representative engine in accordance with paragraph (a) or (b) of this section, as applicable, without evidence of failure or malfunction.

(a) Fixed-pitch and ground adjustable-pitch propellers must be subjected to one of the following tests:

(1) A 50-hour flight test in level flight or in climb. The propeller must be operated at takeoff power and rated rotational speed during at least five hours of this flight test, and at not less than 90 percent of the rated rotational speed for the remainder of the 50 hours.

(2) A 50-hour ground test at takeoff power and rated rotational speed.

(b) Variable-pitch propellers must be subjected to one of the following tests:

(1) A 110-hour endurance test that must include the following conditions:

(i) Five hours at takeoff power and rotational speed and thirty 10-minute cycles composed of:

(A) Acceleration from idle,

(B) Five minutes at takeoff power and rotational speed,

(C) Deceleration, and

(D) Five minutes at idle.

(ii) Fifty hours at maximum continuous power and rotational speed,

(iii) Fifty hours, consisting of ten 5-hour cycles composed of:

(A) Five accelerations and decelerations between idle, takeoff power and rotational speed;

(B) Four and one-half hours at approximately even incremental conditions from idle up to, but not including, maximum continuous power and rotational speed; and

(C) Thirty minutes at idle.

(2) The operation of the propeller throughout the engine endurance tests prescribed in part 33 of this chapter.

(c) An analysis based on tests of propellers of similar design may be used in place of the tests of § 35.39(a) and (b).

32. Add § 35.40 to read as follows:

§ 35.40 Functional test.

The variable-pitch propeller system must be subjected to the applicable functional tests of this section. The same propeller system used in the endurance test (§ 35.39) must be used in the functional tests and must be driven by a representative engine on a test stand or on an airplane. The propeller must complete these tests without evidence of failure or malfunction. This test may be combined with the endurance test for accumulation of cycles.

(a) *Manually-controllable propellers.* Five hundred representative flight cycles must be made across the range of pitch and rotational speed.

(b) *Governing propellers.* Fifteen hundred complete cycles must be made across the range of pitch and rotational speed.

(c) *Feathering propellers.* Fifty cycles of feather and unfeather operation must be made.

(d) *Reversible-pitch propellers.* Two hundred complete cycles of control must be made from lowest normal pitch to maximum reverse pitch. During each cycle, the propeller must be run for 30 seconds at the maximum power and rotational speed selected by the applicant for maximum reverse pitch.

(e) An analysis based on tests of propellers of similar design may be used in place of the tests of § 35.40.

33. Revise §§ 35.41, 35.42, and 35.43 to read as follows:

§ 35.41 Overspeed and overtorque.

(a) When the applicant seeks approval of a transient maximum propeller overspeed, the applicant must demonstrate that the propeller is capable of further operation without maintenance action at the maximum propeller overspeed condition. This may be accomplished by:

(1) Performance of 20 runs, each of 30 seconds duration, at the maximum propeller overspeed condition; or

(2) Analysis based on test or service experience.

(b) When the applicant seeks approval of a transient maximum propeller overtorque, the applicant must demonstrate that the propeller is capable of further operation without maintenance action at the maximum propeller overtorque condition. This may be accomplished by:

(1) Performance of 20 runs, each of 30 seconds duration, at the maximum propeller overtorque condition; or

(2) Analysis based on test or service experience.

§ 35.42 Components of the propeller control system.

The applicant must demonstrate by tests, analysis based on tests, or service experience on similar components, that each propeller blade pitch control system component, including governors, pitch change assemblies, pitch locks, mechanical stops, and feathering system components, can withstand cyclic operation that simulates the normal load and pitch change travel to which the component would be subjected during the initially declared overhaul period or during a minimum of 1000 hours of typical operation in service.

§ 35.43 Propeller hydraulic components.

Applicants must show that propeller components that contain hydraulic pressure and whose structural failure or leakage from a structural failure could cause a hazardous propeller effect demonstrate structural integrity by:

(a) A proof pressure test to 1.5 times the maximum operating pressure for one minute without permanent deformation or leakage that would prevent performance of the intended function.

(b) A burst pressure test to 2.0 times the maximum operating pressure for one minute without failure. Leakage is permitted and seals may be excluded from the test.

§ 35.45 [Removed]

34. Remove and reserve § 35.45.

§ 35.47 [Removed]

35. Remove and reserve § 35.47.

Issued in Washington, DC, on March 26, 2007.

John J. Hickey,

Director, Aircraft Certification Service.

