tolerance must be considered when showing compliance with § 25.571.

4. The folding wingtips and their operating mechanism must be designed for 65 knot, horizontal, ground-gust conditions in any direction as specified in § 25.415(a). Relevant design conditions must be defined using combinations of steady wind and taxi speeds determined by rational analysis utilizing airport wind data. The folding wingtip is not a control surface as specified in § 25.415(b)(c). Therefore, in lieu of the equation provided in § 25.415(b), the hinge moment may be calculated from rational wind-tunnel data. The 1.25 factor specified in § 25.415(d) need not be applied to the portion of the system that is isolated in flight and is not critical for safe flight and landing. The folding-wingtip system must be designed for the conditions specified in § 25.415(e), (f), and (g). Runway roughness, as specified in § 25.491, must be evaluated separately up to the maximum relevant airplane ground speeds. All of the above conditions must be applied to the folding wingtips in the extended (flight-deployed), folded, and transient positions.

5. The airplane must demonstrate acceptable handling qualities during rollout in a crosswind environment, as wingtips transition from the flight-deployed to folded position, as well as during the unlikely event of asymmetric wingtip folding.

6. The wingtip-fold operating mechanism must have stops that positively limit the range of motion of the wingtips. Each stop must be designed to the requirements of § 25.675.

7. The wingtip hinge structure must be designed for inertia loads acting parallel to the hinge line. In the absence of more rational data, the inertia loads may be assumed to be equal to KW as referenced in § 25.393. Hinge design must meet the requirements of § 25.657.

8. In lieu of § 25.1385(b): The forward position lights must be installed such that they consist of a red and a green light spaced laterally as far apart as practicable, and installed forward on the airplane, so that, with the airplane in the normal flying position and with the wingtips in the folded position for ground operations, the red light is on the left side and the green light is on the right side at approximately the level of the wingtips in the takeoff configuration. Each light must be approved and must meet the requirements of § 25.1385(a) and (d). The lights must not impair the vision of the flightcrew when the wingtips are in the folded and transient positions.

9. The applicant must include design features that ensure the wingtips are properly secured during ground operations, to protect ground personnel from bodily injury as well as to prevent damage to the airframe, ground structure, and ground support equipment.

10. The wingtips must have means to safeguard against unlocking from the extended, flight-deployed position in flight, as a result of failures, including the failure of any single structural element. All sources of airplane power that could initiate unlocking of the wingtips must be automatically isolated from the wingtip-fold operating system (including the latching and locking system) prior to flight, and it must not be possible to restore power to the system during flight. The wingtip latching and locking mechanisms must be designed so that, under all airplane flight-load conditions, no force or torque can unlatch or unlock the mechanisms. The latching system must include a means to secure the latches in the latched position, independent of the locking system. It must not be possible to position the lock in the locked position if the latches and the latching mechanisms are not in the latched position, and it must not be possible to unlatch the latches with the locks in the locked position.

Issued in Renton, Washington, on October 25, 2017.

Victor Wicklund,

Manager, Transport Airplane Directorate, Policy and Innovation Division, Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 27 and 29

[Docket No.: FAA–2017–0990]

RIN 2120–AK80

Normal and Transport Category Rotorcraft Certification

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to amend the certification standards of normal and transport category helicopters. The proposed changes are necessary to address modern designs currently used in the rotorcraft industry and would reduce the burden on applicants for certification of new rotorcraft designs. The proposed changes would reduce or eliminate the need for certain special conditions currently required to obtain certification of modern rotorcraft. The proposed changes would also incorporate the requirements of equivalent level of safety findings that the FAA has imposed as conditions for approving certain design features.

DATES: Send comments on or before January 30, 2018.

ADDRESSES: Send comments identified by docket number FAA–2017–0990 using any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov* and follow the online instructions for sending your comments electronically.
- *Mail:* Send comments to Docket Operations, M–30; U.S. Department of Transportation (DOT), 1200 New Jersey Avenue SE., Room W12–140, West Building Ground Floor, Washington, DC 20590–0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202–493–2251.

Privacy: In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to *www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *www.dot.gov/privacy.*

Docket: Background documents or comments received may be read at *http://www.regulations.gov* at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: For questions concerning this action, contact Sandra Shelley, Aviation Safety Engineer, Safety Management Group, FAA, 10101 Hillwood Pkwy., Fort Worth, TX 76177; telephone (817) 222–5110; email *sandra.shelley@faa.gov.*

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code. 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.

This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart III, Sections 44701 and 44704. Under section 44701, the FAA is charged with prescribing regulations promoting safe flight of civil aircraft in air commerce by prescribing minimum standards required in the interest of safety for the design and performance of aircraft. Under section 44704, the Administrator issues type certificates for aircraft, aircraft engines, propellers, and specified appliances when the Administrator finds the product is properly designed and manufactured, performs properly, and meets the regulations and minimum standards prescribed under section 44701(a). This rulemaking is within the scope of these authorities because it would promote safety by updating the existing minimum prescribed standards used during the type certification process.

I. Overview of Proposed Rule

The FAA proposes to revise regulations in title 14 Code of Federal Regulations (14 CFR) part 27 (Airworthiness Standards: Normal Category Rotorcraft) and part 29 (Airworthiness Standards: Transport Category Rotorcraft) related to the certification of rotorcraft. The proposed changes are necessary due to the extensive application of advancing technologies to rotorcraft. Existing airworthiness standards are inadequate because they do not address increasing design complexity. To address these advances, the FAA currently issues reoccurring special conditions, equivalent level of safety findings (ELOS), and means of compliance (MOC) issue papers. This proposed rule would address these problem areas by updating those standards that cause unnecessary burdens in cost and time to both the FAA and the rotorcraft industry. Compliance with these proposed regulatory changes would continue to be shown by the same testing, analysis, and inspections as in the current certification process and there would be a reduced burden through clarification of the safety requirements for the installed systems.

II. Background

A. Statement of the Problem

The FAA is proposing to update parts 27 and 29 because the regulations were originally published in 1964 and revisions to the airworthiness standards have not kept pace with advances in technology for rotorcraft. The FAA addresses the changes to technology by issuing reoccurring special conditions, ELOS findings, and MOC issue papers. Special conditions are prescribed under 14 CFR 21.16 when the FAA finds the applicable airworthiness standards do not contain adequate or appropriate safety standards because of a novel or unusual design feature. The FAA issues ELOS findings under § 21.21(b)(1) where a design does not literally comply with the airworthiness standards, but compensating factors exist that provide an equivalent level of safety. MOC issue papers document compliance methodologies that fall outside existing guidance and policies. These three processes are necessary to address new design features for which airworthiness standards are lacking, literal compliance with a rule cannot be achieved, or alternative methods of compliance are proposed. In some cases, advancements in technology have rendered the regulations obsolete.

