(Catalog of Federal Domestic Assistance No. 83.100, ''Flood Insurance'')

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Acting Administrator, Federal Insurance and Mitigation Administration.

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DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[DOT Docket No. NHTSA–02–12845]

RIN: 2127–AH71

Federal Motor Vehicle Safety Standards; Accelerator Control Systems

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes to revise the Federal motor vehicle safety standard for accelerator control systems. The standard seeks to reduce deaths and injuries resulting from engine overspeed caused by malfunctions in these systems. When the standard was originally drafted and issued, most systems were mechanical. Now, increasing numbers of systems are electronic, electric or hybrid. The revised standard would explicitly apply to these systems, and contain provisions addressing the distinctive failure modes of each type of system.

DATES: You should submit your comments early enough to ensure that Docket Management receives them not later than September 23, 2002.

ADDRESSES: You should mention the docket number of this document in your comments and submit your comments in writing to: Docket Management, Room PL–401, 400 Seventh Street, SW., Washington, DC, 20590.

You may call the Docket at 202–366–9324. You may visit the Docket from 10 a.m. to 5 p.m., Monday through Friday.

FOR FURTHER INFORMATION CONTACT: For non-legal issues, you may call Mr. Michael Pyne, Office of Crash Avoidance Standards at (202) 366–4171. His FAX number is (202) 493–2739.

For legal issues, you may call Ms. Dorothy Nakama, Office of the Chief Counsel at (202) 366–2992. Her FAX number is (202) 366–3820.

You may send mail to both of these officials at National Highway Traffic Safety Administration, 400 Seventh St., SW., Washington, DC, 20590.

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I. Background—History of Standard No. 124

The purpose of Standard No. 124, Accelerator Control Systems, 49 CFR 571.124, is to reduce deaths and injuries resulting from failures of a vehicle's accelerator control system. Since 1972, Standard No. 124 has specified requirements for ensuring the return of a vehicle's throttle to the idle position under each of the following circumstances: (1) When the driver removes the actuating force (usually the driver's foot) from the accelerator control (usually the accelerator pedal), and (2) when there is a severance or disconnection in the accelerator control system (''fail-safe'' operation). Standard No. 124 applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

Standard No. 124 at S5.1 requires that each vehicle have ''at least two sources of energy,'' each independently capable of returning the throttle to the idle position, within the time specified in paragraph S5.3, from any accelerator position or speed whenever the driver removes the actuating force. The Standard defines the throttle as ''the component of the fuel metering device that connects to the driver-operated accelerator control system and that by input from the driver-operated accelerator control system controls engine speed.''

Paragraph S5.2 requires that the throttle return to idle ''whenever any one component of the accelerator control system is disconnected or severed at a single point.'' This requirement must be met within the time specified in paragraph S5.3.

Paragraph S5.3 requires the throttle to return to idle within one second for vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less and within two seconds for vehicles with GVWRs greater than 10,000 pounds. The return-to-idle time is increased to three seconds for any vehicle that is exposed to ambient air at 0 degrees to −40 degrees Fahrenheit during the test or for any portion of a 12-hour conditioning period.

II. Standard No. 124 and Electronic Accelerator Control Systems

When originally promulgated, the definitions and requirements of Standard No. 124 were easy to apply because they were based on the then-universal mechanical control systems. The ''throttle'' of a gasoline engine was the carburetor shaft that opened and closed the air intake passages. The ''throttle'' of a diesel engine was the control rod or rack that controlled fuel flow to the high pressure injectors. The two energy sources were simply two return springs acting on the linkage between the accelerator pedal and the throttle. If at least one of those springs were connected directly to the carburetor or to the diesel fuel injection rack, it would cause the throttle to return to idle in the event of a disconnection of the pedal linkage. If the disconnection occurred at one of the springs, the other would permit continued driver control.

Since Standard No. 124 was issued, electronic engine controls using computer systems have become commonplace. Electronic accelerator linkages have become so common on large trucks that a mechanical accelerator linkage controlling a fuel injection rack is now rare on those vehicles. Already the norm for large trucks, fully electronic accelerator controls, or ''throttle-by-wire'' systems, have recently been introduced on light trucks and passenger cars. In these systems, the driver's pressure on the accelerator pedal is sensed electronically and is transmitted to the device on the engine which controls engine power.

The introduction of electronic systems led to questions about whether and how they were regulated by Standard No. 124. Isuzu Motors America, Inc. (Isuzu) wrote first, asking a variety of questions concerning electronic systems. Isuzu suggested that some of the language in the standard seemed more appropriate for mechanical accelerator systems than for electronic ones. Its central question was whether the standard applies to electronic systems. Among other questions, Isuzu asked whether a severance in electric wires in its electronic accelerator control system is a severance within the meaning of S5.2 of the standard. Isuzu expressed its belief that, because the electric wires were not a ''moving part,'' the answer should be no.

In an August 8, 1988 interpretation letter to Isuzu, NHTSA disagreed with Isuzu's position. NHTSA stated that the standard, which refers generally to accelerator control systems, instead of specifically to ''mechanical'' systems, applies to electronic accelerator control systems. The agency interpreted Standard No. 124's requirement that the throttle must return to idle ''whenever any one component of the accelerator control system is disconnected or severed at a single point,'' to include all severances or disconnections of any component of the accelerator control system as it is defined in the standard, not just disconnections of moving parts. NHTSA subsequently reiterated its position that Standard No. 124 applies to electronic accelerator controls in letters of November 9, 1988 to Caterpillar, Inc.; September 23, 1992 to Bendix Heavy Vehicle Systems; and August 7, 1996 to Philips Research Lab Aachen.

Although the agency has applied Standard No. 124 to electronic accelerator control systems on several occasions, manufacturers continue to question whether the Standard applies to these systems. One correspondent assumed, incorrectly, that since electronic accelerator control systems do not include springs and linkages beyond the pedal assembly as described in Standard No. 124, the electronic components of such systems were not regulated. Similarly, other correspondents have believed Standard No. 124 to mean simply that two return springs should be placed on the accelerator pedal assembly.

In response, the agency has recited in its interpretation letters the requirement that the sources of energy must be capable of returning the throttle to idle in the event of any single severance or disconnection. NHTSA noted that although the use of two springs on the pedal assembly may represent good pedal design, it does not intrinsically overcome a disconnection anywhere within an electronic accelerator control system. Good pedal design by itself does not provide an electronic accelerator control system with the same degree of fail-safe operation provided in a mechanical system by having a return spring directly on the throttle or fuel injection rack. The springs on the throttle or fuel injection rack in a traditional mechanical system could overcome an accelerator control disconnection and return the throttle to idle regardless of where in the system the disconnection occurred. In an electronic accelerator control system, disconnection or severance of the wiring between the pedal position sensor and the engine control processor, between the engine control processor and the throttle on the engine, and in the power and ground connections to the engine control processor are failures analogous to the disconnections of mechanical linkages. Those failures cannot be addressed by focusing solely on the pedal.

Some parties have recognized the analogy between wire severance or disconnection and mechanical linkage severance or disconnection but, because of the standard's lack of specificity, still found it necessary to ask whether the standard applies to short circuits of connecting wires as well as open disconnections.

III. Why We Propose to Amend Standard No. 124

The need for interpretation letters drawing analogies between traditional mechanical components and new electronic systems results from the present regulatory language that reflects the design of mechanical systems. Now that electronic accelerator controls are becoming increasingly commonplace, there is a growing need to revise Standard 124 to address electronic control systems explicitly. As an example, although the term ''throttle'' is not ambiguous for mechanical systems, it loses its clarity when applied to a diesel engine with electronically controlled fuel injectors because the functional throttle position is the product of the combined duty cycle of the engine's injectors and thus cannot be measured by observing the position of any single component. Regulatory language that specifically addresses ''throttle'' in the context of electronic controls systems would help make it explicit not only that Standard No. 124 applies to electronic control systems, but also how it applies to them.

