Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 1, 23, 25, 27, 29, 61, 91, 121, 125, and 135

[Docket No.: FAA–2013–0485; Notice No. 1209]

RIN 2120–AJ94

Revisions to Operational Requirements for the Use of Enhanced Flight Vision Systems (EFVS) and to Pilot Compartment View Requirements for Vision Systems

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA is proposing to permit operators to use an Enhanced Flight Vision System (EFVS) in lieu of natural vision to continue descending from 100 feet above the touchdown zone elevation to the runway and land on certain straight-in instrument approach procedures under instrument flight rules (IFR). This proposal would also permit certain operators using EFVS-equipped aircraft to dispatch, release, or takeoff under IFR, and to initiate and continue an approach, when the destination airport weather is below authorized visibility minimums for the runway of intended landing. Under this proposal, pilot training, recent flight experience, and proficiency would be required for operators who use EFVS in lieu of natural vision to descend below decision altitude, decision height, or minimum descent altitude. EFVS-equipped aircraft conducting operations to touchdown and rollout would be required to meet additional airworthiness requirements. This proposal would also revise pilot compartment view certification requirements for vision systems using a transparent display surface located in the pilot's outside view. The proposal would take advantage of advanced vision capabilities thereby achieving the NextGen goals of increasing access, efficiency, and throughput at many airports when low visibility is the limiting factor. Additionally, it would enable EFVS operations in reduced visibilities on a greater number of approach procedure types while maintaining an equivalent level of safety.

DATES: Send comments on or before September 9, 2013.

ADDRESSES: Send comments identified by docket number FAA–2013–0485 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 USC 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 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 technical questions concerning this action, contact Terry King, Flight Technologies and Procedures Division, AFS–400, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone (202) 385–4586; email *Terry.King@faa.gov.*

For legal questions concerning this proposed rule contact Paul G. Greer, Office of the Chief Counsel, Regulations Division, AGC–200, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone (202) 267–3073; email *Paul.G.Greer@faa.gov.*

SUPPLEMENTARY INFORMATION: See the ''Additional Information'' section for information on how to comment on this proposal and how the FAA will handle comments received. The ''Additional Information'' section also contains related information about the docket and the handling of proprietary or confidential business information. In addition, there is information on obtaining copies of related rulemaking documents.

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 49 U.S.C. 40103, which vests the Administrator with broad authority to prescribe regulations to ensure the safety of aircraft and the efficient use of airspace, and 49 U.S.C. 44701(a)(5), which requires the Administrator to promulgate regulations and minimum standards for other practices, methods, and procedures necessary for safety in air commerce and national security.

List of Abbreviations and Acronyms Frequently Used In This Document

AEG Aircraft Evaluation Group
ASR Airport surveillance radar
CAA Civil aviation authority
DA Decision altitude
DH Decision height
EASA European Aviation Safety Agency
EFVS Enhanced Flight Vision System
FAF Final approach fix
FSB Flight Standardization Board
FPARC Flight path angle reference cue
FPV Flight path vector
HUD Head up display
IAP Instrument approach procedure
ILS Instrument landing system
IFR Instrument flight rules
IR Infrared
LOA Letter of authorization
LODA Letter of deviation authority
MASPS Minimum aviation system performance standards

MDA Minimum descent altitude
MSpec Management specification
NextGen Next Generation Air Transportation System
NOTAM Notice to airmen
NTSB National Transportation Safety Board
OEM Original equipment manufacturer
OpSpec Operation specification
PAR Precision approach radar
PIC Pilot in Command
RVR Runway visual range
VFR Visual flight rules

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I. Overview of Proposed Rule

Regulations pertaining to EFVS can be found in Title 14, Code of Federal Regulations (14 CFR) 1.1, 91.175(l) and (m), 121.651(c) and (d), 125.381(c), and 135.225(c). Section 91.175(l) authorizes the use of EFVS to determine that the enhanced flight visibility is at least the minimum prescribed for the approach being flown, and to identify the visual references that must be observed in order to descend below decision altitude/decision height (DA/DH) or minimum descent altitude (MDA) to 100 feet above the touchdown zone elevation. Natural vision must be used below 100 feet. Sections 121.651(c), 125.325, 125.381(c), and 135.225(c) place additional limitations on air carriers and commercial operators using EFVS.

Under current regulations, an EFVS can be used in lieu of natural vision to descend below DA/DH or MDA down to 100 feet above touchdown zone elevation on certain instrument approach procedures, provided specific regulatory conditions are met. When the destination airport weather is forecast or reported to be below authorized minimums at the estimated time of arrival, persons conducting operations under parts 121, 125, and 135 have certain dispatch, flight release, and IFR takeoff limitations as well as limitations related to initiating an approach, continuing an approach beyond the final approach fix (FAF), or beginning the final approach segment of an instrument approach procedure. The FAA proposes to revise the regulations to specify additional conditions under which an aircraft equipped with EFVS can be dispatched, released, or permitted to take off. It would also specify the conditions under which an operator of an EFVS-equipped aircraft may begin an approach when the weather is reported to be below authorized minimums. Additionally, it would permit an EFVS to be used to continue descent below 100 feet above the touchdown zone elevation when the required visual references can be observed using the EFVS.

Currently, part 61 does not contain any training or recent flight experience requirements to conduct EFVS operations. To ensure that an appropriate level of safety is maintained for all EFVS operations, the FAA proposes to amend part 61 to require initial training as well as new recent flight experience and proficiency requirements for persons conducting EFVS operations.

Current regulations also specify that no pilot operating an aircraft on a Category II or Category III approach that requires the use of a DA/DH may continue the approach below the authorized decision height using an EFVS in lieu of natural vision. The FAA also proposes to amend the regulations to permit an EFVS to be used during Category II and Category III approaches.