These special conditions, ELOS findings, and MOC issue papers impact FAA resources and applicants' schedules for obtaining FAA approval of their products. By updating the affected standards, many special conditions, ELOS findings, and MOC issue papers would be unnecessary, thus reducing the burden on both the FAA and industry. We also propose to update a few of these rules to correct typographical errors.

Sections 27.1329 and 29.1329 do not adequately address the latest technology in flight control automation. These standards adequately addressed the functionality of autopilots for many years until recently with the development of more sophisticated functions, especially in normal category helicopters. The rotorcraft autopilot systems of previous years controlled only altitude, attitude, and heading. The more advanced autopilot systems also control airspeed, vertical speed, and hover. The current rule is inconsistent with FAA-accepted industry standards and practices. The current rule does not adequately cover the growing changes in the marketplace toward increased automation in the primary flight controls.

Sections 27.1335 and 29.1335 were originally written to address a particular flight control concept called ''flight director systems;'' however, the term itself has long been considered a standard part of a modern autopilot covered under §§ 27.1329 and 29.1329. In addition, the text we propose to remove from §§ 27.1335 and 29.1335 has been added to the proposed §§ 27.1329 and 29.1329 rules. The impact to industry would be minimal since the current material associated with these rules in Advisory Circular (AC) 27–1B, Certification of Normal Category Rotorcraft, and AC 29–2C, Certification of Transport Category Rotorcraft,[1] already recognizes industry standards and practices.

In appendix B to parts 27 and 29, the reference to Amendment 29–14 in section VIII needs to be removed. By citing the amendment within the rule, appendix B requires updating every time a relevant part 27 or part 29 rule is changed.

B. National Transportation Safety Board Recommendations

As a result of incidents involving lithium-ion batteries installed on aircraft, the National Transportation Safety Board (NTSB) issued Safety Recommendations A–14–032 through 036 to the FAA on May 22, 2014.[2] The NTSB recommended the FAA develop abuse tests to simulate failures observed in the incidents investigated and to address findings in recent research (A–14–032), perform these tests on new aircraft for certain installations (A–14–033), develop guidance on acceptable methods to induce thermal runaway that reliably simulates battery failures (A–14–034), review methods of compliance used to certificate in-service lithium-ion battery aircraft installations to ensure that they adequately protect against adverse effects of a cell thermal runaway (A–14–035), and develop policy to establish a panel of technical experts to advise on compliance and best practices for safely installing new technology (A–14–036). This proposed rule would incorporate these NTSB recommendations as they relate to rotorcraft into §§ 27.1353 and 29.1353.

III. Discussion of the Proposal

A. AC 27–1B and AC 29–2C Guidance

AC 27–1B and AC 29–2C provide information on methods of compliance with 14 CFR parts 27 and 29, which contain the airworthiness standards for normal and transport category rotorcraft. These ACs include methods of compliance in the areas of basic design, ground tests, and flight tests. With these proposed rules, the FAA is also proposing related changes to these ACs.

B. Powerplant Instruments (§§ 27.1305 and 29.1305)

Sections 27.1305 and 29.1305 prescribe the specific required powerplant instruments for rotorcraft.

[1] *http://rgl.faa.gov/Regulatory_and_Guidance_Library/.*

[2] *http://www.ntsb.gov/.*

The current rules specify separate indicators for many of these instruments, including engine manifold pressure and engine revolutions per minute (r.p.m.) for reciprocating engines, or gas producer speed, gas temperature, and torque for turbine engines.

Traditionally, pilots determine the powerplant performance conditions by monitoring individual gauges: Gas temperature, gas producer speed, and torque. Sections 27.1305 and 29.1305 establish the required powerplant instruments, and §§ 27.1321 and 29.1321 require that these instruments be easily visible to the pilot. These instruments measure the performance output of the engines and they collectively allow the pilot to continuously monitor the condition and health of the engines.

Many rotorcraft manufacturers have started to incorporate a synthesized power indicator (SPI) that provides a single indicator of engine performance. This single value displayed to the pilot is generally presented as a percentage of the nearest engine limit. The continuously displayed SPI presents the calculated value to the flight crew on the primary flight displays along with a caption indicating the nearest engine limiting parameter that is being used for the SPI displayed calculation. Acceptable designs allow the pilot to monitor engine performance and trends. Technologies such as an SPI, which combine multiple indicators into one, cannot meet the requirements of the current rules. By allowing means other than dedicated indicators, the proposed changes would permit designs incorporating an SPI or similar concepts. The FAA proposes to revise §§ 27.1305(e), (k), (n), and (o) and 29.1305(a)(5), (11), and (12) to allow other means of powerplant indication for these instruments. Section 27.1305(k) would continue to require a tachometer to indicate main rotor speed, but would also require a separate means to indicate the r.p.m. of each engine. The FAA also proposes to modify § 27.1305(o) by replacing ''turboshaft'' with ''turbine'' to be consistent with similar wording used throughout parts 27 and 29.

For part 29, the FAA proposes to add § 29.1305(b)(4) to permit manipulating the powerplant instruments to simulate one engine inoperative (OEI) conditions without damaging the engines. Section 29.1305 requires unbiased engine instrument indications to remain available to assure operation within safe limits. Several helicopter designs include, for Category A [3] training purposes (OEI Training Mode), a feature to represent a simulated engine failure by reducing power of all engines symmetrically. This simulated OEI condition is shown on the engine instruments by biasing the engine power, gas temperature, and gas producer and free power turbine tachometers on the primary flight display. To avoid confusion, the proposed § 29.1305(b)(4) would require additional annunciations to differentiate the simulated OEI condition from that of an actual engine failure.

The proposed changes to § 29.1305 would permit designs incorporating an OEI Training Mode. The FAA is not proposing changes to § 27.1305 because 14 CFR part 27 Category A rotorcraft are approved under appendix C to part 27, which requires compliance with § 29.1305.

C. Rotorcraft Equipment, Systems, and Installations (§§ 27.1309, 29.1309, and Appendix C to Part 27)

Sections 27.1309 and 29.1309 apply generally to all systems on the aircraft that do not otherwise have specific language to analyze the safety aspects of a system. The proposed changes to § 27.1309 would address advances in technology and increases in performance of normal category rotorcraft that were not envisioned when this rule was originally promulgated. Manufacturers installed complex and highly integrated systems in part 27 rotorcraft certificated for instrument flight rules (IFR) under appendix B and Category A operations under appendix C. At that time, the FAA did not envision complex and highly integrated systems would be installed in non-IFR and non-Category A normal category rotorcraft because industry was not employing this advanced technology or the technology did not exist. The analysis methods used to identify and determine the effects of system failures required in § 27.1309 are not adequate for today's complex and highly integrated systems. The use of this advanced technology resulted in an exponential increase in the number of ways rotorcraft systems can fail and a decrease in the discernibility of such failures. To ensure the reliability of the rotorcraft system is not compromised when utilizing complex and highly integrated technology, the FAA is proposing a more structured repeatable failure analysis.