We are also concerned that regulating electronic systems by drawing analogies to mechanical systems has the undesirable effect of limiting the permissible responses to failures in electronic systems to only the fail-safe modes that are possible with mechanical systems. The only response that the present standard recognizes for fail-safe performance is the return of the throttle exactly to the idle position. However, the real issue is the return of engine power to a benign idle state as a fail-safe response to a disconnection in the accelerator control system. Electronic engine controls can reduce the engine power through control of fuel pressure, spark timing, and other factors independent of throttle position. It is neither necessary nor desirable to limit the ways in which fail-safe performance can be achieved by electronic accelerator controls systems.

IV. 1995 Request for Comments

In a Request for Comments published in the **Federal Register** on December 4, 1995 (60 FR 62061), NHTSA introduced the subject of revising Standard No. 124 to add specific provisions for electronic accelerator controls. The notice asked for explanations of the principles of operation and fail-safe provisions of systems in use. It also presented for discussion the idea of identifying each potential failure mode of an electronic accelerator control system and a corresponding fail-safe requirement practicable for each failure mode, as well as the alternative idea of a redundant engine controller active only at the idle position of the accelerator pedal.

In general, the comments of vehicle and engine manufacturers did not address the specific questions in the notice. Instead, they voiced a preference for rescinding the standard altogether, suggesting that market forces and litigation pressure are sufficient to assure fail-safe performance without a Federal motor vehicle safety standard. However, they also commented that, should the agency disagree about rescission, a standard specifying fail-safe performance in the least design-specific terms would be preferable to the requirements suggested in the Request for Comments.

V. 1997 Public Technical Workshop

On May 20, 1997, NHTSA held a public technical workshop on electronic accelerator controls, with the participation of the Truck Manufacturers Association (TMA) and the organization then known as the American Automobile Manufacturers Association (AAMA). Both organizations made brief presentations about the general operating principles of electronic accelerator controls and emphasized that there had been no safety-related developments concerning electronic accelerator controls to justify applying Standard No. 124 to such systems, which they would consider an increase in the scope of the standard.

AAMA identified the following problems in defining the safety performance of electronic accelerator controls: How to define ''idle''; how to define ''severance'' and ''disconnection''; how to handle ''limp home'' strategies; how to specify a test procedure; and how to specify where in the engine management system disconnections and severances should be considered failures of the accelerator control system. TMA stressed that the idle speed is dependent on environmental and operating conditions and is somewhat variable by necessity; therefore, ''return to idle'' must refer to a range of operation identified by the manufacturer as appropriate for conditions and not simply as a throttle position.

During the meeting, we responded to these comments by stating that we were seeking neither to increase nor decrease the scope of Standard No. 124, but to have a standard that was clear and adequate in its application to electronic accelerator controls and that was as performance-oriented as possible. We agreed that existing electronic accelerator control systems appeared to be safe and that present regulation by analogy was inadequate only in its lack of clarity regarding its applicability and its exclusion of new fail-safe strategies. We invited the attendees, and especially the industry associations, to provide specific recommendations for regulatory text that would address the difficulties in updating Standard No. 124.

TMA and AAMA each submitted suggested regulatory text amending the Standard to accommodate electronic accelerator controls. Their comments, including their suggestions about text, may be viewed in the docket for the present notice. As discussed in the next section, our proposed revision of Standard No. 124 draws on their suggestions, but differs in several important ways.

VI. Notice of Proposed Rulemaking

A. Scope of the Proposed Revision of Standard No. 124

In response to the industry's concerns, we seek to ensure that the scope of the proposed standard remains the same as that of the present standard. Nothing in this proposed rule intentionally changes the scope of Standard No. 124. For example, where the present standard applies only to single-point severances or disconnections such as the disconnection of one end of a throttle cable, the proposed standard also is limited to single-point severances and disconnections such as unhooking one electrical connector or cutting a conductor at one location. The proposal does not attempt to make the requirements more stringent by requiring fail-safe performance when multiple severances or disconnections occur simultaneously.

Electronic accelerator controls are more complex than mechanical accelerator controls. The revised standard in this proposal appears correspondingly more complex than the present standard, but the added regulatory text is for the purpose of greater specificity. Lack of specificity in the present standard has led some parties to believe that electronic accelerator controls are regulated less comprehensively than mechanical accelerator controls. This amendment also enhances design freedom and avoids greater burden on manufacturers by addressing types of accelerator controls other than mechanical air throttles and by allowing fail-safe strategies other than return of the air throttle to a mechanical stop.

The agency's view of the scope of the Standard differs from the suggestions made in 1997 by TMA and AAMA with regard to whether an electronic accelerator control system is comprised only of the pedal position sensor and its wiring to the input of the engine control module (ECM), or whether it extends beyond the ECM to include connections to the actual throttling device on the engine.

AAMA argued that the ECM itself should be considered the throttle. We do not agree with this position. We believe that the throttle is the air intake valve, or throttle plate (which is housed in the ''throttle body''), for a conventional gasoline engine. In versions of this engine with mechanical accelerator controls, a cable or linkage that is clearly part of the accelerator control system operates the air intake valve. If the cable or linkage is disconnected at the air intake valve, the present standard requires the air intake valve to close by means of a spring or other source of energy. Versions of this engine with electronic accelerator controls have a similar throttle to which is added an electric actuator to open and close the air intake valve. If the electrical connection between the ECM and the electric actuator of the air intake valve were disconnected, no corresponding fail-safe action would be required in AAMA's view of the scope of the standard. This view is contrary to the analogies between mechanical and electronic systems that form the basis of the legal interpretations of the present standard.

B. Components of an Accelerator Control System

The present standard refers to the accelerator control system in general terms, defining it in S4.1 as ''all vehicle components, except the fuel metering device, that regulate engine speed in direct response to the movement of the driver-operated control and that return the throttle to the idle position upon release of the actuating force.''

In this proposed rule, we treat an accelerator control system (ACS), whether electronic or mechanical, as a series of linked components extending from the driver-operated control to the fuel metering device on the engine or motor. A severance at any one point in the system should not result in losing control of engine power. Electronic systems with wires, relays, control modules, and electric actuators joining the accelerator pedal to the throttle or injectors on the engine are analogous to mechanical systems in which levers, linkages, pivots, cables, and springs serve the same purpose. This definition also applies to an ACS that mixes mechanical and electronic components.

In a mechanical control system, it is reasonably clear which vehicle components comprise the ACS, and it is therefore not difficult to apply the definition used in the present standard. Electronic ACSs are less easily defined than mechanical ones because a variety of components can influence engine speed without being in the direct line of action between the accelerator pedal and the throttling device on the engine.

One possible approach to defining an electronic ACS would be to list in the standard exactly which components, connections, modules, etc., make up an ACS and are subject to the fail-safe requirements. This explicit approach would provide for a high degree of clarity, but would tend to produce a standard lacking flexibility. There is the possibility that any connective component omitted from specific mention in the standard would be excluded from regulation, whether intentionally or not.

The alternative regulatory approach, and the one that we have chosen to employ in the proposed standard, is to specify in general terms the connective components that are regulated. This general approach lends a high degree of flexibility to the standard by leaving open the possibility that the regulatory language can be adapted to new technology.

We agree with TMA and AAMA that there is no evidence of a new safety problem requiring an increase in the scope of Standard No. 124. Since the scope of the fail-safe requirements is still limited to the ''connective components'' of accelerator control systems, we believe the proposed standard adheres to the scope of the existing standard.

Nevertheless, this notice lists some common components of an ACS to illustrate the intent of the proposed standard and to make it clear that these components are considered part of the ACS. The following paragraphs list some of the connective components of electronic accelerator control systems subject to the fail-safe requirements of Standard No. 124, as well as elements of mechanical accelerator control systems always understood to be covered by Standard No. 124.