Additionally, the FAA uses special conditions issued under § 21.16 to approve vision systems in type certificated aircraft. The FAA proposes to eliminate the need to issue special conditions for these systems by revising the pilot compartment view certification requirements in the airworthiness standards found in parts 23, 25, 27, and 29.

Following is a detailed overview of the proposed amendments:

- Section 1.1 would be amended to better define the components of an EFVS and to define the term ''EFVS operation.''
- Sections 23.773, 25.773, 27.773, and 29.773 would be amended to establish certification requirements for vision systems with a transparent display surface located in the pilot's outside view.
- Section 61.31 would be amended to require training for EFVS operations.
- Section 61.57 would be amended to require recent flight experience or a proficiency check for a person conducting an EFVS operation or acting as pilot in command (PIC) during an EFVS operation.
- Sections 91.175 (l) and (m), which contain the existing EFVS regulations, would be redesignated as proposed § 91.176. The FAA proposes to place all EFVS regulations contained in part 91, except those pertaining to Category II and III operations, in a single new section for organizational and regulatory clarity.
- Section 91.189 would be amended to permit an EFVS to be used to identify the visual references required to continue an approach below the authorized decision height during Category II and Category III approaches.
- Section 91.905 would be amended to add § 91.176 to the list of rules subject to waiver.
- Sections 121.613 and 121.615 would be amended to expand the conditions under which an EFVS can be used to dispatch or flight release an aircraft when the visibility is forecast or reported to be below authorized minimums for a destination airport.
- Section 121.651 would be amended to permit the pilot of an EFVS-equipped

aircraft to continue an approach past the FAF or to begin the final approach segment of an instrument approach procedure when the weather is reported to be below authorized visibility minimums. Section 121.651 would also be amended to permit EFVS-equipped part 121 operators to conduct EFVS operations in accordance with proposed § 91.176 and their operations specifications issued for EFVS operations.

- Sections 125.361 and 125.363 would be amended to permit flight release for EFVS-equipped aircraft when weather reports or forecasts indicate that arrival weather conditions at the destination airport will be below authorized minimums.
- Sections 125.325 and 125.381 would be amended to permit the pilot of an EFVS-equipped aircraft to execute an instrument approach procedure when the weather is reported to be below authorized visibility minimums. Section 125.381 would also be amended to permit EFVS-equipped part 125 operators to conduct EFVS operations in accordance with proposed § 91.176 and their operations specifications.
- Section 135.219 would be amended to permit flights to be initiated for EFVS-equipped aircraft when weather reports or forecasts indicate that arrival weather conditions at the destination airport will be below authorized minimums.
- Section 135.225 would be amended to permit the pilot of an EFVS-equipped aircraft to initiate an instrument approach procedure when the reported visibility is below the authorized visibility minimums for the approach. Section 135.225 would also be amended to permit EFVS-equipped part 135 operators to conduct EFVS operations in accordance with proposed § 91.176 and their operations specifications issued for EFVS operations.
- Additional amendments would be made to conform to the proposed regulatory changes.

Each of these proposed amendments is discussed in detail in the sections that follow. The FAA has attempted to use regulatory language that is performance-based and not limited to a specific sensor technology. The FAA believes this action would accommodate future growth in real-time sensor technologies used in most enhanced vision systems. The proposal would maximize the benefits of rapidly evolving instrument approach procedures and advanced flight deck technology to increase access and capacity during low visibility operations. The proposal is consistent with the agency's Next Generation Air Transportation System (NextGen) goals and operational improvements. An operator's decision to equip with EFVS is voluntary; however, the operator would be required to conduct EFVS operations in accordance with this proposal.

EFVS-equipped aircraft conducting operations to touchdown and rollout would be required to meet additional airworthiness requirements. Only enhanced flight vision systems that utilize a real-time image of the external scene topography would be addressed by the operational requirements proposed in this notice. Synthetic vision systems, which use a computer-generated image of the external scene topography from the perspective of the flight deck derived from aircraft attitude, a high precision navigation solution, and a database of terrain, obstacles and relevant cultural features, would not be addressed by the operating requirements set forth in this proposal. Synthetic vision systems with a transparent display surface located in the pilot's outside view, however, would be subject to the airworthiness standards in proposed §§ 23.773, 25.773, 27.773, and 29.773 as applicable.

This proposal also does not address EFVS use for takeoff. Section 91.175(f) prescribes civil airport takeoff minimums which are applicable to persons conducting operations under parts 121, 125, 129, or 135. This section makes provision for the Administrator to authorize takeoff minimums other than the minimums prescribed in § 91.175(f). Therefore, no regulatory amendments are proposed to enable EFVS to be used for takeoff because these operations can be authorized through existing processes.

II. Background

A. History

An EFVS uses a head-up display (HUD) to provide flight information, navigation guidance, and a real-time image of the external scene to the pilot on one display. The real-time image of the outside scene is produced by imaging sensors, which may be based on forward looking infrared, millimeter wave radiometry, millimeter wave radar, low level light intensification, or other imaging technologies. In certain reduced visibility conditions, an EFVS can enable a pilot to see the approach lights, visual references associated with the runway environment, and other objects or features that might not be visible without the use of an EFVS. Combining the flight information, navigation guidance, and sensor imagery on a HUD allows the pilot to remain head up and to continue looking forward along the flight path throughout the entire approach, landing, and rollout.

The requirements for operating below DA/DH or MDA under IFR on instrument approaches are contained in § 91.175. Over the years, these requirements have been modified to enable aircraft operations during reduced visibility conditions while maintaining a high level of safety. For many years, descent below DA/DH or MDA could only be accomplished using natural vision. On January 9, 2004, a final rule, Enhanced Flight Vision Systems, was published in the **Federal Register** (69 FR 1620) to permit an EFVS to be used in lieu of natural vision to continue descent below DA/DH or MDA down to 100 feet above the touchdown zone elevation of the runway of intended landing. At and below 100 feet, however, the lights or markings of the threshold or the lights or markings of the touchdown zone had to be distinctly visible and identifiable to the pilot using natural vision. A pilot could not continue descent below 100 feet by relying solely on the EFVS sensor imagery.