The proposed change would also eliminate the distinction between single-engine and multi-engine rotorcraft. Section 27.1309 currently requires applicants to assess the effects of failures that may be introduced by installed systems and equipment, and distinguishes that the methods for assessing these failures may be different between single and multi-engine rotorcraft. This distinction was envisioned because multi-engine rotorcraft employed complex systems or systems with more severe failure effects. This distinction is now irrelevant since current analysis tools for technologies and associated failure effects do not consider number of engines as required input.

The proposed rule would clarify the requirement to perform a proper failure analysis and also recognize that the severity of failures can vary. Since the current rule was promulgated, the number of failure condition categories has varied. Current industry standards and practices recognize five failure condition categories: Catastrophic, Hazardous, Major, Minor, and No-Safety Effect. The proposed rule recognizes the maximum and minimum failure effects without prescribing the number of failure effect severity categories. This proposed change would also accommodate future changes in industry failure analysis techniques and reflect current certification practices. Additionally, it would eliminate the need to issue recurring special conditions and remove the additional time and cost to industry.

The changes proposed for §§ 27.1309 and 29.1309 would make the sections consistent. These changes would remove the necessity to reference § 29.1309 in appendix C of part 27. Although a specific reference to § 27.1309 would not be added, appendix C of part 27 already requires compliance with all of part 27 for Category A certification. These proposed changes would not eliminate the requirement to reassess compliance with § 27.1309 for applicants who request Category A operations. The FAA proposes to change appendix C to delete the reference to § 29.1309.

The FAA proposes to update § 29.1309 to be consistent with industry standards and practices for conducting failure analysis. These proposed changes are intended to allow flexibility in the types of assessments applicants may provide for showing compliance.

[3] In 14 CFR 1.1, Category A, with respect to transport category rotorcraft, means multiengine rotorcraft designed with engine and system isolation features specified in Part 29 and utilizing scheduled takeoff and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure.

Section 29.1309 currently requires applicants to assess the effects of failures resulting from installed systems and equipment. The current rule also identifies differences in the depth of assessing failures between Category A and Category B [4] rotorcraft. Complex and highly integrated systems were typically installed in part 29 rotorcraft certificated for Category A operations. Like the distinction between single-engine and multi-engine rotorcraft discussed previously, this distinction was made because the FAA did not envision that complex and highly integrated systems would be installed in rotorcraft certificated for Category B operations. This distinction is now irrelevant since current analysis tools for technologies and associated failure effects do not differ between Category A and Category B. The FAA proposes to add an introductory paragraph and revise paragraphs (a) and (b) to clarify that all equipment, systems, and installations on the rotorcraft must be analyzed and to remove the distinction between Category A and B. Although the effects of the failures may be different, the method for conducting the failure analysis is the same regardless of the operations evaluated.

The term ''warning'' in § 29.1309(c) and (d) has been interpreted as requiring a red level alert, when the intent was to notify the crew of all required annunciations. Therefore, the FAA proposes to modify paragraphs (c) and (d) by removing the terms ''warning'' and ''probability'' and replacing them with ''annunciation'' and ''effect'' respectively, and adding ''misleading data'' as a standard failure mode.

The FAA also proposes removing the requirements of § 29.1309(e) and (f) dealing specifically with electrical systems as they are covered by §§ 29.1351, 29.1353, 29.1355, and 29.1357.

D. Automatic Flight Guidance and Control Systems (§§ 27.1329, 27.1335, 29.1329, and 29.1335)

The FAA proposes to standardize terminology and combine the requirements for automatic pilot and flight director systems into one rule. Sections 27.1329 and 29.1329 address automatic pilot systems while §§ 27.1335 and 29.1335 address flight director systems. At the time these rules were promulgated, the functionality of designs prompted a separate rule for each system. Since then, systems for automatic control of flight have evolved. Modern designs include both automatic pilot and flight director systems and are now referred to as automatic flight guidance and control systems. Having these systems in separate rules that use different terminology has resulted in some confusion. The proposed changes would remove §§ 27.1335 and 29.1335 and incorporate the requirements into §§ 27.1329 and 29.1329. The FAA also proposes to use the term ''automatic flight guidance and control systems'' to address both automatic pilot and flight director systems, as well as the components.

E. Instrument Systems (§ 29.1333 and Appendix B to Parts 27 and 29)

Currently, § 29.1333(a) requires isolating the pilot instrument system from any other operating systems. At the time the rule was promulgated, these systems were federated, and connecting these systems increased the likelihood that a fault in one system would cause a fault in the pilot instrument system. This physical independence between the pilot system and other operating systems prevented the pilot system's reliability from being compromised by other operating systems. With the adoption of microprocessor technology and the trend towards complex and highly integrated systems, the requirement for physical independence is no longer appropriate. The use of this technology resulted in an exponential increase in the number of ways rotorcraft systems can fail and a decrease in the discernibility of such failures. To ensure the reliability of the pilot system is not compromised when utilizing microprocessors or highly integrated systems, modern designs allow redundant systems in the rotorcraft to compare information. Rotorcraft cannot utilize current technology, and redundant systems cannot compare information, when the pilot instrument system is isolated.

The FAA proposes to revise § 29.1333(a) and section VIII(b)(5)(i) of appendix B to parts 27 and 29 to make them applicable only to pneumatic systems. These proposed changes would allow for the use of modern technology to monitor and display highly integrated information regarding the rotorcraft that is currently not permitted. The FAA also proposes revising appendix B to parts 27 and 29 to remove the amendment level as previously discussed in section B of the preamble.

F. Electrical Systems and Equipment (§ 29.1351) and Energy Storage Systems (§§ 27.1353 and 29.1353)

The FAA proposes changing §§ 27.1353 and 29.1353 to provide a general regulation that is not directed at a particular battery or battery chemistry. The existing regulations were first written when backup electrical power was provided solely by a lead acid battery. The regulations were later amended to add requirements specific to the nickel-cadmium battery chemistry. Recently, batteries have been developed using various lithium chemistries. Lead acid, nickel-cadmium, and lithium batteries are all energy storage devices with different operational parameters and failure mechanisms. Rather than add specific lithium battery requirements, which would necessitate further amendments to address future energy storage chemistries, the FAA is proposing to generalize the regulation to accommodate any energy storage system. The proposed regulation would be less prescriptive than the existing regulation.