[FR Doc. E7–6193 Filed 4–10–07; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 33

[Docket No. FAA–2007–27311; Notice No. 07–03]

RIN 2120–AI94

Airworthiness Standards; Engine Control System Requirements

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The Federal Aviation Administration (FAA) is proposing to revise type certification standards for aircraft engine control systems. These proposed changes reflect current practices and harmonize FAA standards with those recently adopted by the European Aviation Safety Agency (EASA). These proposed changes would establish uniform standards for all engine control systems for aircraft engines certificated by both U.S. and European countries and would simplify airworthiness approvals for import and export.

DATES: Send your comments on or before July 10, 2007.

ADDRESSES: You may send comments identified by Docket Number [FAA–2007–27311] using any of the following methods:

- *DOT Docket Web site:* Go to *http://dms.dot.gov* and follow the instructions for sending your comments electronically.

• *Government-wide rulemaking Web site:* Go to *http://www.regulations.gov* and follow the instructions for sending your comments electronically.

• *Mail:* Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL–401, Washington, DC 20590–0001.

• *Fax:* 1–202–493–2251.

• *Hand Delivery:* Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For more information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document.

Privacy: We will post all comments we receive, without change, to *http://dms.dot.gov,* including any personal information you provide. For more information, see the Privacy Act discussion in the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: To read background documents or comments received, go to *http://dms.dot.gov* at any time or to Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Gary Horan, Engine and Propeller Directorate Standards Staff, ANE–111, Federal Aviation Administration, 12 New England Executive Park, Burlington, Massachusetts 01803–5299; telephone (781) 238–7164, fax (781) 238–7199, e-mail *gary.horan@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. We also invite comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. The docket is available for public inspection before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this preamble between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. You may also review the docket using the Internet at the Web address in the **ADDRESSES** section.

Privacy Act: Using the search function of our docket Web site, anyone can find and read the comments received into any of our dockets, including the name of the individual sending the comment (or signing the comment on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78) or you may visit *http://dms.dot.gov.*

Before acting on this proposal, we will consider all comments we receive on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change this proposal in light of the comments we receive.

If you want the FAA to acknowledge receipt of your comments on this proposal, include with your comments a pre-addressed, stamped postcard on which the docket number appears. We will stamp the date on the postcard and mail it to you.

Availability of Rulemaking Documents

You can get an electronic copy using the Internet by:

(1) Searching the Department of Transportation's electronic Docket Management System (DMS) Web page (*http://dms.dot.gov/search*);

(2) Visiting the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies/*; or

(3) Accessing the Government Printing Office's Web page at *http://www.gpoaccess.gov/fr/index.html.*

You can also get a copy by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267–9680. Make sure to identify the docket number, notice number, or amendment number of this rulemaking.

Background

U.S. and European aircraft engine regulations differ in several areas including engine controls. Harmonization of these differences benefits industry and regulators because of the lower costs associated with one set of engine control regulations.

The FAA, in cooperation with the Joint Aviation Authorities (JAA), the European rulemaking authority before EASA, established an international engine certification study group to compare part 33 with the Joint Aviation Requirements—Engines (JAR–E), the European requirements for engines. As a follow-on, the Aviation Rulemaking Advisory Committee, through its Engine Harmonization Working Group (EHWG), looked at harmonizing the engine control requirements of part 33 and the JAR–E.

In response to EHWG recommendations, the JAA published a Notice of Proposed Amendment (NPA), NPA–E–33 Rev 0, on April 20, 2001. JAA's proposed amendment contained rules and advisory material almost identical to FAA's proposed part 33 changes. Some commenters to this NPA objected that the reliability of aircraft-supplied electrical power should be considered when determining the required degree of protection against failure. Because of these comments, the JAA updated its rulemaking in NPA–E–33 Rev 1. The FAA and the JAA subsequently agreed that the reliability and quality of aircraft-supplied power should be a factor in considering the approval of the engine design. This NPRM reflects this agreement between FAA and the JAA. EASA has adopted this agreement as CS–E (Certification Specifications for Engines) 50(h).

Section-by-Section Discussion of the Proposals

Section 33.5

We propose adding new paragraphs (a)(4), (a)(5), (a)(6) and (b)(4) to § 33.5 to require applicants to include additional installation information in their instructions for installation. The requirements in proposed paragraphs (a)(4), (a)(5) and (b)(4) are currently prescribed under § 33.28(a) as part of the control system description. This proposal places these requirements in sections consistent with their intended purpose.

Our proposed § 33.5(a)(6) would require that installation instructions list the instruments necessary for satisfactory control of the engine. It would also require that the limits of accuracy and transient response required for satisfactory engine operation be identified so that the suitability of the instruments as installed can be assessed. Part 33 does not require similar installation information. We would harmonize §§ 33.5(a)(4), (a)(5) and (b)(4) with CS–E 20(d), CS–E 30(b), and CS–E 20(d), respectively. Adding § 33.5(a)(6) would harmonize with CS–E 60(b).