The 2004 final rule permitted an EFVS to be used in this way under IFR only on straight-in instrument approach procedures other than Category II or III, subject to certain conditions and limitations. The FAA asserted in the final rule that permitting EFVS to be used in this way could allow for operational benefits, reduced costs, and increased safety. Using a HUD assists a pilot in flying a more precise flight path. The FAA asserted that an EFVS, which includes a real-time sensor image on a HUD, might also improve the level of safety by improving position awareness, providing visual cues to maintain a stabilized approach, and reducing missed approaches. An EFVS could also enable a pilot to detect an obstruction on the runway, such as an aircraft or vehicle, earlier in the approach, and detect runway incursions in reduced visibility conditions. Even in situations where the pilot has sufficient flight visibility at the DA/DH or MDA to see the required visual references using natural vision, an EFVS could be used to achieve better situation awareness than might be possible without it—especially in marginal visibility conditions.

The 2004 final rule also established equipment requirements for EFVS operations. Enhanced flight vision systems used to conduct operations under the provisions of §§ 91.175(l) and (m), 121.651(c) and (d), 125.381(c), and 135.225(c) using U.S.-registered aircraft

are required to have an FAA type design approval (e.g., type certificate, amended type certificate, or supplemental type certificate). Requiring a type design approval ensures that the EFVS equipment is appropriate to support the EFVS operations to be conducted. These approvals are currently achieved through the issuance of special conditions. Foreign-registered aircraft used to conduct EFVS operations in the U.S. that do not have an FAA type design approval must be equipped with an operable EFVS that otherwise meets the requirements of the U.S. regulations. Additional information regarding compliance with EFVS operating requirements can be found in Advisory Circular (AC) 90–106, Enhanced Flight Vision Systems. Additional information about compliance with the airworthiness or equipment requirements for EFVS can be found in AC 20–167, Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined Vision System, and Enhanced Flight Vision System Equipment.

B. Statement of the Problem

The FAA believes EFVS capabilities could be better leveraged by making provisions for current and future performance-based enhanced vision capabilities that would increase access, efficiency, and throughput at many airports when low visibility is a factor. The 2004 final rule permitted enhanced flight visibility (determined using EFVS) to be used in lieu of flight visibility (determined by natural vision) to descend below DA/DH or MDA down to 100 feet above the touchdown zone elevation of the runway of intended landing. The rule, however, did not address dispatching a flight under part 121, releasing a flight under part 125, or taking off under part 135. An aircraft operated under those parts cannot be dispatched, released, or permitted to take off under IFR when the weather at the destination airport is forecast or reported to be below authorized minimums at the estimated time of arrival. Additionally, the pilot of an aircraft operating under these parts may not begin an approach or continue an approach past the FAF (or where a FAF is not used, begin the final approach segment of an instrument approach procedure) when the weather at the destination airport is reported to be below authorized minimums. These restrictions prevent EFVS from being used for maximum operational benefit by persons conducting operations under parts 121, 125, or 135. This proposal would provide relief from these restrictions for operators of EFVS-equipped aircraft.

Under current regulations, the enhanced flight visibility provided by an EFVS can only be used for operational benefit under § 91.175(l) in that portion of the visual segment of an approach that extends from DA/DH or MDA down to 100 feet above the touchdown zone elevation. While this provision has provided operators with significant benefits, additional capability could be achieved by permitting EFVS to be used to touchdown and rollout. This would increase access and throughput over existing EFVS operations by removing the requirement to transition to natural vision at 100 feet above the touchdown zone elevation.

There are currently no training, recent flight experience, or proficiency requirements in part 61 for persons conducting EFVS operations. Since the 2004 final rule was enacted, the number of persons conducting EFVS operations has significantly expanded. The FAA believes the proposal would further increase the number of operators conducting EFVS operations. Additionally, it would permit those operations to be conducted in low visibility conditions to touchdown and rollout. The FAA therefore proposes to establish training, recent flight experience, and proficiency requirements for EFVS operations to provide an appropriate level of safety for the conduct of those operations.

The FAA also believes that an EFVS can provide operational and safety benefits during Category II and Category III operations, especially as more advanced imaging sensor capabilities are developed which function more effectively in lower visibility conditions. The proposal would therefore amend the operating rules for Category II and III operations to permit EFVS to be used in lieu of natural vision during the conduct of those operations.

Finally, there are no airworthiness standards that specifically address the certification of vision systems, to include EFVS. Accordingly, the FAA has certificated vision systems using special conditions which can impose significant delays on the certification process. The proposal would therefore also amend parts 23, 25, 27, and 29 to establish certification requirements for vision systems with a transparent display surface located in the pilot's outside view thereby eliminating the need for the issuance of special conditions.

C. Related Actions

The FAA is revising AC 90–106, Enhanced Flight Vision Systems, and AC 20–167, Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined Vision System, and Enhanced Flight Vision System Equipment, to include the provisions proposed in this NPRM. A Notice of Availability will be published in the **Federal Register** when these draft ACs have been completed, and copies of these draft ACs will be placed in the docket for public comment at that time.

III. Discussion of the Proposal

A. Revise the Definition for EFVS and add a Definition for EFVS Operation (§ 1.1)

The FAA proposes to amend the definition of EFVS in § 1.1 to more precisely describe an EFVS. The proposed amendment specifies that an EFVS is an installed aircraft system and revises the current definition to include language that describes the elements and features of an EFVS currently found in § 91.175(m). The current definition of EFVS would be revised to include the phrase ''the EFVS includes the display element, sensors, computers and power supplies, indications, and controls.'' This phrase is currently found in § 91.175(m)(3). The FAA also proposes to change the phrase ''installed airborne system'' to ''installed aircraft system'' because some EFVS operations may be conducted on the surface as well as in an airborne context.