1. Connective Components of an Air or Fuel-Throttled Engine's ACS—For an air-or fuel-throttled engine, the critical connective components of the accelerator control system are: (1) The springs or other sources of energy that return the driver-operated control and the throttle to the idle position; (2) the linkages, rods, cables or equivalent components which are actuated by the driver-operated control; (3) the linkages, rods, cables or equivalent components which actuate the throttle; (4) the hoses which connect hydraulic or pneumatic systems within an accelerator control system; (5) the connectors and individual conductors in the electrical wiring which connect the driver-operated control to the engine control processor; (6) the connectors and individual conductors in the electrical wiring which connect the engine control module (ECM) to the throttle or other fuel-metering device; and (7) the connectors and individual conductors in the electrical wiring which connect the ECM to the electrical power source and electrical ground.

With regard to the ECM itself, the agency believes that an electronic accelerator control system necessarily includes the ECM as one component. However, we view the fail-safe requirements of the Standard as pertaining to the connective elements rather than the internal elements of the ECM. We agree with TMA and AAMA that internal elements of the ECM are analogous in function to the internal elements of a carburetor or fuel injection distributor, which have never been included in the fail-safe requirements of the Standard. The wiring and connectors between the pedal position sensor and the ECM, the wiring and connectors between the ECM and the physical fuel-metering device on the engine, and the power and ground connections to the ECM are all connective rather than internal elements.

2. Connective Components of an Electric Propulsion Motor—For an electric motor, the critical connective components of an accelerator control system are: (1) The springs or other sources of energy that return the driver-operated control and the motor speed controller to the idle position; (2) the linkages, rods, cables or equivalent components which are actuated by the driver-operated control; (3) the linkages, rods, cables or equivalent components which actuate the motor speed controller; (4) the hoses which connect hydraulic or pneumatic systems within an accelerator control system; (5) the connectors and individual conductors in the electrical wiring which connect the driver-operated control to the motor speed controller or motor control processor; (6) the connectors and individual conductors in the electrical wiring which connect the motor control processor to the motor speed controller; (7) the connectors and individual conductors in the electrical wiring which connect the motor control processor to the electrical power and electrical ground; and (8) the connectors and individual conductors in the electrical wiring from the motor speed controller to the electric traction motor.

C. Inadequacy of Present Performance Criteria

At present, Standard No. 124's performance criteria are based on measuring the position of the ''throttle,'' which is defined as the component of the fuel metering device that connects to the driver-operated accelerator control to regulate engine power and speed. The advantage of this indicator of accelerator control operation is that it is simple to measure. The lag time of the actual change in engine power and speed, which can be considerable because it depends on engine characteristics such as compression and rotational inertia and test conditions such as load and temperature, does not complicate the determination of whether the throttle returns to idle within the required time. The typical throttle of a gasoline engine is the ''butterfly'' plate in the air intake.

However, the convenient measurement of throttle plate position, has no literal meaning for many engines other than conventional gasoline engines. For a modern diesel engine, the hydraulically actuated, electrically controlled unit injection (HEUI) fuel injectors function as multiple throttles, and for a vehicle powered by an electric motor, the motor speed controller is considered the throttle. For HEUI fuel injectors and for electric motor speed controllers, there is no observable component equivalent to a throttle that changes position when the accelerator control is operated.

Furthermore, electronic accelerator control systems now being installed on some gasoline engines have a spring-centered throttle plate. In the absence of an electrical signal at the throttle plate actuator, the spring-centered throttle opens much more than the usual idle position. In the event the electronic accelerator control is disconnected from the throttle plate actuator, these engines cannot satisfy the present fail-safe criterion that the ''throttle return to the idle position.'' On the other hand, engines of this design can accomplish the essential fail-safe performance of returning engine power to a satisfactory idle condition through spark timing control or other means. However, strategies other than throttle plate return would not be recognized as being in compliance under the present Standard. For these reasons, we propose alternative performance criteria to recognize the various ways in which a return to idle state power can be achieved.

D. Criteria for Return to Idle in Normal Operation

Like the present Standard, the proposed Standard has return-to-idle time requirements for two operating conditions: (1) Normal operation of intact accelerator control systems, and (2) fail-safe operation in the event of a severance or disconnection in the accelerator control system. Regarding normal operation, the proposed Standard has retained return of the air throttle to the idle position as the criterion for air-throttled (gasoline) engines. The criterion is still valid for normal operation of engines with mechanical accelerator controls and also for air-throttled engines with electronic accelerator controls.

1. Diesel Engines—For diesels (and other fuel-throttled engines), this proposal accepts TMA's suggestion that the return of the fuel delivery rate (gallons/minute of fuel entering the combustion chambers of the engine) to the idle state be used as the return to idle criterion. For these engines, power is controlled directly by controlling the fuel flow. The result of rapidly returning the accelerator control to idle is a rapid return of the fuel rate to the steady idle rate without the lag required to see the effect on engine speed. In this respect, the fuel rate of fuel-throttled engines is much like the throttle position of air-throttled engines.

2. HEUI Injectors With Multiple ''Throttles''—An engine with a HEUI injection system, now commonplace in commercial trucks, is potentially problematic with respect to return to idle criteria because it has multiple ''throttles,'' its individual HEUI injectors, which can operate independently of each other. This difficulty is overcome by using a measured fuel rate that combines the action of the individual injectors and represents the steady effect of all the injectors' dynamic duty cycles (percent open time or pulse width and frequency). It also solves the problem of the lack of a throttle reference position and thus provides a satisfactory return-to-idle indicant. For many trucks, a fuel rate signal that computes the combined effect of fuel pressure and fuel injector duty cycles is available as a diagnostic signal at the ECM. For engines without a reliable diagnostic signal, direct measurement of fuel flow in the supply and return lines would be necessary.

3. Electric Motors—For vehicles powered by electric motors, the electric power input at the drive motor (computed from voltage and current) can be used as the indicant of return-to-idle. This measurement represents the operation of the motor speed controller that, like an electronic fuel injector, is a throttle without a measurable reference position. Since propulsive power is directly proportional to the drive motor input current and voltage, this indicant is equivalent to throttle position.

4. Response Time Requirements Will Be Retained—AAMA suggested eliminating the response time requirements for return to idle in normal operation, but the agency has chosen to retain these requirements. The elimination of the requirements for normal operation was the subject of a prior NPRM (see 61 FR 19020; April 30, 1996) (No DOT Docket No.) which was withdrawn (see 62 FR 10514; March 7, 1997) (No DOT Docket No.). These requirements continue to protect against accelerator controls with poor operation due to mechanical friction.

E. Fail-Safe Performance Criteria

In the case of fail-safe operation, electronic accelerator control systems can have a variety of ways of curtailing vehicle power in response to an accelerator control system failure. Our intent in the proposed Standard is to take advantage of those possibilities by establishing fail-safe criteria that are performance-oriented rather than design-oriented.

AAMA suggested a criterion for fail-safe behavior in the event of a disconnection or severance of the accelerator control system that is strictly performance based and applies to all forms of vehicle propulsion. That criterion was that the maximum time to return to the idle state in the presence of a single severance, disconnection, or short circuit not exceed the time to return to the idle state in the absence of any such fault by more than three seconds. AAMA further suggested that the engine RPM would be used as the idle state indicant for this test.

This suggested criterion appears to be simple and easily attainable because of the extra three seconds of reaction time, but it is actually a rigorous requirement and a difficult test to perform. We propose not to restrict the test to operation in neutral, as initially suggested by AAMA, because that restriction would neglect real driving safety. We propose that in order to adequately determine whether propulsive power is returned to the idle state, the appropriate time to be measured is the time for a whole vehicle to slow from any speed and power condition back to the speed at which the engine is at the idle RPM. It could easily take 60 seconds for a vehicle to slow from 70 mph to an idle speed of perhaps 20 mph as a result of simply lifting the driver's foot from the accelerator pedal. Random differences in the effect of wind and road surface alone make it unlikely that successive runs, even with a vehicle free of faults, would be repeatable within 3 seconds unless performed on an indoor dynamometer. Also, much of the deceleration is the result of engine braking (negative driving torque), and it is arguable that the safety purpose of the standard is satisfied by the cessation of driving torque alone as a fail-safe response.