Section 33.7

We propose adding a new paragraph (d) to this section. This paragraph

would require that the overall limits of accuracy of the engine control system and the necessary instruments, as defined in § 33.5(a)(6), be considered when determining engine performance and operating limitations. Paragraph (d) would harmonize with CS–E 40(g).

Section 33.27

We propose a new § 33.27(b) that prescribes requirements for methods, other than engine control methods, for protecting rotor structural integrity during overspeed conditions. These methods would include protection methods, such as blade shedding, currently regulated under the CS–E but not identified under part 33.

Section 33.28

We propose changing the title of § 33.28 and the content of its paragraphs. The title would be changed from ''Electrical and electronic engine control systems'' to ''Engine control systems.'' Currently, § 33.28 applies only to electrical and electronic engine control systems, while CS–E 50 and associated requirements apply to all types of engine control systems, including hydromechanical and reciprocating engine controls. The new title reflects the proposed revisions to the section which, to harmonize with EASA specifications, would change the scope of the proposed rule to include all types of engine control systems and devices under § 33.28.

Section 33.28(a)

Our proposed § 33.28(a) would be titled ''Applicability'' and would clarify the systems or devices that are subject to § 33.28 requirements.

Section 33.28(b)

We propose replacing existing § 33.28(b) with new § 33.28(b), ''Validation,'' which prescribes requirements for engine control system validation. The new § 33.28(b) consists of new paragraphs (b)(1) and (b)(2).

Our proposed § 33.28(b)(1) requires that applicants demonstrate that their engine control system performs its intended function in the declared operating conditions, including environmental conditions and flight envelope. Part 33 generally requires this showing, but does so nonspecifically. This new specific requirement will clarify the regulation.

The proposed § 33.28(b)(1) requires that the engine control system comply with §§ 33.51, 33.65, and 33.73, as appropriate, under all likely system inputs and allowable engine power or thrust demands. It also requires that the engine control system allow engine power and thrust modulation with adequate sensitivity over the declared range of engine operating conditions. The engine control system also must not create unacceptable power or thrust oscillations.

Proposed § 33.28(b)(1) would harmonize the sections in part 33 that address engine performance and operability requirements with similar requirements in CS–E 50.

Our proposed § 33.28(b)(2) revises requirements located in the existing § 33.28(d). Proposed § 33.28(b)(2) would clarify environmental testing requirements, including those for High Intensity Radiated Fields (HIRF), lightning, and electromagnetic interference (EMI) for the engine control system.

The environmental testing requirements that are part of the proposed § 33.28(b) set the installation limitations. Those limitations are incorporated into the instructions in accordance with § 33.5(b)(4).

Section 33.28(c)

We propose to revise § 33.28(c) to clarify the requirements for control transitions when fault accommodation is implemented through alternate modes, channel changes, or changes from primary to back-up systems. Proposed § 33.28(c), titled ''Control transitions,'' will clarify the need for crew notification if crew action is required as part of fault accommodation.

Section 33.28(d)

Our proposed § 33.28(d) would consist of revised control system failure requirements formerly located in § 33.28(c). Proposed § 33.28(d), titled ''Engine control system failures,'' would consist of four paragraphs: § 33.28(d)(1) would address integrity requirements, such as Loss of Thrust Control (LOTC) requirements consistent with the intended application; § 33.28(d)(2) would require accommodation of single failures with respect to LOTC/LOPC (Loss of Power Control) events; § 33.28(d)(3) would clarify requirements for single failures of electrical or electronic components; and § 33.28(d)(4) would add requirements for foreseeable failures or malfunctions in the intended aircraft installation such as fire and overheat (*i.e.*, local events).

We considered using the phrase ''essentially single fault tolerant'' in proposed paragraph (d)(2) as the standard for measuring the compliance of an applicant's engine control system. We have had extensive discussions with industry about the meaning of ''essentially single fault tolerant.'' However, in reviewing the meaning of ''essentially,'' we decided that this term introduces sufficient ambiguity so that the phrase could not serve as the basis for an enforceable standard. We chose, therefore, to remove ''essentially'' and to reserve to the Administrator the right to define what is meant by ''single fault tolerant.'' We are preparing an advisory circular to offer guidance regarding what we mean by ''single fault tolerant'' as used in the regulation.

Section 33.28(e)

Our proposed § 33.28(e), titled ''System safety assessment,'' would require a System Safety Assessment (SSA) for the engine control system. The SSA would identify faults or failures that would have harmful effects on the engine. Proposed § 33.28(e) harmonizes with CS–E 50(d).