The proposed definition for EFVS would state: ''Enhanced flight vision system (EFVS) means an installed aircraft system which uses an electronic means to provide a display of the forward external scene topography (the applicable natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as forward-looking infrared, millimeter wave radiometry, millimeter wave radar, or low-light level image intensification. The EFVS sensor imagery and required aircraft flight information and flight symbology is displayed on a head-up display, or an equivalent display, so that the imagery and symbology is clearly visible to the pilot flying in his or her normal position with the line of vision looking forward along the flight path. An EFVS includes the display element, sensors, computers and power supplies, indications, and controls.''

The FAA also proposes to add a definition to § 1.1 for EFVS operation. An EFVS operation would be defined as ''an operation in which an EFVS is

required to be used to perform an approach or landing, determine enhanced flight visibility (as defined in current § 1.1), identify required visual references, or conduct the rollout.'' This definition establishes the conditions under which an EFVS would be required to conduct specific operations. The FAA notes that while an EFVS can provide situation awareness in any phase of flight, such use would not constitute an EFVS operation unless an EFVS is required in lieu of natural vision to perform any visual task associated with approach, landing, and rollout.

B. Consolidate EFVS Requirements in Part 91 in a New Section (§ 91.176)

The FAA proposes to create new § 91.176 which would contain the regulations for enhanced flight vision systems. The FAA believes that the extent of current and proposed EFVS provisions requires a new section for organizational and regulatory clarity. The existing regulations for EFVS to 100 feet that are located in current §§ 91.175(l) and (m) would be moved to proposed § 91.176 and restructured. Proposed §§ 91.176(a) and (b) would each be organized into three main areas—equipment requirements, operating requirements, and visibility and visual reference requirements. Section 91.176(a) would contain the new regulations for EFVS operations to touchdown and rollout, and § 91.176(b) would contain the existing regulations for EFVS operations that are conducted to 100 feet above the touchdown zone elevation.

C. Establish Equipment, Operating, and Visual Reference Requirements for EFVS Operations To Touchdown and Rollout (§ 91.176(a))

Under the current EFVS rule, an EFVS can be used to descend below DA/DH or MDA on any instrument approach procedure, other than Category II or III, that is straight-in and that uses published straight-in minima. The existing regulations permit an EFVS to be used to identify the visual references required by § 91.175(l)(3) and to determine that the enhanced flight visibility provided by the EFVS is not less than the visibility prescribed in the instrument approach procedure (IAP) being flown. Both of these requirements have to be met before descending below DA/DH or MDA down to 100 feet above the touchdown zone elevation. Additionally, the regulations require that the aircraft be continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and, for operations conducted under parts 121 or 135, the descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing.

At 100 feet above the touchdown zone elevation and below, the current regulations require that the flight visibility must be sufficient for the lights or markings of the threshold or the lights or markings of the touchdown zone to be distinctly visible and identifiable to the pilot without reliance on the EFVS in order to continue to a landing. In other words, descent below 100 feet has to be accomplished using natural vision—a pilot cannot continue descending below 100 feet by relying solely on the EFVS sensor imagery under the current rule.

The FAA proposes to permit enhanced vision provided by an EFVS to be used in lieu of natural vision to descend below 100 feet above the touchdown zone elevation. The FAA believes the current visual references that need to be seen using natural vision to descend below 100 feet should serve as the basis for establishing the visual references necessary to be seen with enhanced vision to descend below 100 feet when conducting EFVS operations to touchdown and rollout. Those visual references consist of lights or markings of the threshold or lights or markings of the touchdown zone. Additionally, the FAA proposes to add the runway threshold and the runway touchdown zone landing surface as references a pilot could use to descend below 100 feet. The FAA believes these additions are necessary to include other visual references that could be displayed by the EFVS and used by the pilot to safely land the aircraft.

Additionally, in § 91.176(a) the FAA would require that the aircraft be continuously in a position from which a descent to a landing on the intended runway could be made at a normal rate of descent using normal maneuvers. This proposed requirement is identical to the current requirement that exists for EFVS operations to 100 feet above the touchdown zone elevation. The proposal would also require that for all operators, the descent rate would allow touchdown to occur within the touchdown zone of the runway of intended landing. Currently only persons conducting operations under parts 121 or 135 are required to touchdown within the touchdown zone. For EFVS operations to touchdown and rollout, the FAA considers it prudent to require touchdown to occur within the touchdown zone for all operators in order to minimize any potential for a runway overrun in low visibility conditions.

The FAA proposes to permit an EFVS operation to be conducted below the authorized DA/DH to touchdown and rollout using a straight-in precision instrument approach procedure or an approach with approved vertical guidance. In order to ensure obstacle clearance and stabilized approach to touchdown, the approach must have published straight-in minima, a published vertical path, and a published DA or DH. Accordingly, EFVS operations to touchdown and rollout would not be permitted on nonprecision approaches.

In proposed § 91.176(a)(2)(i), the FAA would require each required pilot flight crewmember to have adequate knowledge of, and familiarity with, the aircraft, the EFVS, and the procedures to be used. Additionally, in proposed § 91.176(a)(2)(ii), the FAA would require that the aircraft be equipped with, and the pilot flying would be required to use, an operable EFVS that meets the equipment requirements specified in proposed § 91.176(a)(1). When a minimum flightcrew of more than one pilot is required, proposed § 91.176(a)(2)(iii) would require the pilot monitoring to use a display that provides him or her with EFVS sensor imagery.