In the proposed rule, we have included AAMA's suggested RPM test as performed on a dynamometer, in S6.4, as a compliance test of fail-safe performance, and have made it valid for any type of engine or motor. With the RPM test, the proposed standard includes a compliance test that is purely performance-based and independent of design. However, the RPM test is not the sole fail-safe test in the proposed standard because of the disadvantages just described. This is because there are several optional tests in addition to the RPM option for demonstrating fail-safe performance that, though their applicability depends on design, will be simpler and less burdensome to perform than the RPM test for most vehicles.

1. Alternative Fail-Safe Performance Tests for Air-Throttled Engines—For air-throttled engines, we propose three alternative tests. The first test is the return of the throttle plate to the idle position. This alternative is identical to the present standard and is the least burdensome test for many vehicles in current production. The second test alternative for air-throttled engines is return of the fuel rate to the idle state. For engines of this type, engine power cannot vary substantially from the idle state if the fuel rate is constrained to the value observed at the idle state. Thus, fuel rate is a reliable indicant that engine power is under control. The third test, the RPM test, can be used if neither of the other two tests is compatible with the vehicle's fail-safe design.

2. Alternative Fail-Safe Performance Tests for Fuel-Throttled Engines—Since fuel-throttled engines such as diesel engines may operate with excess air in the combustion chambers, neither the position of an air throttle, if one is present, nor the air intake rate would be an accurate indicant of engine power. Fuel rate, on the other hand, is an accurate and sufficient indicant of engine power for these engines. Consequently, we have included the same fuel rate criterion specified for normal operation of fuel-throttled engines as an optional test for fail-safe performance of those engines. This test was suggested by TMA for both normal and fail-safe operation. As stated above, the RPM test is the other option for these types of engines.

3. Alternative Fail-Safe Performance Tests for Electric Vehicles—For vehicles driven by electric motors, we are proposing that the normal operation criterion for measuring throttle return time of vehicles driven by electric motors, i.e., return of the drive motor electric power input to the idle state, be used as an optional test of fail-safe performance for these vehicles. Again, as stated above, the RPM test is the other option for these vehicles.

4. Alternative Fail-Safe Performance Tests for Hybrid Vehicles—For a hybrid vehicle with more than one type of propulsion system, the RPM test could be applied to the various propulsion systems working together. Alternatively, the fail-safe performance of the accelerator controls of each separate propulsion system could be demonstrated independently using either optional tests appropriate for each propulsion system or the RPM test.

F. Irrevocable Selection of Test to Which Vehicle is Certified

While we propose alternative compliance options in order to minimize the burden on manufacturers, we are also proposing to require manufacturers to declare the option to which their compliance is certified before the agency performs any compliance test of its own. We have noted previously that when a safety standard provides manufacturers with more than one compliance option, the agency needs to know which option has been selected in order to conduct a compliance test.

We have had previous experience with enforcing standards having compliance options without an irrevocable election provision. A manufacturer may certify a vehicle based on one compliance option but subsequently, when confronted with an apparent noncompliance (based on a compliance test) consistent with that choice, argue that the compliance test is irrelevant because the vehicle complies with a different compliance option. Such a shift in the manufacturer's compliance stance would create obvious difficulties for the agency in managing its available resources for carrying out its enforcement responsibilities. By granting manufacturers the flexibility of compliance alternatives, the agency does not intend to impose upon itself an obligation to test each vehicle with each compliance option to determine whether the vehicle in fact complies with this standard.

To avoid this circumstance, we intend to compel manufacturers to inform the agency, when asked to do so, of the compliance option on which its certification is based. The agency will test the vehicle in accordance with that information and further will consider that choice irrevocable. We will consider that test to be prima facie proof of compliance or noncompliance, without regard to whether the vehicle may comply with another option the manufacturer was not intending to rely on. Further, we believe that a post hoc argument that a different option can apply raises serious questions about the manufacturer's compliance with its obligations under 49 U.S.C. 30115 to ensure, using reasonable care, that its certificate is neither false nor misleading.

G. Definition of ''Idle State''

TMA and AAMA advised the agency in their comments that the idle state is not fixed but varies according to a number of factors such as engine temperature, accessory load, and emission controls. It may not be possible for a manufacturer to specify absolute values for operating characteristics of the idle state like throttle opening, engine speed, and fuel rate because those characteristics can change according to conditions, e.g., if the engine is warming up or the vehicle's air conditioning is turned on. As a result, the idle state can vary over a limited range without any input from the accelerator pedal. The idle state also can be modified by speed setting devices such as cruise control. Further, some engines may now employ a ''limp home'' mode which can adjust engine operation to prevent stalling in the event of a malfunction and to provide enough power for a vehicle to be moved from an unsafe location.

For mechanical accelerator control systems, the current standard accommodates the existence of a range of idle states by allowing any idle position ''appropriate for existing conditions.'' Thus, in a traditional air-throttled engine in which the idle position is determined by a mechanical throttle stop, the throttle stop itself can change position as dictated by operating conditions. For example, it may move to a position of increased throttle opening when the engine is cold. For compliance testing, the throttle stop provides a convenient reference position that makes determination of compliance a simple matter.

In vehicles with electronic engine controls, there may be no reference position like a throttle stop. Therefore, it is necessary to establish a reference or baseline value for the idle state, whether it is measured by throttle position, fuel rate, RPM, or electrical power input. The standard could require that the manufacturer specify a value for the baseline, but it would be burdensome to have to obtain idle state data for each of the numerous possible combinations of operating conditions for each vehicle used in compliance testing.

Instead, it is easier and more practical to establish a baseline simply by measuring the initial value of the applicable idle state indicant (throttle position, fuel rate, RPM, electrical power input, etc.) at the beginning of a compliance test (i.e., immediately before the fault is induced). The initial value is an appropriate baseline because it accounts for whatever operating conditions exist. Further, it is a convenient baseline because it is measured directly at the time of the test, and does not depend on information provided by the vehicle manufacturer.

Once the baseline is established, the value of the idle state indicant at the end of the test should be expected to be the same as the baseline value established at the start of the test. Compliance is indicated by whether or not the idle state returns to the baseline value within the elapsed time specified in S5.3.

However, this approach only works if operating conditions such as engine temperature, ambient temperature, accessory load, etc., are constant during a test because on many vehicles there is no idle reference position that adjusts along with those conditions. On an electronic engine, idle state adjustments due to changes in operating conditions would likely take place in the internal circuitry of the ECM. Consequently, a noncomplying increase in idle state might be indistinguishable from a permissible one.

Because of this, the proposed standard specifies that operating conditions must be held constant during the test procedures. In a compliance test, the engine must be stabilized before the test and all accessory controls held constant so that any conditions that affect idle state do not change during the course of the test. In order to eliminate variations in engine idle that are not controlled by the driver, the engine will be operated long enough to release the cold start mechanism as well as to stabilize the emissions controls. The reference or baseline value is established by observing the value of the idle state indicant for an engine with a normally functioning accelerator control system. For normal operation, the idle state following any input to the accelerator pedal is compared to baseline value, and in fail-safe operation, the idle state following a disconnection in the accelerator control system is compared to the baseline value. Return to the baseline must occur within the specified time span. With the engine operating in a steady state with all accessory controls held constant, any difference in the ''before and after'' idle states could not be attributed to a change in operating conditions.

