the Administrator, the manufacturer may install: A manual override switch capable of preventing (i.e., delaying until the switch is turned off) the start of the regeneration process; and a light which indicates when the system would initiate regeneration if it had no override switch. Upon activation of the override switch the vehicle will be operated on a dynamometer to precondition it for the regeneration emission test in accordance with §§ 86.132 and 86.1772. The Urban Dynamometer Driving Schedule (UDDS) that is in progress at the time when the light comes on shall be completed and the vehicle shall proceed to the prescribed soak period followed by testing. With the advance approval of the Administrator, the manual override switch will be turned off at some predetermined point in the testing sequence, permitting the regeneration process to proceed without further manual interaction. The mileage intervals between test points shall be approximately equal. The first regeneration emission test shall be made at the 5,000 mile point. The regeneration emission tests must provide a deterioration factor confidence level equal to or better than the confidence level achieved by performing regeneration emission tests at the following mileage points: 5,000; 25,000; 50,000; 75,000; and 100,000. The procedure for making this determination is shown in appendix XV of this part.

(3) For gasoline-, gaseous-, and alcohol-fueled vehicles that are certified by a whole-vehicle durability protocol, the specified evaporative durability test points are at 5,000, 40,000, 75,000, and 100,000 miles. These requirements are also applicable to hybrid electric vehicles. With the exception of flexible-fuel vehicles, a manufacturer may conduct evaporative testing at test points used for exhaust emission durability testing, provided that the same deterioration confidence level for the evaporative emission DF determination is retained (see appendix XIV of this part).

(4) For flexible-fuel vehicles certifying to TLEV, LEV, or ULEV standards, the test schedule shall include exhaust emission tests at 5,000 miles, 10,000 miles, and every 10,000 miles thereafter to the final mileage point using M85 or E85 and certification gasoline. For all flexible-fuel vehicles, if evaporative emission testing is conducted, exhaust and evaporative emission tests shall also be conducted using M35 or E10, or another approved fuel, at the mileage points where M85 or E85 testing is conducted. The results of these exhaust and evaporative emission tests will be used by the Administrator to evaluate the vehicle's emission control deterioration with various fuels (M85, M35, and unleaded gasoline; See fuel specifications in § 86.1771). Only the M85 or E85 and certification gasoline exhaust emission results and the M35 or E10 evaporative emission results will be used to determine applicable exhaust and evaporative emission deterioration factors, respectively, as required in § 86.1728 (Compliance with Emission Standards).

(e) The provisions of § 86.096–26(a)(5)(i) and subsequent model year provisions apply to this subpart, with the following addition:

(1) In addition, the emission tests performed on emission-data vehicles and durability-data vehicles shall be non-regeneration emission tests for diesel light-duty vehicles and light-duty trucks equipped with periodically regenerating trap oxidizer systems. For any of these vehicles equipped with continually regenerating trap oxidizer systems, manufacturers may use the provisions applicable to periodically regenerating trap oxidizer systems as an option. If such an option is elected, all references in these procedures to

vehicles equipped with periodically regenerating trap oxidizer systems shall be applicable to the vehicles equipped with continually regenerating trap oxidizer systems.

(2) [Reserved]

(f) The provisions of §86.096–26(a)(8) and subsequent model year provisions do not apply to this subpart. The following shall instead apply to this subpart:

(1) Once a manufacturer submits the information required in §86.096–26(a)(7) and subsequent model year provisions for a durability-data vehicle, the manufacturer shall continue to run the vehicle to 50,000 miles if the family is certified to 50,000 mile emission standards or to the full useful life if it is certified to emission standards beyond 50,000 miles (or to a lesser distance that the Administrator may have previously agreed to), and the data from the vehicle will be used in the calculations under §86.094–28 and subsequent model year provisions. Discontinuation of a durability-data vehicle shall be allowed only with the consent of the Administrator.

(2) [Reserved]

(g) The provisions of §86.096–26(b) and subsequent model year provisions do not apply to this subpart.

(h)(1) The exhaust emissions shall be measured from all exhaust emission data vehicles tested in accordance with the federal Highway Fuel Economy Test (HWFET; 40 CFR part 600, subpart B). The oxides of nitrogen emissions measured during such tests shall be multiplied by the oxides of nitrogen deterioration factor computed in accordance with §86.094–28 and subsequent model year provisions, and then rounded and compared with the applicable emission standard in §§86.1708 and 86.1709. All data obtained pursuant to this paragraph (h)(1) shall be reported in accordance with procedures applicable to other exhaust emissions data required pursuant to these procedures. Hybrid electric vehicles shall be tested with the battery state-of-charge set such that one of the following two conditions is satisfied:

(i) The state-of-charge is at the lowest level allowed by the control unit of the auxiliary power unit; or

(ii) The state-of-charge is set such that auxiliary power unit operation will be at its maximum level at the beginning and throughout the emission test.

(2) In the event that one or more of the manufacturer's emission data vehicles fail the applicable HWFET standard in §§86.1708 and 86.1709, the manufacturer may submit to the Administrator engineering data or other evidence showing that the system is capable of complying with the standard. If the Administrator finds, on the basis of an engineering evaluation, that the system can comply with the HWFET standard, he or she may accept the information supplied by the manufacturer in lieu of vehicle test data.

[62 FR 31242, June 6, 1997. Redesignated and amended at 63 FR 987, Jan. 7, 1998]

§86.1727–99 [Reserved]

§86.1728–01 Compliance with emission standards for the purpose of certification.

The provisions of §86.1837–01 and subsequent model year provisions apply with respect to the applicable standards of this subpart.

[64 FR 23924, May 4, 1999]

§86.1728–99 Compliance with emission standards.

The provisions of §86.094–28 and subsequent model year provisions apply to this subpart, with the following exceptions and additions:

(a) The provisions of §86.094–28(a)(1) and subsequent model year provisions do not apply to this subpart. The following shall instead apply to this subpart:

(1) The provisions of §86.094–28(a) and subsequent model year provisions apply to light-duty vehicles and light light-duty trucks, except ZEVs.

(2) [Reserved]

(b) The provisions of §86.094–28(a)(4)(i) and subsequent model year provisions do not apply to this subpart. The following shall instead apply to this subpart:

(1) Separate emission deterioration factors shall be determined from the exhaust emission results of the durability-data vehicle(s) for each engine-system combination. A separate factor