Section 33.28(f)

Our proposed § 33.28(f), titled ''Protection systems,'' requires protective functions that preserve rotor integrity. Proposed § 33.28(f)(1) would include the protection requirements of the existing § 33.27(b). Proposed § 33.28(f)(2) adds requirements for testing the protection function for availability. Proposed § 33.28(f)(3) establishes requirements for overspeed protection systems implemented through hydromechanical or mechanical means. Proposed § 33.28(f) harmonizes with CS–E 50(e).

Section 33.28(g)

Our proposed § 32.28(g), titled ''Software,'' would consist of the software requirements for the engine control system currently prescribed under § 33.28(e). We are proposing to revise § 33.28(g) to require that software be consistent with the criticality of performed functions. Proposed § 33.28(g) harmonizes with CS–E 50(f).

Section 33.28(h)

Our proposed § 33.28(h), titled ''Aircraft-supplied data,'' clarifies requirements related to failure of aircraft-supplied data. The revision consists of two new paragraphs that prescribe requirements for single failures leading to loss, interruption, or corruption of aircraft-supplied data or data shared between engines. We propose to modify the current FAA requirement for fault accommodation for loss of all aircraft-supplied data to require detection and accommodation for single failures leading to loss, interruption, or corruption of aircraft-supplied data. This accommodation must not result in an unacceptable change in thrust or power or an unacceptable change in engine

operating and starting characteristics. Proposed § 33.28(h) harmonizes with CS–E 50(g).

Section 33.28(i)

Our proposed § 33.28(i), titled ''Aircraft-supplied electrical power,'' clarifies requirements for the response of the engine control system to loss or interruption of electrical power supplied from the aircraft. Proposed § 33.28(i) would apply to all electrical power supplied to the engine control system, including that supplied from the aircraft power system and from the dedicated power source, if required.

We propose to add requirements to § 33.28(i) that represent current industry standard practices but are not in part 33. These include a requirement that the applicant define in the instructions for installation:

1. The power characteristics of any power supplied from the aircraft to the engine control system; and

2. The engine control and engine responses to low voltage transients outside the declared power supply voltage limitations.

This action proposes an additional requirement for a dedicated power source for the control system to provide sufficient capacity to power the functions provided by the control system below idle, such as for the auto-relight function.

With the change in scope of this proposal from electronic engine controls to engine controls, it is not our intent that all electrically powered engine functions be under the § 33.28(i) requirement for a dedicated power source. The loss of some control functions traditionally dependent on aircraft-supplied power continues to be acceptable. The use of conventional aircraft-supplied power for these traditional functions has been acceptable as they, in general, do not affect the safe operation of the engine. Examples include:

- Functions without safety significance that are primarily performance enhancement functions
- Engine start and ignition
- Thrust reverser deployment
- Anti-icing (engine probe heat)
- Fuel shut-off

Our proposed § 33.28(i) harmonizes with CS–E 50(h).

Section 33.28(j)

We propose adding a new § 33.28(j), titled ''Air pressure signal,'' that would add safety requirements for air pressure signals in the engine control system. It will require that applicants take design precautions to minimize system malfunction from ingress of foreign matter or blockage of the signal lines by foreign matter or ice. Our proposed § 33.28(j) harmonizes with CS–E 50(i).

Section 33.28(k)

Our proposed § 33.28(k), ''Automatic availability and control of engine power for 30-second OEI rating,'' prescribes requirements for engines with One-Engine-Inoperative (OEI) capability. This proposal, formerly located in § 33.67(d), prescribes a control function that more properly is located in the ''Engine control systems'' section. We propose moving the contents of § 33.67(d) to 33.28(k). Our proposed § 33.28(k) harmonizes with CS–E 50(j).

Section 33.28(l)

Our proposed § 33.28(l), titled ''Engine shutdown means,'' requires that the engine control system provide a rapid means of shutting down the engine. Proposed § 33.28(l) harmonizes with CS–E 50(k).

Section 33.28(m)

Our proposed § 33.28(m), titled ''Programmable logic devices,'' adds safety requirements for programmable logic devices (PLD) that include Application-Specific Integrated Circuits and programmable gate arrays. We decided to propose new PLD requirements separate from software requirements, although the requirements are similar, because PLD's combine software and complex hardware. The proposed rule would require that development of the devices and associated encoded logic used in their design and implementation be at a level equal to the hazard level of the functions performed via the devices. Proposed § 33.28(m) harmonizes with CS–E 50(f).

Section 33.29

We propose revising § 33.29 by adding new paragraphs (e) through (h) to harmonize with CS–E 60, Provision for Instruments.