Part 61 does not currently contain training, recent flight experience, and proficiency requirements for EFVS operations. Under the proposal, however, each required pilot flight crewmember would be required to meet the applicable training, recent flight experience, and proficiency requirements proposed in §§ 61.31(l) and 61.57(h) and (i). Persons conducting operations under parts 121, 125, or 135 would continue to be required to meet the current training, testing, and qualification provisions of those parts. The new proposals for part 61 are discussed in more detail in Sections III–E and III–F of this proposal. For foreign persons, each required pilot flight crewmember would have to meet the applicable requirements of the civil aviation authority of the State of the operator.

For operational approval to conduct EFVS operations to touchdown and rollout, the FAA proposes to require persons conducting operations under parts 121, 125, 129, or 135 to conduct those operations in accordance with OpSpecs authorizing the use of EFVS. Persons conducting operations under a part 125 Letter of Deviation Authority (LODA) would conduct those operations in accordance with a letter of authorization (LOA) for EFVS

operations to touchdown and rollout. Part 91, subpart K, operators would be required to conduct these operations in accordance with their MSpecs authorizing the use of EFVS. Persons conducting operations under part 91 (other than those conducted under subpart K) would be required to conduct them in accordance with their LOA for EFVS operations to touchdown and rollout. Section L contains a discussion on how the FAA plans to manage EFVS operations to touchdown and rollout through OpSpecs, MSpecs, and LOAs.

Under the current EFVS rule, an EFVS installed on a U.S.-registered aircraft conducting EFVS operations to 100 feet must be installed on that aircraft in accordance with an FAA type design approval (a type certificate, amended type certificate, or supplemental type certificate). An EFVS that is currently certified to conduct EFVS operations to 100 feet above the touchdown zone elevation, however, may not meet the airworthiness standards necessary to support EFVS operations to touchdown and rollout. Therefore, the FAA proposes a similar certification process for an EFVS installed on an aircraft used in EFVS operations to touchdown and rollout and would require an FAA type design approval for these systems.

The FAA recognizes that a foreign-registered aircraft may not have an FAA-type design approval. Therefore, the proposal would also permit use of an EFVS in those aircraft that may not have an FAA-type design approval provided those aircraft are equipped with an operable EFVS that otherwise meets the requirements of the U.S. regulations.

Current § 91.175(m) states that an EFVS presents sensor imagery and aircraft symbology on a head-up display (HUD) or an equivalent display, so that they are clearly visible to the pilot flying in his or her normal position and line of vision looking forward along the flight path. A head-down display does not meet the regulatory requirement that the EFVS sensor imagery and aircraft flight symbology be presented so a pilot can see it while seated in his or her normal position and line of vision looking forward along the flight path. A head-down display, therefore, would not be considered an equivalent display.

Current § 91.175(m) also states that an EFVS includes imaging sensors, computers and power supplies, indications, and controls. It must also display the following aircraft flight information and flight symbology: airspeed, vertical speed, aircraft attitude, heading, altitude, command guidance as appropriate for the approach to be flown, path deviation indications, flight path vector, and flight path angle reference cue. The displayed EFVS imagery, attitude symbology, flight path vector, flight path angle reference cue, and other cues which are referenced to the imagery and external scene topography must be aligned with and scaled to the external view; therefore, they must be conformal. The flight path angle reference cue must also be displayed with the pitch scale, and the pilot must be able to select the appropriate descent angle for the approach. The EFVS sensor imagery and aircraft flight symbology must be displayed such that they do not obscure the pilot's outside view or field of view through the cockpit window. Finally, the display characteristics and dynamics must be suitable for manual control of the aircraft.

The FAA proposes to apply all of the equipment requirements of the current EFVS regulations found in § 91.175(m) to EFVS operations conducted to touchdown and rollout. The FAA would also require the EFVS to display height above ground level such as that provided by a radio altimeter or another device capable of providing equivalent performance. While EFVS-specific callouts are usually based upon barometric altitude, the FAA believes that the supplementary information provided by a radio altimeter would provide pilots with additional altitude information and assist those pilots with performing the flare and landing during EFVS operations to touchdown and rollout. The FAA believes this requirement is necessary to support altitude awareness during EFVS operations to touchdown and rollout.

The FAA also proposes to require a flare prompt or flare guidance, as appropriate, for achieving acceptable touchdown performance. Each applicant for type design approval would be required to demonstrate acceptable touchdown performance for their particular EFVS implementation using either flare prompt or flare guidance. The FAA believes this requirement is necessary to provide the pilot with additional information to conduct the flare maneuver during conditions of low visibility typically encountered during EFVS operations to touchdown and rollout.

When a minimum flightcrew of more than one pilot is required, the FAA proposes to require that the aircraft be equipped with a display that provides the pilot monitoring with EFVS sensor imagery. Under the FAA's proposal, this display must be located within the maximum primary field of view of the pilot monitoring and any symbology displayed must not adversely obscure the sensor imagery of the runway environment. The proposal also makes provision for dual EFVS installations, head mounted displays, and other head up presentations the FAA might find acceptable. While many EFVS-equipped aircraft provide a display of the sensor imagery to the pilot monitoring, U.S. regulations do not require that such a display be provided to the pilot monitoring for EFVS operations to 100 feet. For these operations, the FAA considers it sufficient to conduct the operation using EFVS-specific procedures and callouts to support crew coordination and common situation awareness. At 100 feet above the touchdown zone elevation, both pilots are relying on natural vision to identify the required visual references. During EFVS operations where the pilot flying relies on EFVS from DA/DH through touchdown and rollout, it cannot be assumed that the monitoring pilot sees anything of the outside environment using natural vision. Therefore, the FAA proposes to require that the aircraft be equipped with a display that provides the pilot monitoring with EFVS sensor imagery. This display would support the monitoring pilot's view of the outside environment and provide common situation awareness. The pilot monitoring would carry out his or her normal approach monitoring tasks and be required to use the display to monitor and assess the safe conduct of the approach, landing, and rollout. This would confirm that the required visual references are acquired, verify visual acquisition of and alignment with the runway of intended landing, and assist in determining that the runway is clear of aircraft, vehicles, or other obstructions.