H. Handling Limp Home Strategies

Limp home strategies allow for a temporary increase in idle speed to keep an engine from stalling as a result of certain malfunctions, and enhance safety and convenience by preserving limited mobility to get a partially disabled vehicle off the roadway. The test procedures for fail-safe performance identify the baseline idle state as the idle state for a vehicle without a fault in the accelerator control system (although the test could be run with faults in other engine systems). The test requirements do not allow the vehicle to comply if it is in a higher idle state at the end of the test because there would be no real fail-safe requirement. Whatever idle state resulted from a fault in the accelerator control system could be claimed as a limp-home mode induced by the fault. The question of compliance would be essentially rendered moot (although an unsafe idle condition might be considered a vehicle safety defect.)

Neither TMA nor AAMA discussed the possibility of manufacturers creating a limp home strategy specifically for accelerator control system faults such as disconnections and severances. However, the agency considered a hybrid vehicle, the Toyota Prius, which was designed with a ''limp-off-the-road'' mode for such faults. In this case, a disconnection of the pedal position sensor causes the electric traction motor to receive enough power to move the vehicle off the road. To assure safety, the power is removed upon any activation of the service brake.

We do not view this design as presenting a safety or compliance testing problem. Under the proposed test procedures, fail-safe performance tests would be conducted with the brake pedal (or brake lamp switch) depressed by the minimum amount necessary to cancel the limp-off-the-road idle state during introduction of accelerator control disconnections. We are proposing to include paragraph S5.4 in the Standard to permit limp-off-the-road idle states for accelerator control system faults, but only if they are canceled by any use of the service brake. We have chosen to refer to these as ''limp-off-the-road'' modes because we believe that term is a more accurate description of what their purpose should be, and also to distinguish them from ''limp-home'' modes that are designed to function in response to faults not involving the accelerator control system.

I. Severance and Disconnection

Under the proposed revised standard, electrical connections could be tested for disconnection of a whole connector and for the severance of each individual conductor in the wiring at the connector. Each conductor could be either left open or shorted to ground. This treatment is consistent with the prior agency legal interpretations of the standard relating to single point disconnections and severances in electronic accelerator control systems. (See NHTSA interpretation letter of August 8, 1988 to Isuzu Motors America, Inc.)

In the test procedures of the proposed regulatory text, ''induce fault'' refers to the act of disconnecting one component of the accelerator control system, or severing a single conducting wire to a component, or disconnecting or severing one mechanical linkage or spring within the accelerator control system.

J. Two Sources of Energy for Returning Throttle to Idle

At present, Standard No. 124 at S5.1 states that there shall be at least two sources of energy capable of returning the throttle to the idle position within the specified time limits from any accelerator position or speed, whenever the driver removes the opposing actuating force. S5.1 also specifies that, whenever one source of energy fails, the other shall fulfill the return-to-idle function.

In the past, springs have been the predominant sources of energy for return to idle. That appears to still be the case for accelerator pedal (treadle) assemblies of vehicles with electronic accelerator controls. These assemblies usually incorporate redundant springs. Such springs would be considered part of the accelerator control system under the proposed standard. Fail-safe operation would be tested by disconnecting a spring, just as it is tested in the existing standard. Although having two or more springs on the treadle is an effective countermeasure for instances where a spring disconnection occurs, it is not a sufficient condition to ensure return of the throttle to the idle state. Many vehicles now have electric motors, solenoids, or other devices to control the actual throttle on the engine. Redundant springs on the treadle could be rendered irrelevant if, e.g., the electrical connector to the treadle were disconnected. Under this proposal, fail-safe performance could be tested by disconnecting any single spring in the accelerator pedal or any single spring anywhere else in the ACS.

We believe that all sources of energy connected to the accelerator control system for throttle return, whether springs, solenoids, electric actuators, or other devices, should be treated uniformly as single components whose disconnection must not result in losing control of engine power.

Because the standard requires return to idle regardless of whether there are two sources of energy present, the current requirement may be considered somewhat redundant. Also, it is evident that many manufacturers will provide two or more springs on treadle assemblies whether there is an explicit requirement for it. Nevertheless, since we tentatively conclude that this requirement would continue to ensure that disconnection of one spring would not cause a runaway engine, we propose to retain it in Standard No. 124.

K. Stabilization of Engine Power and Idle State Tolerance

A significant concern in the regulation of ACS failures is that after a fault occurs, the engine should return to a benign power state very quickly, and should also stabilize at a benign condition. It would be unsafe for engine power to return only temporarily to a safe idle state and subsequently jump to a relatively high idle, even after a significant delay.

It is evident from agency tests that an engine with a fault in the ACS may return to or below the baseline idle state initially and within the specified time, but may not stabilize at or below the baseline. Rather, engine power can increase after the initial return to idle. Also, it is reasonable to expect that the idle level attained after fault introduction might be subject to fluctuation because current engines or motors operating in a fault condition might not always be able to achieve a smooth, uniform idle state. Engine operation might be rough, with speed oscillations and/or an elevated idle speed. These are not unexpected side effects when severances or disconnections occur, particularly in modern engines with electronic controls that might be capable of evoking a variety of control strategies to avoid stalling. Such variations in idle conditions may occur independently of any limp-off-the-road provisions built into the engine control system.

The current standard is silent regarding the need to remain at idle after returning to the idle state when a fault occurs. With traditional mechanical linkages, there was little or no reason to believe that an engine's fail-safe response would change after the first few seconds. The throttle's initial return to or below the idle position after fault introduction was thought to be a sufficient measure of performance, and there was no need to consider engine power behavior at any later instant.

The current standard does not allow for return to any condition that is above the idle state, even by a small amount. Further, it does not give any consideration to whether an elevated idle condition is benign or not. In the past, the prevalence of mechanical throttle systems made such considerations unnecessary because a broken accelerator control system generally was not capable of making adjustments in order to compensate for disconnections or severances.

With electronic engine controls, the situation has changed. Engine computers continuously monitor engine operation. When the computer recognizes a problem, it can adjust engine operation. Such adjustments may occur on a delayed basis. Thus, power output behavior of electronic engines can change over a period of seconds after a fault occurs. Even if an engine returns to a safe power level initially, there might be fluctuations in engine idle parameters. These fluctuations could periodically exceed the baseline idle state by a significant amount.

For example, in one agency test of a fuel-throttled diesel engine in a school bus (GTL Test No. 3473), in which a fault was introduced in the ACS by severing one of the wires between the accelerator pedal position sensor and the engine control module, the fuel rate signal returned very quickly (within 0.2 seconds) to an indicated rate approximately the same as the fuel rate at idle before the wire was severed. By itself, this result appeared to indicate that the vehicle's ACS met a safe level of performance. However, within one second after fault introduction, the fuel rate increased momentarily to a level (approximately 1.2 gallons/hour) that was 2.4 times the baseline value (approximately 0.5 gallons/hour). The indicated fuel rate stabilized at exactly the baseline rate or less only after about 3.4 seconds had elapsed after fault introduction.

In this example, the initial return of indicated fuel rate to zero was evidence that engine power had dropped to a safe level in response to the ACS fault. Since the fuel rate subsequently increased before two seconds had elapsed to a level greater than the baseline, it was necessary to look at the fuel rate behavior for a greater time interval after the fault was introduced to determine if the engine continued to operate at a safe power level. In this case, it did so after a few seconds.

We believe there is no safety reason why the engine power should not be allowed to vary as long as a relatively benign idle condition is achieved within the time specified in S5.3 of the existing standard and maintained. In this example, the engine did return to a benign power level, approximately equal to the baseline power level at idle, within the prescribed time and it also did stabilize, after several seconds, at exactly the baseline level.

In order to address issues relating to stabilization of the idle state, we believe it is appropriate to require return to an idle state that is reasonably close to the baseline idle state, even if not identical to it, by specifying a tolerance which, when applied to the baseline, defines a maximum safe idle condition while also providing for some reasonable amount of variation.