The new § 33.29(e) would require that applicants provide instrumentation necessary to ensure engine operation in compliance with the engine operating limitations. When instrumentation is necessary for compliance with the engine requirements, applicants must specify the instrumentation in the instructions for installation and include the instrumentation as part of the engine type design. The proposed § 33.29(e) harmonizes with CS–E 60(a).

The existing § 33.29(a) requirement addresses the prevention of incorrect connections of instruments only. Proposed § 33.29(f) would require that applicants provide a means to minimize the possibility of incorrect fitting of instruments, sensors and connectors. Proposed § 33.29(f) harmonizes with CS–E 110(e).

Currently, part 33 does not address requirements for sensors and associated wiring and signal conditioning segregation. Proposed § 33.29(g) would reduce the probability of faults propagating from the instrumentation and monitoring functions to the control functions, or vice versa, by prescribing that the probability of propagation of faults be consistent with the criticality of the function performed. Proposed § 33.29(g) harmonizes with CS–E 60(c).

Our proposed § 33.29(h) would add new requirements for instrumentation that enables the flight crew to monitor the functioning of the turbine case cooling system. Proposed § 33.29(h) harmonizes with CS–E 60(e).

Section 33.53

We propose revising the title of § 33.53 from ''Engine component tests,'' to ''Engine system and component tests.'' The revised title would better identify reciprocating engine control system tests that may be conducted under this paragraph. Proposed § 33.53(a) provides for systems tests if required.

Section 33.91

We propose changing the title of § 33.91 from ''Engine component tests'' to ''Engine system and component tests.'' The revised title would better identify engine control system tests, for example, system validation testing, that may be required under this paragraph. Our proposed § 33.91(a) would provide for systems tests if required.

Rulemaking Analyses and Notices

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, ''General requirements.'' Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce, including minimum safety standards for aircraft engines. This proposed rule is within the scope of that authority because it

updates existing regulations for aircraft engine control systems.

Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. We determined that this proposed rule does not impose any new information collection requirements.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, we comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. We determined that ICAO has no Standards or Recommended Practices that correspond to these proposed regulations.

Economic Assessment, Regulatory Flexibility Determination, Trade Impact Assessment, and Unfunded Mandates Assessment

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency propose or adopt a regulation only upon a determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act also requires agencies to consider international standards and, where appropriate, use them as the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires 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 private sector, of $100 million or more annually (adjusted for inflation with base year of 1995). This portion of the preamble summarizes the FAA's analysis of the economic impacts of this proposed rule.

Department of Transportation Order DOT 2100.5 prescribes policies and procedures for simplification, analysis, and review of regulations. If the expected cost impact is so minimal that a proposed or final rule does not warrant a full evaluation, this order permits that a statement to that effect, and the basis for it, be included in the preamble if a full regulatory evaluation of the cost and benefits is not prepared. Such a determination has been made for this proposed rule. The reasoning for this determination follows.

The proposed rule reflects current practices and harmonizes FAA airworthiness standards for aircraft engine control systems with similar requirements recently adopted by EASA. These proposed changes to engine control system requirements would establish uniform standards for all engine control systems for aircraft engines certificated by both U.S. and European countries and would simplify airworthiness approvals for import and export. Similar international requirements would reduce duplicative testing which would reduce certification costs.

An engine control system is any system or device that controls, limits, or monitors engine operation and is necessary for the continued airworthiness of the engine. This implies consideration of all control system components including the electronic control unit(s), fuel metering unit(s), variable-geometry actuators, cables, wires, and sensors.

An engine control system may be composed of several subsystems which can include: (1) Fuel control, (2) spark control, (3) turbocharger wastegate control, (4) throttle control, and (5) propeller governor. A turbine FADEC (Full Authority Digital Engine Control) system typically controls the fuel, the variable pitch vanes, the engine operability bleeds, the temperature management system and, most recently, the ignition and other starting elements. A reciprocating engine could be considered to have a FADEC system if any of the subsystems are controlled electronically over their full range of operation.

The proposed regulation covers the main engine control system as well as the protection systems, for example, overspeed, over-torque, or over-temperature. Engine monitoring systems are covered by this proposed regulation when they are physically or functionally integrated with the control system and they perform functions that affect engine safety or are used to effect continued-operation or return-to-service decisions.

The purpose of § 33.28 is to set objectives for the general design and functioning of the engine control system. These requirements are not intended to replace or supersede other requirements, such as § 33.67 for the fuel system. Therefore, individual components of the control system, such as alternators, sensors, actuators, should be covered, in addition, under other part 33 paragraphs such as § 33.53 and § 33.91 as appropriate.

Although the proposed rule would cover all types of engine control systems (including hydromechanical and reciprocating engine controls), it would not cover one particular simple electro-mechanical device—the conventional magneto—because that device is not a true control component. On the other hand, the proposed rule would cover subsystems controlled by a FADEC because this is considered part of the engine control system. FADECs are standard on virtually all new turbine engines, and are now being put on some new reciprocating engines also.