For certain future EFVS operations, proposed § 91.176(a)(1)(ii) specifies that the Administrator may require the display of the EFVS sensor imagery, required aircraft flight information, and flight symbology to be provided to the pilot monitoring on a head-up display or other equivalent display appropriate to the operation being conducted. This provision is being made to provide the FAA with a means to respond to future advancements in sensor or display technology.

D. Revise Current Requirements for EFVS Operations to 100 feet (§ 91.176(b))

As stated in Section III–B, the FAA proposes to move the current requirements for EFVS operations to 100 feet from § 91.175(l) and (m) to proposed § 91.176(b) and restructure them to accommodate the regulatory changes set forth in this proposal.

The FAA proposes to permit EFVS to be used in the conduct of Category II and Category III operations. Accordingly, the exclusionary language ''other than Category II or Category III'' would be deleted from the current provisions of § 91.175(l) that are now found in proposed § 91.176(b). This change is discussed in more detail in Section III–I.

Proposed § 91.176(b)(3)(iii) would be structured to conform to the original intent of current § 91.175(l)(4) and include provisions for additional visual reference requirements similar to those proposed for inclusion in § 91.176(a)(3)(iii) and discussed in Section III–C. It would clarify that the requirement for the pilot to determine enhanced flight visibility is only applicable to that portion of the approach from the authorized DA/DH or MDA to 100 feet above the touchdown zone elevation. At and below 100 feet, flight visibility (using natural vision) would be required to be sufficient for the runway threshold, the lights or markings of the threshold, the runway touchdown zone landing surface, or the lights or markings of the touchdown zone to be distinctly visible and identifiable to the pilot without reliance on the EFVS.

The reference to ''standard instrument approach procedure'' currently found in § 91.175(l)(2) would be revised to ''instrument approach procedure'' when the provisions contained in that paragraph are included in proposed § 91.176(b)(3)(i). A corresponding provision would also be included in proposed § 91.176(a)(3)(i). These changes were made in recognition of the fact that persons conducting EFVS operations may use either standard or special instrument approach procedures.

Currently, there are no training, recent flight experience, or proficiency requirements in part 61 for persons conducting EFVS operations. The FAA believes it is necessary to establish training, recent flight experience, and proficiency requirements to ensure that pilots possess the skills necessary to operate EFVS equipment, that they are trained and tested to a standard, and that the training they receive supports the EFVS operation to be conducted. The FAA's proposal to add these requirements to part 61 are discussed in Sections III–E and III–F. Proposed training, recent flight experience, and proficiency requirements would apply to EFVS operations conducted to touchdown and rollout and to EFVS operations conducted to 100 feet above the touchdown zone elevation. Accordingly, the FAA proposes to include language in proposed § 91.176(b)(2)(v)(A) which would require each required pilot flight crewmember to meet the new training, recent flight experience, and proficiency requirements that would be added to part 61. Additionally, the FAA proposes to add rule language to proposed § 91.176(b)(2)(i) to require that each required pilot flight crewmember have adequate knowledge of, and familiarity with, the aircraft, the EFVS, and the procedures to be used.

Under current § 91.175(l), a part 119 or part 125 certificate holder cannot conduct an EFVS operation unless their OpSpecs authorize the use of EFVS. The same requirement applies to persons conducting operations under part 129. The proposed amendment would state that for persons conducting operations under part 91, subpart K, the operation would be required to be conducted in accordance with MSpecs authorizing the use of EFVS. For persons conducting operations under parts 121, 129, or 135 of this chapter, the operation would be required to be conducted in accordance with OpSpecs authorizing the use of EFVS. For persons conducting operations under part 125 of this chapter, the operation would be required to be conducted in accordance with OpSpecs authorizing the use of EFVS, or in the case of a part 125 LODA holder, an LOA for the use of EFVS. While the FAA proposes to require an LOA for part 91 operators (other than part 91, subpart K) to conduct EFVS operations to touchdown and rollout, no LOA is currently required or proposed for EFVS operations conducted to 100 feet.

Currently, most foreign civil aviation authorities (CAAs) require an authorization to conduct EFVS operations. As a result, a foreign CAA may require a U.S. operator who wishes to conduct EFVS operations in their country to submit their FAA EFVS authorization as a condition for the foreign CAA's approval. The FAA strongly recommends that operators contact the CAA of each foreign country in which they plan to conduct EFVS operations to determine the requirements for approval and for conducting EFVS operations since those requirements may be different from those of the United States.

As previously discussed in Section III–A, the FAA proposes to move the statement ''The EFVS includes the display element, sensors, computers and power supplies, indications, and controls.'' currently contained in § 91.175(m)(3) to the proposed revised definition of EFVS in § 1.1. The FAA also proposes not to include in the proposal the sentence ''It may receive inputs from an airborne navigation system or flight guidance system,'' which is currently contained in § 91.175(m)(3). While this statement provides contextual information, it is not a stated requirement, and would be more appropriately addressed in advisory or guidance material. The FAA proposes to remove the phrase ''on approaches without vertical guidance;'' contained in § 91.175(m)(2)(ii) because the flight path angle reference cue is useful on all approaches.

Additionally, the FAA would include language in proposed § 91.176(b)(1)(iii), which would clarify that a foreign registered aircraft need not have an FAA-type design approval provided the aircraft is equipped with an EFVS that meets all other applicable FAA requirements.

E. Establish Training Requirements for Persons Conducting EFVS Operations (§ 61.31)

Currently, part 61, which sets forth training requirements applicable to all pilots, flight instructors and ground instructors, does not contain specific training requirements for persons conducting EFVS operations. However, § 91.175(l) requires that any pilot conducting an EFVS operation under parts 121, 125, and 135 be qualified to use an EFVS in accordance with the applicable training, testing, and qualification provisions of those parts. Additionally, a pilot conducting EFVS operations must conduct those operations in accordance with OpSpecs issued to the certificate holder which authorize the use of EFVS. OpSpecs authorizing the use of EFVS specify training, testing, and qualification requirements applicable to the use of EFVS. Furthermore, persons conducting EFVS operations under part 91, subpart K must conduct those operations in accordance with MSpecs, which set forth specific training, testing, and qualification requirements applicable to the use of EFVS.