We are proposing to permit a 50 percent increase from the idle state in fail-safe operation. That is, the idle state achieved after fault introduction must not be any more than 50 percent greater than the baseline idle state as determined prior to fault introduction. This level of tolerance would accommodate the kind of engine behavior such as speed fluctuations that the agency observed in tests that were conducted for the purpose of updating Standard No. 124. It would also eliminate the need to either lengthen the allowable time to return to idle in S5.3 or to specify an allowable delay before a complete return to the baseline idle state is achieved in a compliance test.

We are also proposing to require that an engine must remain at the idle state, within the 50 percent tolerance, after initially returning to or below that level following a disconnection or severance. That is, an engine or motor cannot be considered to comply if it returns to an acceptable idle state only temporarily and then increases to a relatively high power level. Under this proposal, the engine would be required to remain at the idle state indefinitely. This requirement would also prevent random or periodic fluctuations in idle state that are large enough to significantly exceed the baseline idle state, even though the idle state might be within compliance during portions of the oscillations. We do not believe this requirement expands Standard No. 124's scope because we believe that a requirement to remain at idle fulfills exactly the same safety need as the requirement to initially return to idle, and it is, in fact, implied in the existing standard.

To measure fuel rate, engine RPM, or electric power, the 50 percent tolerance would be calculated by multiplying the baseline value of the measured quantity by 1.5. To measure the air throttle position, the percent opening is the ratio of throttle plate angular displacement to its full travel. It is calculated by dividing the angular displacement to its full travel. The percent opening would be calculated by dividing the angular displacement of the throttle plate relative to its fully closed position by the angular displacement of the wide open throttle relative to fully closed.

The above described definition of ''percent throttle opening'' is included in the ''Definitions'' section of the proposed Standard. As an example, a throttle plate that is designed to rotate 80 degrees from its fully closed position to its fully open position would be considered 20 percent open when rotated 16 degrees from its fully closed position. If a baseline idle position for this throttle at given idle state conditions were measured to be 8 degrees from the fully closed position, then the 50 percent tolerance would be 4 degrees. Thus, the maximum opening following fault inducement in S6.3.4 and the release of the throttle in S6.3.5 would be 12 degrees from the fully closed position.

VII. Leadtime

We propose that the new standard apply to passenger cars, multipurpose passenger vehicles, trucks and buses manufactured on or after the first September 1st that occurs two or more years after the publication of the final rule. Public comment is sought on this proposed lead time. We believe that two years is sufficient lead time for industry since we do not believe that compliance with this proposed rule would involve any new technology, or performance specifications that manufacturers cannot meet with existing design, tooling, or manufacturing capabilities. We further believe that conducting the proposed test procedures would not involve any new technologies or procedures that manufacturers would find difficult to conduct. Since this rulemaking would not make any substantive changes in the scope of Standard No. 124, manufacturers or passenger cars, multipurpose passenger vehicles, trucks or buses would not need to make any changes in vehicle manufacturing processes or procedures to ensure that their vehicles meet Standard No. 124.

VIII. Regulatory Analyses and Notices

A. Executive Order 12866 and DOT Regulatory Policies and Procedures

Executive Order 12866, ''Regulatory Planning and Review'' (58 FR 51735, October 4, 1993), provides for making determinations whether a regulatory action is ''significant'' and therefore subject to Office of Management and Budget (OMB) review and to the requirements of the Executive Order. The Order defines a ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

We have considered the impact of this rulemaking action under Executive Order 12866 and the Department of Transportation's regulatory policies and procedures. This rulemaking document was not reviewed by the Office of Management and Budget under E.O. 12866, ''Regulatory Planning and Review.'' The rulemaking action is also not considered to be significant under the Department's Regulatory Policies and Procedures (44 FR 11034; February 26, 1979).

The purpose of the proposed revision of Standard No. 124, *Accelerator control systems*, is to specifically clarify the requirements as they apply to ''non-mechanical'' accelerator control systems, and not an expansion of the present requirements. These proposed requirements were developed with the agency working in concert with the motor vehicle industry, to prevent interpretation problems that have been associated with the present standard. Therefore, there are no new costs involved with the proposed revisions, and a regulatory evaluation has not been prepared.

B. Executive Order 13132 (Federalism)

Executive Order 13132 requires us to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.'' Under Executive Order 13132, we may not issue a regulation with Federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or unless we consult with State and local governments, or unless we consult with State and local officials early in the process of developing the proposed regulation. We also may not issue a regulation with Federalism implications and that preempts State law unless we consult with State and local officials early in the process of developing the proposed regulation.

This proposed rule would not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The reason is that this proposed rule, if made final, would apply to motor vehicle manufacturers, and not to the States or local governments. Thus, the requirements of Section 6 of the Executive Order do not apply to this proposed rule.

C. Executive Order 13045 (Economically Significant Rules Disproportionately Affecting Children)

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under E.O. 12866, and (2) concerns an environmental, health or safety risk that NHTSA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, we must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by us.

This proposed rule is not subject to the Executive Order because it is not economically significant as defined in E.O. 12866 and does not involve decisions based on environmental, health or safety risks that disproportionately affect children.

D. Executive Order 12778 (Civil Justice Reform)

Pursuant to Executive Order 12778, ''Civil Justice Reform,'' we have considered whether this proposed rule would have any retroactive effect. We conclude that it would not have such an effect. Under 49 U.S.C. 30103, whenever a Federal motor vehicle safety standard is in effect, a State may not adopt or maintain a safety standard applicable to the same aspect of performance which is not identical to the Federal standard, except to the extent that the state requirement imposes a higher level of performance and applies only to vehicles procured for the State's use. 49 U.S.C. 30161 sets forth a procedure for judicial review of final rules establishing, amending or revoking Federal motor vehicle safety standards. That section does not require submission of a petition for reconsideration or other administrative proceedings before parties may file suit in court.

E. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996) whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule would not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule would not have a significant economic impact on a substantial number of small entities.

The Head of the Agency has considered the effects of this rulemaking action under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) and certifies that this proposal would not have a significant economic impact on a substantial number of small entities. The statement of the factual basis for the certification is that since this rulemaking would not make any substantive changes in the scope of Standard No. 124, small manufacturers of passenger cars, multipurpose passenger vehicles, trucks or buses would not need to make any changes in vehicle manufacturing processes or procedures to ensure that their vehicles meet Standard No. 124. Accordingly, the agency believes that this proposal would not affect the costs of motor vehicle manufacturers considered to be small business entities.

F. National Environmental Policy Act

We have analyzed this proposal for the purposes of the National Environmental Policy Act and determined that it would not have any significant impact on the quality of the human environment.

G. Paperwork Reduction Act

NHTSA has determined that, if made final, this proposed rule would not impose any ''collection of information'' burdens on the public, within the meaning of the Paperwork Reduction Act of 1995 (PRA). This rulemaking action would not impose any filing or recordkeeping requirements on any manufacturer or any other party. For this reason, we discuss neither electronic filing and recordkeeping nor do we discuss a fully electronic reporting option by October 2003.

H. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, section 12(d) (15 U.S.C. 272) directs us to use voluntary consensus standards in our regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of Automotive Engineers (SAE). The NTTAA directs us to provide Congress, through OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

After conducting a search of available sources (including data from International Organization of Standards or other standards bodies), we have determined that there are not any available and applicable voluntary consensus standards that we can use in this notice of proposed rulemaking. We have searched the SAE's Recommended Practices applicable to accelerator control systems. We found SAE J1843 *Accelerator Pedal Position Sensor for Use with Electronic Controls in Medium and Heavy-Duty Vehicle Applications* APR93, the purpose of which is to ''provide a common electrical and mechanical interface specification that can be used to design electronic accelerator pedal position sensors and electronic control systems for use in medium and heavy-duty vehicle applications.'' However, the specifications in this SAE Standard are limited to the pedal position sensor and a connector-pin diagnostic. It does not provide guidance on the entire accelerator control system. Since the SAE Standard does not provide guidance on an issue material to this rulemaking, we have developed our own proposal.

I. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA) requires Federal agencies to prepare a written assessment of the costs, benefits and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local or tribal governments, in the aggregate, or by the private sector, of more than $100 million in any one year (adjusted for inflation with base year of 1995). Before promulgating a NHTSA rule for which a written statement is needed, section 205 of the UMRA generally requires us to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows us to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if we publish with the final rule an explanation why that alternative was not adopted.

This proposal would not result in costs of $100 million or more to either State, local, or tribal governments, in the aggregate, or to the private sector. Thus, this proposal is not subject to the requirements of sections 202 and 205 of the UMRA.

J. Data Quality Guidelines

After reviewing the provisions of this NPRM pursuant to OMB's Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies (''Guidelines'') issued by the Office of Management and Budget (OMB) (67 FR 8452, Feb. 22, 2002) and prepared, in draft form, by the Department of Transportation (DOT) (67 FR 21319, Apr. 30, 2002), NHTSA has determined that if made final, nothing in this rule would result in ''information dissemination'' to the public, as that term is defined in the Guidelines.

If a determination were made that public distribution of data resulting from this rule, constituted information dissemination and was, therefore, subject to the OMB/DOT Guidelines, then the agency would review the information prior to dissemination to ascertain its utility, objectivity, and integrity (collectively, ''quality''). Under the Guidelines, any ''affected person'' who believed that the information ultimately disseminated by NHTSA was of insufficient quality could file a complaint with the agency. The agency would review the disputed information, make an initial determination of whether it agreed with the complainant, and notify the complainant of its initial determination. Once notified of the initial determination, the affected person could file an appeal with the agency.

K. Plain Language

Executive Order 12866 requires each agency to write all rules in plain language. Application of the principles of plain language includes consideration of the following questions:

—Have we organized the material to suit the public's needs?
—Are the requirements in the rule clearly stated?
—Does the rule contain technical language or jargon that is not clear?
—Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand?
—Would more (but shorter) sections be better?
—Could we improve clarity by adding tables, lists, or diagrams?
—What else could we do to make this rulemaking easier to understand?

If you have any responses to these questions, please include them in your comments on this NPRM.

L. Regulation Identifier Number (RIN)

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

Comments

How do I Prepare and Submit Comments?

Your comments must be written and in English. To ensure that your comments are correctly filed in the Docket, please include the docket number of this document in your comments.

Your comments must not be more than 15 pages long. (49 CFR 553.21). We established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments. There is no limit on the length of the attachments.

Please submit two copies of your comments, including the attachments, to Docket Management at the address given above under ADDRESSES.

You may also submit your comments to the docket electronically by logging onto the Dockets Management System website at Click on ''Help & Information'' or ''Help/Info'' to obtain instructions for filing the document electronically.

How Can I be Sure That My Comments Were Received?

If you wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

How do I Submit Confidential Business Information?

If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given above under FOR FURTHER INFORMATION CONTACT. In addition, you should submit two copies, from which you have deleted the claimed confidential business information, to Docket Management at the address given above under ADDRESSES. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in our confidential business information regulation. (49 CFR Part 512.)

Will the Agency Consider Late Comments?

We will consider all comments that Docket Management receives before the close of business on the comment closing date indicated above under DATES. To the extent possible, we will also consider comments that Docket Management receives after that date. If Docket Management receives a comment too late for us to consider it in developing a final rule (assuming that one is issued), we will consider that comment as an informal suggestion for future rulemaking action.

How can I Read the Comments Submitted by Other People?

You may read the comments received by Docket Management at the address given above under ADDRESSES. The hours of the Docket are indicated above in the same location.

You may also see the comments on the Internet. To read the comments on the Internet, take the following steps:

1. Go to the Docket Management System (DMS) Web page of the Department of Transportation (*http://dms.dot.gov/*).

2. On that page, click on ''search.''

3. On the next page (*http://dms.dot.gov/search/*), type in the four-digit docket number shown at the beginning of this document. Example: If the docket number were ''NHTSA–1998–1234,'' you would type ''1234.'' After typing the docket number, click on ''search.''

4. On the next page, which contains docket summary information for the docket you selected, click on the desired comments. You may download the comments. Although the comments are imaged documents, instead of word processing documents, the ''pdf'' versions of the documents are word searchable.

Please note that even after the comment closing date, we will continue to file relevant information in the Docket as it becomes available. Further, some people may submit late comments. Accordingly, we recommend that you periodically check the Docket for new material.

List of Subjects in 49 CFR Part 571

Imports, Motor vehicle safety, Motor vehicles, Rubber and rubber products, Tires.

In consideration of the foregoing, it is proposed that the Federal Motor Vehicle Safety Standards (49 CFR Part 571), be amended as set forth below.

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

1. The authority citation for part 571 would continue to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.50.

2. Section 571.124 would be revised to read as follows:

§ 571.124 Standard No. 124; Accelerator control systems.

S1. *Scope.* This standard establishes requirements for the return of engines and electric motors that are connected to a vehicle's drive wheels to the idle state, whenever the actuating force on the driver-operated accelerator control is removed, or there is a severance or disconnection in the accelerator control system.

S2. *Purpose.* The purpose of this standard is to reduce deaths and injuries resulting from engine over-speed caused by malfunctions in the accelerator control system.

S3. *Application.* This standard applies to passenger cars, multi-purpose passenger vehicles, trucks, and buses.

S4. *Definitions.*

Accelerator control system means all vehicle components, including all engine control modules, that either operate the throttle in response to movement of the driver-operated accelerator control or return the driver-operated accelerator control and the throttle to the idle position upon release of an actuating force.

Air throttle position means the ratio of the angular displacement of the throttle plate in that position relative to its fully closed position to its wide open angular displacement relative to its fully closed position.

Air-throttled engine means an internal combustion engine in which the power is regulated primarily through control of the air intake to the combustion chambers.

Ambient temperature means the surrounding air temperature, at a distance such that it is not significantly affected by heat from the vehicle under test.

Driver-operated accelerator control means any device, such as the accelerator pedal, that allows the driver to change the speed of a vehicle's engine or motor by changing input to the device, but does not include the cruise control or engine controls for other driver-operated ancillary components or systems.

Fuel delivery rate means the rate at which fuel enters the combustion chambers of an engine.

Fuel-throttled engine means an internal combustion engine in which the power is regulated primarily through control of fuel delivery to the combustion chambers.

Idle state means the engine power output to the drive wheels under idle state conditions when there is no input to the driver-operated accelerator control.

Idle state conditions include, but are not limited to, engine temperature, air conditioning load, emission control, limp home mode, and the use of the cruise control.

Input electric power delivery means a power (wattage) computation using the input current and voltage to an electric motor and an appropriate power factor, if applicable.

Limp home mode means a device or design that restricts the engine or motor to a limited speed range when certain faults other than accelerator control system faults are detected by the engine management system.

Limp-off-the-road mode means a device or design that increases engine or motor speed above the idle state in response to a fault in the accelerator control system.

RPM means the engine or motor speed in revolutions per minute.

Throttle means the component of an engine that is connected to the accelerator control system and that controls the air intake to the combustion chambers of an air-throttled engine, the fuel delivery to the combustion chambers of a fuel-throttled engine or the electric power to an electric traction motor in response to the driver-operated accelerator control.

S5. *Requirements.* Each vehicle shall meet the following requirements when its engine or motor is running under any load condition, when tested under the applicable provisions of S6.