The FAA's intent with this proposal is that the modified regulation would be directly applicable to both lead acid and nickel-cadmium batteries without imposing additional requirements. In addition, this generalized approach would allow the FAA to consider batteries, fuel cells, or any other energy storage device not yet developed. Certain attributes tied to a specific battery chemistry currently found in the regulation would be addressed in AC 27–1B and AC 29–2C. These proposed changes to §§ 27.1353 and 29.1353 are intended to reduce the burden on the FAA and the rotorcraft industry associated with issuing special conditions and the related issue papers.

Section 29.1353, paragraphs (a) and (b) would be moved into § 29.1351 as paragraphs (e) and (f) respectively. These paragraphs are general requirements for all electrical systems and equipment installations. This change is proposed for consistency because those requirements are more appropriate in § 29.1351. This proposed change would standardize the requirements of §§ 27.1353 and 29.1353 and both section titles would be changed to ''Energy storage systems'' to properly reflect the new language.

G. Instrument Markings (§§ 27.1545, 29.1545, 27.1549, and 29.1549)

The FAA proposes to modify §§ 27.1545(b)(4), 27.1549(b), 29.1545(b)(4), and 29.1549(b) by eliminating the restriction of only using

[4] In 14 CFR 1.1, Category B, with respect to transport category rotorcraft, means single-engine or multiengine rotorcraft which do not fully meet all Category A standards. Category B rotorcraft have no guaranteed stay-up ability in the event of engine failure and unscheduled landing is assumed.

a ''green arc'' to indicate normal operating ranges. The existing rules require using a green arc for normal operating ranges on airspeed and powerplant instruments. Modern glass cockpits generally do not contain these green indicators. The philosophy utilized by modern cockpit designs is the ''dark, quiet cockpit,'' and only yellow or red is presented to indicate the aircraft is outside the normal or safe operating range. The absence of green arcs did not meet the requirement of the rule. Since the rule was promulgated, the FAA has determined that if all abnormal conditions are otherwise adequately indicated, green markings are unnecessary. These accepted design features include the pilot being able to easily interpret (by way of glancing at the instrument) whether a parameter is in a precautionary range (yellow) or beyond a limit (red). Almost every current rotorcraft design now incorporates a glass cockpit that requires an ELOS finding for the absence of green arcs. This proposal only affects the color utilized for the normal operating ranges and does not address graduation markings on an instrument.

The FAA also proposes to remove the term ''radial'' from §§ 27.1545(b)(1), 27.1549(a), 29.1545(b)(1), and 29.1549(a). At the time these rules were promulgated, cockpit instruments were circular, and therefore the technically-correct term ''radial line'' was used. Technological advances have since produced linear-scale gauges rendering the term ''radial'' obsolete. The term ''line'' is intended to represent a radial for round instruments or a line for tape or other style instruments.

The FAA further proposes to replace ''arc'' with ''range'' in §§ 27.1545(b)(3), 27.1545(b)(4), 27.1549(b), 27.1549(c), 27.1549(d), 29.1545(b)(3), 29.1545(b)(4), 29.1549(b), 29.1549(c), and 29.1549(d). When these regulations were created, cockpit instruments were circular. ''Arc'' is a term that only applies to round gauges and not to tape or other style instruments, which are in popular use today. The FAA intends ''range'' to be applied to round, tape, or other style instruments.

Finally, the FAA proposes to move the requirement for indicating V_{NE} (power-off) from § 27.1545(b)(2) to § 27.1545(b)(1)(iii) and modify it to encompass designs that incorporate a means other than a red cross-hatched line. The FAA has previously accepted designs that utilize a single red line for V_{NE} (power-on) and V_{NE} (power-off) when not concurrently displayed. Additionally, a red and white cross-hatched ''barber pole'' may not be the only acceptable method for distinguishing V_{NE} (power-off) from V_{NE} (power-on). The FAA also proposes to apply this change to § 29.1545.

H. Control Markings (§§ 27.1555 and 29.1555)

The FAA proposes to modify §§ 27.1555(c)(1) and 29.1555(c)(1) to permit more than one method to inform the pilot of the usable fuel system capacity. The existing rules require marking the usable fuel capacity at the fuel quantity indicator. Older, analog fuel gauges (many without numbers) used a placard to inform the pilot of the useful fuel quantity. With modern display systems, the location of the fuel quantity indicator, as well as the fact that the location may change, make it impractical to affix a placard next to the display. In addition, although useful fuel capacity is commonly included in the rotorcraft flight manual, the proposed alternate method would make this a requirement to address the lack of continuous display provided by a placard.

I. Typographical and Standardizing Corrections (§§ 27.87, 27.903, 29.955, 29.977, 29.1019, 29.1517, and 29.1587)

The FAA proposes to correct several typographical errors and to revise certain terminology differences between part 27 and part 29. First, the FAA proposes to revise the title of § 27.87 to coincide with the title of § 29.87, which is the equivalent transport category rotorcraft requirement. The title of § 29.87 was changed from ''Limiting height-speed envelope'' to ''Height-velocity envelope'' in order to ''agree with the commonly used term.'' However, the corresponding title to § 27.87 was not similarly changed at that time.

The FAA also proposes to replace the term ''height-speed'' with the term ''height-velocity'' throughout §§ 27.1587, 29.1587, and 29.1517 to be consistent with the title nomenclature of §§ 27.87 and 29.87. These proposed changes are intended to reduce confusion between and within parts 27 and 29.

The FAA also proposes to reformat § 27.903(d) so that it is consistent with the format of the § 29.903(e) engine restart capability requirement. When the § 27.903(d) restart capability requirements were adopted, the paragraph structure of the existing § 29.903(e) was not used even though the technical requirements were intended to be identical. The restart capability requirements of § 27.903(d) are not being changed in this proposal. These proposed changes are intended to reduce confusion between part 27 and part 29 by using a standard format for the same technical requirements.

The FAA proposes to correct a typographical error in §§ 29.955 and 29.1019. When § 29.1305 was updated to add a requirement for an oil pressure indicator for pressure-lubricated gearboxes, the numbering sequence was changed when the additional requirement was inserted at paragraph (a)(6). The § 29.1305(a)(17) fuel filter contamination warning was moved to paragraph (a)(18), and the § 29.1305(a)(18) turbine engine filter contamination warning was moved to paragraph (a)(19). However, the reference to the fuel filter contamination warning in § 29.955(a)(7) and the turbine engine filter contamination warning in § 29.1019(a)(5) were not updated to account for the change in numbering sequence. This proposed change would correct the reference at §§ 29.955(a)(7) and 29.1019(a)(5).

Finally, the FAA proposes to correct a typographical error in § 29.977. When § 29.977 was updated, it incorrectly carried over references to ''airplanes'' from an identical part 23 update. The proposed change would revise § 29.977 by removing the term ''airplanes'' and replacing it with the term ''rotorcraft.''