Although specific EFVS training requirements do not currently exist in part 61, both the FAA and EFVS manufacturers have recognized that pilots conducting EFVS operations need to be appropriately trained. FAA Aircraft Evaluation Group (AEG) Flight Standardization Boards (FSBs) have conducted operational suitability evaluations of EFVS equipment installed on certain airplanes, which have resulted in FSB reports that document the training, checking, and currency tasks that should be accomplished to safely operate this equipment. Certain aircraft

manufacturers have also encouraged flight crewmembers to receive training in the use of EFVS prior to conducting EFVS operations. These recommendations can be found in the airplane flight manuals for these manufacturers' aircraft. Additionally, recent recommendations by the National Transportation Safety Board (NTSB) and legislative action by Congress highlight a concern with and commitment to safety, pilot training, standards, and performance.

Non-commercial operators of EFVS-equipped aircraft have also recognized the need for specialized ground and flight training in the use of EFVS. These operators generally obtain EFVS training for their pilots at part 142 training centers prior to conducting EFVS operations. This practice clearly demonstrates the importance these operators place on training in order to safely conduct EFVS operations.

EFVS operations are often conducted in visibility conditions similar to those under which Special Authorization Category I, Category II, Special Authorization Category II, and Category III operations are conducted. These operations are conducted to lower than standard minima and require special aircrew training.

Expanding the operational conditions and benefits for operators who use EFVS technology would increase the number and mix of aircraft and operators conducting low visibility operations at airports throughout the national airspace system. Establishing training requirements for the conduct of EFVS operations would ensure that pilots meet minimum requirements to operate EFVS equipment, that they are trained and tested to a standard, and that an appropriate level of public safety is maintained. This approach is consistent with that taken for other technology-based vision enhancements such as night vision goggles, for which the FAA established training requirements in 2009 (74 FR 42500; August 21, 2009).

The FAA proposes, therefore, to codify current EFVS training practices by amending § 61.31 to require ground training for any person manipulating the controls of an aircraft or acting as pilot in command of an aircraft during an EFVS operation. This requirement would apply to EFVS operations conducted to 100 feet above the touchdown zone elevation under existing EFVS regulatory provisions and to EFVS operations conducted to touchdown and rollout under this proposal. In addition, the FAA would require any person who serves as a required pilot flight crewmember during an EFVS operation conducted to touchdown and rollout under proposed § 91.176(a) to obtain ground training. The ground training would be required to be received from an authorized instructor under a training program approved by the Administrator. Additionally, a logbook or other endorsement would be required to be obtained from an authorized instructor who would certify that the person satisfactorily completed the ground training.

A person who serves as a required pilot flight crewmember during an EFVS operation that is conducted to 100 feet under the existing EFVS rule, but who does not manipulate the controls or serve as pilot in command of that aircraft, would not be required to receive EFVS ground training. These pilots are not required to receive EFVS ground training under current regulatory provisions. The FAA believes that the EFVS-specific call outs and crew coordination items performed by the pilot monitoring who would not also be acting as pilot in command (PIC) during an EFVS operation to 100 feet are so similar in nature to duties he or she normally performs on an instrument approach procedure that the completion of a formal EFVS ground training program for these pilots should not be required. The FAA further believes that these pilots can obtain the knowledge necessary to satisfactorily accomplish these additional tasks through computer based training, self study, other non-regulatory means, or through compliance with other regulations. Section 61.55, for example, contains provisions requiring a person serving as second-in-command to be familiar with the operational procedures applicable to an aircraft's powerplant, equipment and systems, its performance specifications and limitations, its normal, abnormal, and emergency procedures, and its flight manual, placards and markings. Additionally, that pilot must comply with the training provisions of the part under which the operation is conducted, such as part 121, which requires ground and flight training appropriate to the particular assignment of the pilot flight crewmember.

Under this proposal, the ground training would, at a minimum, consist of the following subjects:

- Applicable portions of this Chapter I of Title 14 that relate to EFVS flight operations and limitations, including Aircraft Flight Manual (AFM) limitations;
- EFVS display, controls, modes, features, symbology, annunciations, and associated systems and components;
- EFVS sensor performance, sensor limitations, scene interpretation, visual anomalies, and other visual effects;
- Preflight planning and operational considerations associated with using EFVS during taxi, takeoff, climb, cruise, descent and landing phases of flight, including the use of EFVS for instrument approaches, operating below DA/DH or MDA, executing missed approaches, landing, rollout, and balked landings;
- Weather associated with low visibility conditions and its effect on EFVS performance;
- Normal, abnormal, emergency, and crew coordination procedures when using EFVS; and
- Interpretation of approach and runway lighting systems and their display characteristics when using an EFVS.

In considering those subjects that would be included in the proposed ground training, the FAA evaluated FSB recommendations and EFVS training material developed by part 142 training centers, EFVS manufacturers, and persons conducting operations under parts 121, 135, and subpart K of part 91. Additionally, the FAA reviewed EFVS training material used by the U.S. military and European Aviation Safety Agency (EASA) training requirements for EFVS operations.

The FAA also proposes to amend § 61.31 to require flight training for any person manipulating the controls of an aircraft or acting as pilot in command of an aircraft during an EFVS operation. In order to ensure the continuation of current flight training practices, implement FSB flight training recommendations, and perpetuate the safe conduct of EFVS operations in an increasingly complex and rapidly evolving operational environment, the FAA believes that any person manipulating the controls of an aircraft or acting as pilot in command of an EFVS operation should receive EFVS flight training. This requirement would apply to pilots conducting EFVS operations to 100 feet above the touchdown zone elevation under the existing rule and also to pilots conducting EFVS operations to touchdown and rollout under this proposal.