This proposal would lower costs by establishing uniform certification standards for all engine control systems certified in the United States under part 33 and in European countries under EASA regulations, simplifying airworthiness approvals for import and export. In addition, a potential for increased safety lies in having more clear and explicit regulations, but the FAA was unable to quantify this benefit. The FAA concludes that the benefits of this rule justify the costs. The FAA requests comments with supporting justification about the FAA determination of minimal impact.

The FAA has, therefore, determined that this proposed rule is not a ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866, and is not ''significant'' as defined in DOT's Regulatory Policies and Procedures.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Pub. L. 96–354) (RFA) establishes ''as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration.'' The RFA covers a wide-range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a rule will have a significant economic impact on a

substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The FAA believes that this proposed rule would not have a significant economic impact on a substantial number of small entities because only one U.S. engine manufacturer meets the definition of small business contained in the Small Business Administration's small business size standard regulations. Therefore, the FAA certifies that this proposed rule would not have a significant economic impact on a substantial number of small entities. The FAA solicits comments regarding this determination.

Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39) prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this rulemaking and determined that it uses European standards as the basis for U.S. regulations.

Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (adjusted annually for inflation) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ''significant regulatory action.'' The FAA currently uses an inflation-adjusted value of $128.1 million in lieu of $100 million.

This proposed rule does not contain such a mandate. The requirements of Title II do not apply.

Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action would not have a substantial direct effect 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, and therefore would not have federalism implications.

Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. We determined that this proposed rulemaking action qualifies for the categorical exclusion identified in Chapter 3, paragraph 312d and involves no extraordinary circumstances.

Regulations that Significantly Affect Energy Supply, Distribution, or Use

The FAA has analyzed this NPRM under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We determined that it is not a ''significant energy action'' under the executive order because it is not a ''significant regulatory action'' under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

List of Subjects in 14 CFR Part 33

Aircraft, Air transportation, Aviation safety, Safety.

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend chapter I of Title 14, Code of Federal Regulations, as follows:

PART 33—AIRWORTHINESS STANDARDS: AIRCRAFT ENGINES

1. The authority citation for part 33 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44704.

2. Amend § 33.5 by adding new paragraphs (a)(4), (a)(5), (a)(6), and (b)(4), to read as follows:

§ 33.5 Instruction manual for installing and operating the engine.

* * * * *

(a) * * *

(4) A definition of the physical and functional interfaces with the aircraft and aircraft equipment, including the propeller when applicable.

(5) Where an engine system relies on components that are not part of the engine type design, the interface conditions and reliability requirements for those components upon which engine type certification is based must be specified in the engine installation instructions directly or by reference to appropriate documentation.

(6) A list of the instruments necessary for control of the engine, including the overall limits of accuracy and transient response required of such instruments for control of the operation of the engine, must also be stated so that the suitability of the instruments as installed may be assessed.

(b) * * *

(4) A description of the primary and all alternate modes, and any back-up system, together with any associated limitations, of the engine control system and its interface with the aircraft systems, including the propeller when applicable.

3. Amend § 33.7 by adding new paragraph (d) to read as follows:

§ 33.7 Engine ratings and operating limitations.

* * * * *

(d) In determining the engine performance and operating limitations, the overall limits of accuracy of the engine control system and of the necessary instrumentation as defined in § 33.5(a)(6) must be taken into account.

4. Amend § 33.27 by revising paragraph (b) to read as follows:

§ 33.27 Turbine, compressor, fan, and turbosupercharger rotors.

* * * * *

(b) The design and functioning of engine systems, instruments, and other methods, not covered under § 33.28 of this part must give reasonable assurance that those engine operating limitations that affect turbine, compressor, fan, and turbosupercharger rotor structural integrity will not be exceeded in service.

* * * * *

5. Revise § 33.28 to read as follows:

§ 33.28 Engine control systems.

(a) *Applicability.* These requirements are applicable to any system or device that is part of engine type design, that controls, limits, or monitors engine operation, and is necessary for the continued airworthiness of the engine.

(b) *Validation.* (1) *Functional aspects.* The applicant must substantiate by tests, analysis, or a combination thereof, that the engine control system performs the intended functions in a manner which:

(i) Enables selected values of relevant control parameters to be maintained and the engine kept within the approved operating limits over changing atmospheric conditions in the declared flight envelope;

(ii) Complies with the operability requirements of §§ 33.51, 33.65 and 33.73, as appropriate, under all likely system inputs and allowable engine power or thrust demands, unless it can be demonstrated that this is not required for non-dispatchable specific control modes in the intended application, in which case the engine would be approved;

(iii) Allows modulation of engine power or thrust with adequate sensitivity over the declared range of engine operating conditions; and

(iv) Does not create unacceptable power or thrust oscillations.