IV. Regulatory Notices and Analyses

A. Regulatory Evaluation

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 and Executive Order 13563 direct that each Federal agency shall propose or adopt a regulation only upon a reasoned 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, the Trade Act requires agencies to consider international standards and, where appropriate, that they be 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 the 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 to 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 FAA proposes to revise regulations in 14 CFR part 27 (Airworthiness Standards: Normal Category Rotorcraft) and part 29 (Airworthiness Standards: Transport Category Rotorcraft) related to the certification of rotorcraft. The proposed changes are necessary due to advancing technologies, which address a lack of adequate airworthiness standards resulting from increasing design complexity. As a result, many regulatory sections are subject to reoccurring special conditions, ELOS, and MOC issue papers. This proposed rulemaking would address these problem areas by updating the rules that cause unnecessary burdens in cost and time to both the FAA and the rotorcraft industry. The compliance cost to industry of these proposed regulation changes would be minimal. The justification for minimal cost by regulation is identified in sections 1 through 9 below.

1. Powerplant Instruments (§§ 27.1305 and 29.1305)

Changes to this section would allow for other means of compliance for powerplant instrument indicators. Other means of compliance are voluntary and do not impose any new cost but could be cost relieving for those that choose to voluntarily comply. Additionally, for § 29.1305, the FAA would permit manipulating the powerplant instruments to simulate OEI conditions without damaging the engines. However, helicopters with OEI Training Mode would require additional indicators to differentiate the OEI condition from actual engine failure, but these indicators are already being installed in current rotorcraft. The FAA believes this proposed change would impose minimal new cost to industry, as these are current industry practice.

2. Normal Category Rotorcraft Equipment, Systems, and Installations (§ 27.1309 and Appendix C to Part 27)

The FAA clarifies the requirement to perform proper failure analysis that would adopt the current industry practice of five failure category conditions. Additionally, the FAA eliminates the distinction between single-engine and multi-engine rotorcraft as this distinction is irrelevant because current analysis tools for technologies and associated failure effects no longer consider the number of engines. As these are current industry practice, the FAA asserts that the cost associated with these changes is minimal.

3. Transport Category Rotorcraft Equipment, Systems, and Installation (§ 29.1309)

This section would be updated to be consistent with industry standards and practices for conducting failure analysis. The proposed rule would clarify the requirement to perform a proper failure analysis and also recognize that the severity of failures can vary. The FAA asserts that performing a proper failure analysis would be minimal cost as it would codify current industry practices. Additionally, this section would be changed to accommodate future changes in industry failure analysis techniques and reflects current certification practices. Moving to a performance based standard would reduce the need to issue recurring special conditions and potentially save manufactures that choose to use an alternative means of compliance. Thus, these proposed changes would impose minimal cost.

4. Automatic Flight Guidance and Control Systems (§§ 27.1329, 27.1335, 29.1329, and 29.1335)

The FAA proposes to standardize terminology and combine the requirements for automatic pilot and flight director systems into one rule. Modern designs include both automatic pilot and flight director systems and are now referred to as automatic flight guidance and control systems. Changes to this section would match current industry practices at a minimal cost.

5. Instrument Systems (§ 29.1333 and Appendix B to Parts 27 and 29)

The FAA proposed change would allow for the use of more modern integrated systems to monitor and display highly integrated information regarding the rotorcraft. This section would impose minimal cost as the updates reflect modern industry practices of integrating instrument systems.

6. Electrical Systems and Equipment (§ 29.1351) and Energy Storage Systems (§§ 27.1353 and 29.1353)

The FAA proposed changes are less prescriptive and performance-based to accommodate different energy storage systems. The modified regulation would be directly applicable to both lead acid and nickel-cadmium batteries without imposing additional requirements. The change would allow the FAA to keep up with changes in technology. Cost to the industry should be minimal as performance based requirements allow for minimal cost options to meet the current standard.

7. Instrument Markings (§§ 27.1545, 29.1545, 27.1549, and 29.1549)

The proposed rule would remove the restrictive requirement for some instrument markings to allow alternative means of compliance, *i.e.*—green arc, radial red line, etc. Allowing for another means of compliance is voluntary and would be either a minimal cost and possibly cost relieving for manufactures that elect to outfit the rotorcraft with different instrument markings.

8. Control Markings (§§ 27.1555 and 29.1555)

The proposed rule would permit more than one method to inform the pilot of the usable fuel system capacity. However, alternative method must address the lack of continuous display. Changes to this section allows for more than one means of compliance. Offering alternative means of compliance allows industry to meet the requirement with the least costly option that can be cost relieving or the existing method of compliance, but either method would be no more than minimal cost.

9. Typographical and Standardizing Corrections (§§ 27.87, 27.903, 29.955, 29.977, 29.1019, 29.1517, and 29.1587)

Costs for proposed changes to this section are minimal as these are strictly typographical or standardizing corrections.

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. The FAA requests comments with supporting justification about the FAA determination of minimal cost impact.

B. 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 proposes to amend the certification standards of normal and transport category helicopters. The proposed changes reflect modern designs currently used in the rotorcraft industry and would reduce the burden on applicants for certification of new rotorcraft designs. The proposed changes would reduce or eliminate the need for certain special conditions currently required to obtain certification of modern rotorcraft. This proposed rule would merely revise and clarify FAA rulemaking procedures; the expected outcome will have only a minimal cost impact on any small entity affected by this rulemaking action.

If an agency determines that a rulemaking will not result in a significant economic impact on a substantial number of small entities, the head of the agency may so certify under section 605(b) of the RFA. Therefore, as provided in section 605(b), the head of the FAA certifies that this rulemaking will not result in a significant economic impact on a substantial number of small entities.

C. International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. 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 proposed rule and determined that the potential benefits are available to both domestic and international firms which would either have no affect or a positive effect on international trade.

D. 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 (in 1995 dollars) 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 $155 million in lieu of $100 million. This proposed rule does not contain such a mandate; therefore, the requirements of Title II of the Act do not apply.

E. 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. The FAA has determined that there would be no new requirement for information collection associated with this proposed rule.

F. International Compatibility and Cooperation

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has determined that there are no ICAO Standards and Recommended Practices that correspond to these proposed regulations.

G. Environmental Analysis

FAA Order 1050.1F 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. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 5–6.6.f and involves no extraordinary circumstances.

V. Executive Order Determinations

A. Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. The agency has determined that this action would not have a substantial direct effect on the States, or the relationship between the Federal 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.

B. Executive Order 13211, Regulations That Significantly Affect Energy Supply, Distribution, or Use

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

VI. Additional Information

A. Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. The agency also invites 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. To ensure the docket does not contain duplicate comments, commenters should send only one copy of written comments, or if comments are filed electronically, commenters should submit only one time.

The FAA will file in the docket all comments it receives, as well as a report summarizing each substantive public contact with FAA personnel concerning

this proposed rulemaking. Before acting on this proposal, the FAA will consider all comments it receives on or before the closing date for comments. The FAA will consider comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. The agency may change this proposal in light of the comments it receives.