S5.1 *Performance in Normal Operation.* The throttle shall return to or below the idle state within the time limit specified in S5.3 from any position of the driver-operated accelerator control or any speed of which the engine or motor is capable, whenever the actuating force is removed from the driver-operated accelerator control. The idle state of the throttle in normal operation is measured by one of the following indicators when the engine or motor is at a stable idle and its idle state conditions remain constant:

(a) the air throttle position of an air-throttled engine;

(b) the fuel rate to the combustion chambers of a fuel-throttled engine; or

(c) the input electrical power (calculated from the measurements of current and voltage) for an electric traction motor.

S5.2 *Fail-safe Performance.*

S5.2.1 In the event of disconnection or severance of any one component of an accelerator control system at a single point, the engine or motor power shall return to or below the idle state, within the tolerance allowed by S6, within the time limit specified in S5.3, from any position of the driver-operated accelerator control or any speed of which the engine is capable. Each electronic control module in an accelerator control system is considered to be a single component. Severances and disconnections include those which can occur in the external connections of an electronic control module to other components of the accelerator control system and exclude those which can occur internally in an electronic control module.

S5.2.2 The time to return to the idle state is measured either from the first removal of the actuating force by the driver or from the time of severance or disconnection.

S5.2.3 The accelerator control system shall meet the requirements of this section when either open circuits or short circuits to ground result from disconnections and severances of electrical wires and connectors.

S5.2.4 *Selection of compliance options.* Where options for testing fail-safe performance are specified in S6, the manufacturer shall select the option by the time it certifies the vehicle and may not thereafter select a different option for the vehicle. Each manufacturer shall, upon request from the National Highway Traffic Safety Administration, provide information regarding which of the compliance options it has selected for a particular vehicle or make/model.

S5.3 *Accelerator response time.*

S5.3.1 Except as provided in S5.3.2, the maximum time to return to idle state shall be 1 second for vehicles of 4,536 kilograms (10,000 pounds) or less gross vehicle weight rating (GVWR), and 2 seconds for vehicles of more than 4,536 kilograms (10,000 pounds) GVWR.

S5.3.2 The maximum time to return to idle state shall be 3 seconds for any vehicle that is exposed to ambient air at ‘‘18 degrees Celsius to ‘‘40 degrees Celsius during a test or for any portion of the conditioning period described in S6.

S5.4 *Limp-Off-the-Road Mode for Accelerator Control System Faults.*

S5.4.1 Any increase in the idle state as a limp-off-the-road mode response to a fault in the accelerator control system that is greater than the tolerances provided in S6. shall be removed upon application of the service brake within the time limit specified in S5.3 and shall not recur as long as the service brake is applied.

S5.4.2 For purposes of S5.4, application of the service brake means any application that is sufficient to illuminate the vehicle's stop lamps.

S5.5 *Driver-Operated Accelerator Control.* There shall be at least two sources of energy, each of which is separately capable of returning the driver-operated accelerator control to the idle position within the applicable time limit specified in S5.3, from any position whenever the driver removes the actuating force.

S6. *Test Procedures and Conditions.*

S6.1.1 The air-conditioning setting selected for testing shall be any point within the vehicle's air conditioning control.

S6.1.2 If a vehicle is equipped with limp home mode, the idle state condition is determined with the limp home mode either on or off.

S6.1.3 For idle state conditions such as emissions control that do not provide a means of adjustment, the engine or motor will be operated long enough to stabilize its idle state prior to testing.

S6.1.4 *Air-throttled engines.* An air-throttled engine is tested for fail-safe performance under S6.2, S6.3, or S6.4, at the manufacturer's option.

S6.1.5 *Fuel-throttled engines.* A fuel-throttled engine is tested for fail-safe performance under S6.3, or S6.4 at the manufacturer's option.

S6.1.6 *Electric motors.* An electric motor is tested for fail-safe performance under S6.4 or S6.5 at the manufacturer's option.

S6.1.7 *Baseline value.* The baseline value is the value of the engine or motor power indicant specific to each test procedure below measured for an engine or motor without faults in its accelerator control system for the idle state conditions that will exist at the beginning and end of the test.

S6.1.8 Conditions applicable to all test procedures. The test procedures are conducted with the vehicle's service brake applied by the minimum amount necessary to disengage any limp-off-the-road mode effects.

S6.1.9 *Temperature.* The conditioning and test procedures are conducted at any ambient temperature between ‘‘40 degrees Celsius and +50 degrees Celsius.

S6.2 *Return of Air Throttle Position.*

S6.2.1 Condition the vehicle to the selected ambient temperature for 12 hours.

S6.2.2 Operate the engine at idle long enough to determine the baseline air throttle position for the idle state condition.

S6.2.3 Impose test load and engine speed conditions.

S6.2.4 Induce fault while measuring air throttle position.

S6.2.5 After at least 3 seconds, remove actuating force on driver-operated accelerator control while measuring air throttle position.

S6.2.6 The air throttle shall return to and remain indefinitely in a position that is no greater than 50 percent more open than the baseline idle position of S6.1.2 in the response time specified in S5.3 following either S6.2.4 or S6.2.5.

S6.3 *Return of Fuel Delivery Rate.*

S6.3.1 Condition the vehicle to the selected ambient temperature for 12 hours.

S6.3.2 Operate engine at idle long enough to determine fuel delivery rate in the idle state.

S6.3.3 Impose test load and engine speed conditions.

S6.3.4 Induce fault while measuring fuel delivery rate.

S6.3.5 After at least 3 seconds, remove actuating force on driver-operated accelerator control while measuring fuel delivery rate.

S6.3.6 The fuel delivery rate shall return to and shall remain indefinitely at a value that is no greater than 50% more than the idle state value of S6.3.2 in the response time specified in S5.3 following either S6.3.4 or S6.3.5.

S6.4 *Return of Engine or Motor RPM.*

S6.4.1 This test is performed on a chassis dynamometer providing the same resistance as a function of road speed for test runs as for baseline runs.

S6.4.2 Vehicle load, tire pressures and all other factors affecting rolling resistance are kept constant between baseline and test runs.

S6.4.3 Condition the vehicle to the selected ambient temperature.

S6.4.4 Operate the engine or motor at idle long enough to determine the baseline idle RPM on the chassis dynamometer in the same gear which will be selected for the baseline return-to-idle time measurement of S6.4.5 and the fail-safe test of S6.4.8.

S6.4.5 Begin baseline return-to-idle time measurement by imposing test load and engine or motor speed conditions.

S6.4.5.1 Return the external test load to that of S6.4.4 and simultaneously remove the actuating force on the driver-operated accelerator control.

S6.4.5.2 Record the time for the RPM to return to the idle RPM determined in S6.4.4. plus 50 percent.

S6.4.6 Begin fail-safe test by imposing test load and engine or motor speed conditions as in S6.4.5.

S6.4.7 Return the external test load to that of S6.4.4 and remove the actuating force on the driver-operated accelerator control in the manner of S6.4.6 and simultaneously induce fault while measuring RPM.

S6.4.8 The time following S6.4.9 for the RPM to return to a level that is no greater than 50 percent more than the baseline idle RPM of S6.4.4 shall not exceed the normal idle RPM return time of S6.4.7 by more than three seconds.

S6.4.9 The RPM shall remain indefinitely at a level that is no greater than 50 percent more than the baseline idle RPM of S6.4.4.

S6.5 *Return of Input Power Delivery to an Electric Motor.*

S6.5.1 Condition test vehicle to selected ambient temperature.

S6.5.2 Operate the motor at idle long enough to determine the baseline idle input power (which may be zero for some vehicles.)

S6.5.3 Impose test load and engine speed conditions.

S6.5.4 Induce fault while measuring input voltage and total current delivery.

S6.5.5 After at least 3 seconds, remove actuating force on driver-operated accelerator control while measuring input voltage and total current delivery.

S6.5.6 The input power to the motor shall return to and shall remain indefinitely at a value that is no more than 50 percent greater than the baseline idle value of S6.5.2 in the response time specified in S5.3 following either S6.5.4 or S6.5.5.

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