(2) *Environmental limits.* The applicant must demonstrate, when complying with §§ 33.53 or 33.91, that the engine control system functionality will not be adversely affected by declared environmental conditions, including electromagnetic interference (EMI), High Intensity Radiated Fields (HIRF), and lightning. The limits to which the system has been qualified must be documented in the engine installation instructions.

(c) *Control transitions.* (1) The applicant must demonstrate that, when fault or failure results in a change from one control mode to another, from one channel to another, or from the primary system to the back-up system, the change occurs so that:

(i) The engine does not exceed any of its operating limitations;

(ii) The engine does not surge, stall, or experience unacceptable thrust or power changes or oscillations or other unacceptable characteristics; and

(iii) There is a means to alert the flight crew if the crew is required to initiate, respond to, or be aware of the control mode change. The means to alert the crew must be described in the engine installation instructions, and the crew action must be described in the engine operating instructions;

(2) The magnitude of any change in thrust or power and the associated transition time must be identified and described in the engine installation instructions and the engine operating instructions.

(d) *Engine control system failures.* The applicant must design and construct the engine control system so that:

(1) The rate for Loss of Thrust (or Power) Control (LOTC/LOPC) events, consistent with the safety objective associated with the intended application can be achieved;

(2) In the full-up configuration, the system is single fault tolerant, as determined by the Administrator, for electrical or electronic failures with respect to LOTC/LOPC events,

(3) Single failures of engine control system components do not result in a hazardous engine effect, and

(4) Foreseeable failures or malfunctions leading to local events in the intended aircraft installation, such as fire, overheat, or failures leading to damage to engine control system components, do not result in a hazardous engine effect due to engine control system failures or malfunctions.

(e) *System safety assessment.* When complying with §§ 33.28 and 33.75, the applicant must complete a System Safety Assessment for the engine control system. This assessment must identify faults or failures that result in a change in thrust or power, transmission of erroneous data, or an effect on engine operability together with the predicted frequency of occurrence of these faults or failures.

(f) *Protection systems.* (1) The design and functioning of engine control devices and systems, together with engine instruments and operating and maintenance instructions, must provide reasonable assurance that those engine operating limitations that affect turbine, compressor, fan, and turbosupercharger rotor structural integrity will not be exceeded in service.

(2) When electronic overspeed protection systems are provided, the design must include a means for testing, at least once per engine start/stop cycle, to establish the availability of the protection function. The means must be such that a complete test of the system can be achieved in the minimum number of cycles. If the test is not fully automatic, the requirement for a manual test must be contained in the engine instructions for operation.

(3) When overspeed protection is provided through hydromechanical or mechanical means, the applicant must demonstrate by test or other acceptable means that the overspeed function remains available between inspection and maintenance periods.

(g) *Software.* The applicant must design, implement, and verify all associated software to minimize the existence of errors by using a method, approved by the FAA, consistent with the criticality of the performed functions.

(h) *Aircraft-supplied data.* Single failures leading to loss, interruption or corruption of aircraft-supplied data (other than thrust or power command signals from the aircraft), or data shared between engines must:

(1) Not result in a hazardous engine effect for any engine; and

(2) Be detected and accommodated. The accommodation strategy must not result in an unacceptable change in thrust or power or an unacceptable change in engine operating and starting characteristics. The applicant must evaluate and document the effects of these failures on engine power or thrust, engine operability, and starting characteristics throughout the flight envelope.

(i) *Aircraft-supplied electrical power.* (1) The applicant must design the engine control system so that the loss, malfunction, or interruption of electrical power supplied from the aircraft to the engine control system will not result in any of the following:

(i) A hazardous engine effect, or

(ii) The unacceptable transmission of erroneous data.

(2) When an engine dedicated power source is required for compliance with § 33.28(i)(1), its capacity should provide sufficient margin to account for engine operation below idle where the engine control system is designed and expected to recover engine operation automatically.

(3) The applicant must identify and declare the need for, and the characteristics of, any electrical power supplied from the aircraft to the engine control system for starting and operating the engine, including transient and steady state voltage limits, in the engine instructions for installation.

(4) Low voltage transients outside the power supply voltage limitations declared in § 33.28(i)(3) must meet the requirements of § 33.28(i)(1). The engine control system must be capable of resuming normal operation when aircraft-supplied power returns to within the declared limits.

(j) *Air pressure signal.* The applicant must consider the effects of blockage or leakage of the signal lines on the engine control system as part of the system safety assessment of § 33.28(e) and must adopt the appropriate design precautions.