Proprietary or Confidential Business Information: Commenters should not file proprietary or confidential business information in the docket. Such information must be sent or delivered directly to the person identified in the **FOR FURTHER INFORMATION CONTACT** section of this document, and marked as proprietary or confidential. If submitting information on a disk or CD ROM, mark the outside of the disk or CD ROM, and identify electronically within the disk or CD ROM the specific information that is proprietary or confidential.

Under 14 CFR 11.35(b), if the FAA is aware of proprietary information filed with a comment, the agency does not place it in the docket. It is held in a separate file to which the public does not have access, and the FAA places a note in the docket that it has received it. If the FAA receives a request to examine or copy this information, it treats it as any other request under the Freedom of Information Act (5 U.S.C. 552). The FAA processes such a request under Department of Transportation procedures found in 49 CFR part 7.

B. Availability of Rulemaking Documents

An electronic copy of rulemaking documents may be obtained from the Internet by—

1. Searching the Federal eRulemaking Portal (*http://www.regulations.gov*);

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.gpo.gov/fdsys/*.

Copies may also be obtained 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. Commenters must identify the docket number of this rulemaking.

All documents the FAA considered in developing this proposed rule, including economic analyses and technical reports, may be accessed from the Internet through the Federal eRulemaking Portal referenced in item (1) above.

List of Subjects

14 CFR Part 27

Aircraft, Aviation safety.

14 CFR Part 29

Aircraft, Aviation 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 27—AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

■ 1. The authority citation for part 27 continues to read as follows:

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

■ 2. Amend § 27.87 by revising the section heading and paragraph (a) introductory text to read as follows:

§ 27.87 Height-velocity envelope.

(a) If there is any combination of height and forward speed (including hover) under which a safe landing cannot be made under the applicable power failure condition in paragraph (b) of this section, a limiting height-velocity envelope must be established (including all pertinent information) for that condition, throughout the ranges of—

* * * * *

■ 3. Amend § 27.903 by revising paragraph (d) to read as follows:

§ 27.903 Engines.

* * * * *

(d) *Restart capability.* (1) A means to restart any engine in flight must be provided.

(2) Except for the in-flight shutdown of all engines, engine restart capability must be demonstrated throughout a flight envelope for the rotorcraft.

(3) Following the in-flight shutdown of all engines, in-flight engine restart capability must be provided.

■ 4. Amend § 27.1305 by revising paragraphs (e), (k) introductory text, (n), and (o) to read as follows:

§ 27.1305 Powerplant instruments.

* * * * *

(e) A means to indicate manifold pressure for each altitude engine.

* * * * *

(k) A means to indicate the r.p.m. of each engine and at least one tachometer, as applicable, for:

* * * * *

(n) A means to indicate the gas temperature for each turbine engine.

(o) A means to enable the pilot to determine the torque of each turbine engine, if a torque limitation is established for that engine under § 27.1521(e).

* * * * *

■ 5. Revise § 27.1309 to read as follows:

§ 27.1309 Equipment, systems, and installations.

The equipment, systems, and installations whose functioning is required by this subchapter must be designed and installed to ensure that they perform their intended functions under any foreseeable operating condition. For any item of equipment or system whose failure has not been specifically addressed by another requirement in this chapter, the following requirements also apply:

(a) The design of each item of equipment, system, and installation must be analyzed separately and in relation to other rotorcraft systems and installations to determine and identify any failure that would affect the capability of the rotorcraft or the ability of the crew to perform their duties in all operating conditions.

(b) Each item of equipment, system, and installation must be designed and installed so that:

(1) The occurrence of any catastrophic failure condition is extremely improbable;

(2) The occurrence of any minor failure condition is no more than probable; and

(3) For the occurrence of any other failure condition, the probability of the failure condition must be inversely proportional to its consequences.

(c) A means to alert the crew in the event of a failure must be provided when an unsafe system operating condition exists to enable them to take corrective action. Systems, controls, and associated monitoring and crew alerting means must be designed to minimize crew errors that could create additional hazards.

(d) Compliance with the requirements of this section must be shown by analysis and, where necessary, by ground, flight, or simulator tests. The analysis must account for:

(1) Possible modes of failure, including malfunctions and misleading data and input from external sources;

(2) The effect of multiple failures and latent failures;

(3) The resulting effects on the rotorcraft and occupants, considering the stage of flight and operating conditions; and

(4) The crew warning cues and the corrective action required.

■ 6. Amend § 27.1329 by revising the section heading, adding introductory

text, and revising paragraphs (a), (d), and (e) to read as follows:

§ 27.1329 Automatic flight guidance and control system.

For the purpose of this subpart, an automatic flight guidance and control system may consist of an autopilot, flight director, or a component that interacts with stability augmentation or trim.

(a) Each automatic flight guidance and control system must be designed so that it:

(1) Can be overpowered by the pilot to allow control of the rotorcraft;

(2) Provides a means to disengage the system by the pilot to prevent it from interfering with the control of the rotorcraft; and

(3) Provides a means to indicate to the flight crew its current mode of operation.

Selector switch position is not acceptable as a means of indication.

* * * * *

(d) The system must be designed so that, within the range of adjustment available to the pilot, it cannot produce hazardous loads on the rotorcraft, or create hazardous deviations in the flight path, under any flight condition appropriate to its use or in the event of a malfunction.

(e) If the automatic flight guidance and control system integrates signals from auxiliary controls or furnishes signals for operation of other equipment, there must be a means to prevent improper operation.

* * * * *

§ 27.1335 [Removed]

■ 7. Remove § 27.1335.

■ 8. Revise § 27.1353 to read as follows:

§ 27.1353 Energy storage systems.

Energy storage systems must be designed and installed as follows:

(a) Energy storage systems must provide automatic protective features for any conditions that could prevent continued safe flight and landing.

(b) Energy storage systems must not emit any explosive or toxic gases, smoke, or fluids except through designed venting provisions and must not accumulate in hazardous quantities within the rotorcraft.

(c) Corrosive fluids or gases that escape from the system must not damage surrounding structures, adjacent equipment, or systems necessary for continued safe flight and landing.

(d) The maximum amount of heat that can be generated during any operation or under any failure condition of the energy storage system or its individual components must not result in any hazardous effect on rotorcraft structure, equipment, or systems necessary for continued safe flight and landing.

(e) Energy storage system installations required for continued safe flight and landing of the rotorcraft must have monitoring features and a means to indicate to the pilot the status of all critical system parameters.

■ 9. Amend § 27.1545 by revising paragraph (b) to read as follows:

§ 27.1545 Airspeed indicator.

* * * * *

(b) The following markings must be made:

(1) A red line—

(i) For rotorcraft other than helicopters, at V_{NE}.

(ii) For helicopters, at V_{NE} (power-on).

(iii) For helicopters, at V_{NE} (power-off). If V_{NE} (power-off) is less than V_{NE} (power-on) and both are simultaneously displayed, the red line at V_{NE} (power-off) must be clearly distinguishable from the red line at V_{NE} (power-on).

(2) [Reserved]

(3) For the caution range, a yellow range.

(4) For the normal operating range, a green or unmarked range.

* * * * *

■ 10. Amend § 27.1549 by revising paragraphs (a) through (d) to read as follows:

§ 27.1549 Powerplant instruments.

* * * * *

(a) Each maximum and, if applicable, minimum safe operating limit must be marked with a red line;

(b) Each normal operating range must be marked as a green or unmarked range;

(c) Each takeoff and precautionary range must be marked with a yellow range or yellow line; and

(d) Each engine or propeller range that is restricted because of excessive vibration stresses must be marked with red ranges or red lines.

* * * * *

■ 11. Amend § 27.1555 by revising paragraph (c)(1) to read as follows:

§ 27.1555 Control markings.

* * * * *

(c) * * *

(1) For fuel systems having no selector controls, the usable fuel capacity of the system must be indicated at the fuel quantity indicator unless it is:

(i) Provided by another system or equipment readily accessible to the pilot; and

(ii) Contained in the limitations section of the rotorcraft flight manual.

* * * * *

■ 12. Amend § 27.1587 by revising paragraph (a)(1) to read as follows:

§ 27.1587 Performance information.

(a) * * *

(1) Enough information to determine the limiting height-velocity envelope.

* * * * *

■ 13. Amend appendix B to part 27 by revising paragraphs VIII introductory text and VIII(b)(5)(i) to read as follows:

Appendix B to Part 27—Airworthiness Criteria for Helicopter Instrument Flight

* * * * *

VIII. *Equipment, systems, and installation.* The basic equipment and installation must comply with §§ 29.1303, 29.1431, and 29.1433, with the following exceptions and additions:

* * * * *

(b) * * *

(5) * * *

(i) For pneumatic systems, only the required flight instruments for the first pilot may be connected to that operating system;

* * * * *

Appendix C to Part 27 [Amended]

■ 14. In appendix C to part 27, amend paragraph C27.2 by removing the entry ''29.1309(b)(2) (i) and (d)-Equipment, systems, and installations.''

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

■ 15. The authority citation for part 29 continues to read as follows:

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

■ 16. Amend § 29.955 by revising paragraph (a)(7) to read as follows:

§ 29.955 Fuel flow.

(a) * * *

(7) The fuel filter required by § 29.997 is blocked to the degree necessary to simulate the accumulation of fuel contamination required to activate the indicator required by § 29.1305(a)(18).

* * * * *

■ 17. Amend § 29.977 by revising paragraphs (a)(1) and (2) to read as follows:

§ 29.977 Fuel tank outlet.

(a) * * *

(1) For reciprocating engine powered rotorcraft, have 8 to 16 meshes per inch; and

(2) For turbine engine powered rotorcraft, prevent the passage of any object that could restrict fuel flow or damage any fuel system component.

* * * * *

■ 18. Amend § 29.1019 by revising paragraph (a)(5) to read as follows:

§ 29.1019 Oil strainer or filter.

(a) * * *

(5) An oil strainer or filter that has no bypass, except one that is installed at an oil tank outlet, must have a means to connect it to the warning system required in § 29.1305(a)(19).

* * * * *

■ 19. Amend § 29.1305 by revising paragraphs (a)(5), (11), and (12) and adding (b)(4) to read as follows:

§ 29.1305 Powerplant instruments.

(a) * * *

(5) A means to indicate manifold pressure for each reciprocating engine of the altitude type;

* * * * *

(11) A means to indicate the gas temperature for each turbine engine;

(12) A means to indicate the gas producer speed for each turbine engine;

* * * * *

(b) * * *

(4) For each Category A rotorcraft for which OEI Training Mode is requested, a means must be provided to indicate to the pilot the simulation of an engine failure, the annunciation of that simulation, and a representation of the OEI power being provided.

* * * * *

■ 20. Revise § 29.1309 to read as follows:

§ 29.1309 Equipment, systems, and installations.

The equipment, systems, and installations whose functioning is required by this subchapter must be designed and installed to ensure that they perform their intended functions under any foreseeable operating condition. For any item of equipment or system whose failure has not been specifically addressed by another requirement in this chapter, the following requirements also apply:

(a) The design of each item of equipment, system, and installation must be analyzed separately and in relation to other rotorcraft systems and installations to determine and identify any failure that would affect the capability of the rotorcraft or the ability of the crew to perform their duties in all operating conditions.

(b) Each item of equipment, system, and installation must be designed and installed so that:

(1) The occurrence of any catastrophic failure condition is extremely improbable;

(2) The occurrence of any minor failure condition is no more than probable; and

(3) For the occurrence of any other failure condition, the probability of the failure condition must be inversely proportional to its consequences.

(c) A means to alert the crew in the event of a failure must be provided when an unsafe system operating condition exists and to enable them to take corrective action. Systems, controls, and associated monitoring and crew alerting means must be designed to minimize crew errors that could create additional hazards.

(d) Compliance with the requirements of this section must be shown by analysis and, where necessary, by ground, flight, or simulator tests. The analysis must account for:

(1) Possible modes of failure, including malfunctions and misleading data and input from external sources;

(2) The effect of multiple failures and latent failures;

(3) The resulting effects on the rotorcraft and occupants, considering the stage of flight and operating conditions; and

(4) The crew warning cues and the corrective action required.

■ 21. Amend § 29.1329 by revising the section heading, adding introductory text, and revising paragraphs (a), (d), and (e) to read as follows:

§ 29.1329 Automatic flight guidance and control system.

For the purpose of this subpart, an automatic flight guidance and control system may consist of an autopilot, flight director, or a component that interacts with stability augmentation or trim.

(a) Each automatic flight guidance and control system must be designed so that it:

(1) Can be overpowered by the pilot to allow control of the rotorcraft;

(2) Provides a means to disengage the system by the pilot to prevent it from interfering with the control of the rotorcraft; and

(3) Provides a means to indicate to the flight crew its current mode of operation. Selector switch position is not acceptable as a means of indication.

* * * * *

(d) The system must be designed so that, within the range of adjustment available to the pilot, it cannot produce hazardous loads on the rotorcraft, or create hazardous deviations in the flight path, under any flight condition appropriate to its use or in the event of a malfunction.

(e) If the automatic flight guidance and control system integrates signals from auxiliary controls or furnishes signals for operation of other equipment, there must be a means to prevent improper operation.