(k) *Automatic availability and control of engine power for 30-second OEI rating.* Rotorcraft engines having a 30-second OEI rating must incorporate a means, or a provision for a means, for automatic availability and automatic control of the 30-second OEI power within its operating limitations.

(l) *Engine shut down means.* Means must be provided for shutting down the engine rapidly.

(m) *Programmable logic devices.* The development of programmable logic

devices using digital logic or other complex design technologies must provide a level of assurance for the encoded logic commensurate with the hazard associated with the failure or malfunction of the systems in which the devices are located. The applicant must design, implement, and verify all associated logic to minimize the existence of errors by using a method, approved by the FAA, that is consistent with the criticality of the performed function.

6. Amend § 33.29 by adding new paragraphs (e) through (h) to read as follows:

§ 33.29 Instrument connection.

* * * * *

(e) The applicant must make provision for the installation of instrumentation necessary to ensure operation in compliance with engine operating limitations. Where, in presenting the safety analysis, or complying with any other requirement, dependence is placed on instrumentation that is not otherwise mandatory in the assumed aircraft installation, then the applicant must specify this instrumentation in the engine installation instructions and declare it mandatory in the engine approval documentation.

(f) As part of the System Safety Assessment of § 33.28(e), the applicant must assess the possibility and subsequent effect of incorrect fit of instruments, sensors, or connectors. Where necessary, the applicant must take design precautions to prevent incorrect configuration of the system.

(g) The sensors, together with associated wiring and signal conditioning, must be segregated, electrically and physically, to the extent necessary to ensure that the probability of a fault propagating from instrumentation and monitoring functions to control functions, or vice versa, is consistent with the failure effect of the fault.

(h) The applicant must provide instrumentation enabling the flight crew to monitor the functioning of the turbine cooling system unless appropriate inspections are published in the relevant manuals and evidence shows that:

(1) Other existing instrumentation provides adequate warning of failure or impending failure;

(2) Failure of the cooling system would not lead to hazardous engine effects before detection; or

(3) The probability of failure of the cooling system is extremely remote.

7. Amend § 33.53 by revising the section heading and paragraph (a) to read as follows:

§ 33.53 Engine system and component tests.

(a) For those systems and components that cannot be adequately substantiated in accordance with endurance testing of § 33.49, the applicant must conduct additional tests to demonstrate that systems or components are able to perform the intended functions in all declared environmental and operating conditions.

* * * * *

§ 33.67 [Amended]

8. Remove paragraph (d) from § 33.67.

9. Amend § 33.91 by revising the section heading and paragraph (a) to read as follows:

§ 33.91 Engine system and component tests.

(a) For those systems or components that cannot be adequately substantiated in accordance with endurance testing of § 33.87, the applicant must conduct additional tests to demonstrate that the systems or components are able to perform the intended functions in all declared environmental and operating conditions.

* * * * *

Issued in Washington, DC, on March 26, 2007.

John J. Hickey,

Director, Aircraft Certification Service.

[FR Doc. E7–6535 Filed 4–10–07; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2007–27532; Directorate Identifier 2007–CE–021–AD]

RIN 2120–AA64

Airworthiness Directives; Piaggio Aero Industries S.p.A. P–180 Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to adopt a new airworthiness directive (AD) for the products listed above. This proposed AD results from mandatory continuing airworthiness information (MCAI) originated by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

> One P–180 aircraft experienced a jamming of its longitudinal flight control cables. Investigations revealed that its fuselage drain holes were plugged, and water was trapped in the lower fuselage.
>
> As a consequence of plugged drain holes, water can accumulate and freeze when the aircraft reaches and holds altitudes where temperature is below the freezing point. If not corrected this may cause the loss of control of the airplane.

The proposed AD would require actions that are intended to address the unsafe condition described in the MCAI.

DATES: We must receive comments on this proposed AD by May 11, 2007.

ADDRESSES: You may send comments by any of the following methods:

- *DOT Docket Web Site:* Go to *http://dms.dot.gov* and follow the instructions for sending your comments electronically.
- *Fax:* (202) 493–2251.
- *Mail:* Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL–401, Washington, DC 20590–0001.
- *Hand Delivery:* Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the instructions for submitting comments.

Examining the AD Docket

You may examine the AD docket on the Internet at *http://dms.dot.gov;* or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (telephone (800) 647–5227) is in the **ADDRESSES** section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Sarjapur Nagarajan, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329–4145; fax: (816) 329–4090.

SUPPLEMENTARY INFORMATION:

Streamlined Issuance of AD

The FAA is implementing a new process for streamlining the issuance of ADs related to MCAI. This streamlined process will allow us to adopt MCAI