* * * * *

■ 22. Amend § 29.1333 by revising paragraph (a) to read as follows:

§ 29.1333 Instrument systems.

* * * * *

(a) For pneumatic systems, only the required flight instruments for the first pilot may be connected to that operating system.

* * * * *

§ 29.1335 [Removed]

■ 23. Remove § 29.1335.

■ 24. Amend § 29.1351 by adding paragraphs (e) and (f) to read as follows:

§ 29.1351 General.

* * * * *

(e) Electrical equipment, controls, and wiring must be installed so that operation of any one unit or system of units will not adversely affect the simultaneous operation of any other electrical unit or system essential to safe operation.

(f) Cables must be grouped, routed, and spaced so that damage to essential circuits will be minimized if there are faults in heavy current-carrying cables.

* * * * *

■ 25. Revise § 29.1353 to read as follows:

§ 29.1353 Energy storage systems.

Energy storage systems must be designed and installed as follows:

(a) Energy storage systems must provide automatic protective features for any conditions that could prevent continued safe flight and landing.

(b) Energy storage systems must not emit any explosive or toxic gases, smoke, or fluids except through designed venting provisions and must not accumulate in hazardous quantities within the rotorcraft.

(c) Corrosive fluids or gases that escape from the system must not damage surrounding structures, adjacent equipment, or systems necessary for continued safe flight and landing.

(d) The maximum amount of heat that can be generated during any operation or under any failure condition of the energy storage system or its individual components must not result in any hazardous effect on rotorcraft structure, equipment, or systems necessary for continued safe flight and landing.

(e) Energy storage system installations required for continued safe flight and landing of the rotorcraft must have monitoring features and a means to indicate to the pilot the status of all critical system parameters.

■ 26. Amend § 29.1517 by revising the section heading to read as follows:

§ 29.1517 Limiting height-velocity envelope.

* * * * *

■ 27. Amend § 29.1545 by revising paragraph (b) to read as follows:

§ 29.1545 Airspeed indicator.

* * * * *

(b) The following markings must be made:

(1) A red line:

(i) For rotorcraft other than helicopters, at V_{NE}.

(ii) For helicopters, at a V_{NE} (power-on).

(iii) For helicopters, at V_{NE} (power-off). If V_{NE} (power-off) is less than V_{NE} (power-on) and both are simultaneously displayed, the red line at V_{NE} (power-off) must be clearly distinguishable from the red line at V_{NE} (power-on).

(2) [Reserved]

(3) For the caution range, a yellow range.

(4) For the normal operating range, a green or unmarked range.

* * * * *

■ 28. Amend § 29.1549 by revising paragraphs (a) through (d) to read as follows:

§ 29.1549 Powerplant instruments.

* * * * *

(a) Each maximum and, if applicable, minimum safe operating limit must be marked with a red line;

(b) Each normal operating range must be marked as a green or unmarked range;

(c) Each takeoff and precautionary range must be marked with a yellow range or yellow line;

(d) Each engine or propeller range that is restricted because of excessive vibration stresses must be marked with red ranges or red lines; and

* * * * *

■ 29. Amend § 29.1555 by revising paragraph (c)(1) to read as follows:

§ 29.1555 Control markings.

* * * * *

(c) * * *

(1) For fuel systems having no selector controls, the usable fuel capacity of the system must be indicated at the fuel quantity indicator unless it is:

(i) Provided by another system or equipment readily accessible to the pilot; and

(ii) Contained in the limitations section of the rotorcraft flight manual.

* * * * *

■ 30. Amend § 29.1587 by revising paragraph (b)(6) to read as follows:

§ 29.1587 Performance information.

* * * * *

(b) * * *

(6) The height-velocity envelope except for rotorcraft incorporating this as an operating limitation;

* * * * *

■ 31. Amend appendix B to part 29 by revising paragraphs VIII introductory text and VIII(b)(5)(i) to read as follows:

Appendix B to Part 29—Airworthiness Criteria for Helicopter Instrument Flight

* * * * *

VIII. *Equipment, systems, and installation.* The basic equipment and installation must comply with §§ 29.1303, 29.1431, and 29.1433, with the following exceptions and additions:

* * * * *

(b) * * *

(5) * * *

(i) For pneumatic systems, only the required flight instruments for the first pilot may be connected to that operating system;

* * * * *

Issued under authority provided by (Consult AGC) 49 U.S.C. 106(f), 44701(a), and 44703 in Washington, DC, on October 19, 2017.

David W. Hempe,

Deputy Executive Director for Regulatory Operations, Aircraft Certification Service.

[FR Doc. 2017–23360 Filed 10–31–17; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Docket No. FAA–2017–0848; Airspace Docket No. 13–ANE–2]

Proposed Amendment of Class E Airspace, Berlin, NH

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This action proposes to amend Class E airspace at Berlin, NH, due to the addition of a localizer performance with vertical guidance function (LPV) instrument procedure to runway 18 being created for Berlin Regional Airport (formerly Berlin Municipal Airport). This action also would update the geographic coordinates of the airport to coincide with the FAA's aeronautical database, and would enhance the safety and management of instrument flight rules operations (IFR) at the airport.

DATES: Comments must be received on or before December 18, 2017.

ADDRESSES: Send comments on this proposal to: U.S. Department of Transportation, Docket Operations, 1200 New Jersey Avenue SE., West Bldg. Ground Floor, Rm. W12–140, Washington, DC 20590; Telephone: (202) 366–9826. You must identify the Docket No. FAA–2017–0848; Airspace Docket No. 13–ANE–2, at the beginning of your comments. You may also submit and review received comments through the Internet at *http://www.regulations.gov.* You may review the public docket containing the proposal, any comments received, and any final disposition in person in the Dockets Office between 9:00 a.m. and 5:00 p.m., Monday through Friday, except federal holidays.

FAA Order 7400.11B, Airspace Designations and Reporting Points, and subsequent amendments can be viewed on line at *http://www.faa.gov/air_traffic/publications/.* For further information, you can contact the Airspace Policy Group, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone: (202) 267–8783. The Order is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of FAA Order 7400.11B at NARA, call (202) 741–6030, or go to *https://www.archives.gov/federal-register/cfr/ibr-locations.html.*

FAA Order 7400.11, Airspace Designations and Reporting Points, is published yearly and effective on September 15.

FOR FURTHER INFORMATION CONTACT: John Fornito, Operations Support Group, Eastern Service Center, Federal Aviation Administration, P.O. Box 20636, Atlanta, Georgia 30320; telephone (404) 305–6364.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue rules regarding aviation safety is found in Title 49 of the United States Code. 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. This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart I, Section 40103. Under that section, the FAA is charged with prescribing regulations to assign the use of airspace necessary to ensure the safety of aircraft and the efficient use of airspace. This regulation is within the scope of that authority as it would amend Class E airspace at Berlin