The FAA evaluated the same material it used to determine proposed ground training subjects and determined that EFVS flight training would, at a minimum, include the following tasks:

- Preflight and inflight preparation of EFVS equipment for EFVS operations, including EFVS setup and use of display, controls, modes and associated systems, including adjustments for

brightness and contrast under day and night conditions;

- Proper piloting techniques associated with using EFVS during taxi, takeoff, climb, cruise, descent, landing, and rollout, to include missed approaches and balked landings;
- Proper piloting techniques for the use of EFVS during instrument approaches, to include operations below DA/DH or MDA as applicable, under both day and night conditions;
- Determining enhanced flight visibility;
- Identifying required visual references appropriate to EFVS operations;
- Transitioning from EFVS sensor imagery to natural vision acquisition of required visual references and the runway environment;
- Using EFVS sensor imagery to touchdown and rollout, if EFVS operations as specified in § 91.176(a) are to be conducted; and
- Normal, abnormal, emergency, and crew coordination procedures when using an EFVS.

The flight training would have to be received from an authorized instructor under a training program approved by the Administrator. Additionally, a logbook or other endorsement would have to be obtained from an authorized instructor who finds the person proficient in the use of EFVS. To ensure that the authorized instructor providing the flight training is knowledgeable and proficient in the conduct of EFVS operations, that instructor would have to meet the training requirements for EFVS operations specified in proposed § 61.31(l).

Under this proposal, a training program approved by the Administrator could include EFVS training received through a part 141 pilot school, a part 142 training center, or an FAA-approved training program other than that provided under parts 141 or 142. One example of an FAA-approved training program other than that provided under parts 141 or 142 could be a training program approved under part 121. Another example could be an approved EFVS training program conducted by a corporate flight department with experience in the conduct of EFVS operations. The FAA would require an EFVS training program to be approved to ensure that pilots receiving that training are trained and tested to a specific standard and that the training program content supports the EFVS operation to be conducted.

Flight training for EFVS may be accomplished in the actual aircraft or in a simulator equipped with an EFVS. In accordance with FSB recommendations for EFVS training, the FAA has determined that flight simulators used to conduct this training would have to be either a level 'C' simulator with a daylight visual display, or a level 'D' simulator. Each simulator would have to be qualified for EFVS by the National Simulator Program.

The FAA recognizes that an operator may opt to conduct less than the full range of EFVS operations due to equipment or operational limitations. For example, an operator's aircraft may only be equipped to conduct EFVS operations to 100 feet above the touchdown zone elevation and its pilots are only trained to conduct those operations. That operator may later decide, however, to conduct EFVS operations to touchdown and rollout. The proposal would not require this operator's pilots to complete the full training program applicable to EFVS operations to touchdown and rollout, but only that portion of the flight training program addressing the differences between the two operations. The proposal would require that this training be documented by an endorsement. In lieu of completing this differences training, a pilot could complete a pilot proficiency check on the additional EFVS operations administered by an FAA inspector, designated examiner, a check airman under parts 121, 125, or 135, or a program manager check pilot under part 91, subpart K.

Under this proposal, the ground training requirements of proposed § 61.31(l)(1) and flight training requirements of proposed paragraph (l)(3) would not apply if a person has satisfactorily completed a pilot proficiency check on EFVS operations and received a logbook endorsement verifying that the check has been completed. The proficiency check, however, would be applicable to the specific type of EFVS operation to be conducted. For example, an EFVS proficiency check conducted for EFVS operations to 100 feet would not meet the requirement for a proficiency check for EFVS operations to touchdown and rollout. Additionally, a proficiency check for EFVS operations to touchdown and rollout may not meet all of the requirements for a proficiency check for EFVS operations to 100 feet because it may not include non-precision approaches. The FAA recognizes, however, that a proficiency check for EFVS operations to touchdown and rollout could be combined with a proficiency check for EFVS operations to 100 feet that addresses the conduct of non-precision approaches.

The pilot proficiency check would be permitted to be conducted by an FAA inspector or designated examiner, a check airman under parts 121, 125, or 135, or a program manager check pilot under part 91, subpart K. The pilot proficiency check could also be conducted by a person authorized by the U.S. Armed Forces to administer EFVS proficiency checks, provided the person receiving the check was a member of the U.S. Armed Forces at the time the check was administered. The proficiency check could also be conducted by an authorized instructor employed by a Federal, State, county, or municipal agency to administer an EFVS proficiency check, provided the person receiving the check was employed by that agency at the time the check was administered.

Under proposed § 61.31(l)(7), the requirements of § 61.31(l)(1) and (l)(3) would not apply to a person who has satisfactorily completed an EFVS training program, proficiency check, or other course of instruction applicable to EFVS operations conducted under § 91.176(b). The training program, proficiency check, or course of instruction would have to be acceptable to the FAA and could be completed prior to this proposal, but no later than 24 months after the effective date of the final rule. The EFVS training program could be provided by a part 141 pilot school, a part 142 training center, or through another course of instruction the FAA would consider acceptable. Because current industry practice for training pilots to conduct EFVS operations typically includes both ground and flight training, the FAA believes that most pilots currently conducting EFVS operations have already completed EFVS ground and flight training at a part 141 pilot school, a part 142 training center, or through other ground and flight training acceptable to the Administrator for which they could show a logbook endorsement or training record. The FAA believes this provision would decrease the regulatory burden on pilots who have been safely conducting EFVS operations to 100 feet under current regulations. Additionally, the proposal would provide pilot schools and training centers with adequate time to develop training programs that meet the proposed training requirements. By including specific provisions in proposed § 61.31(l)(7) to permit the use of training programs, proficiency checks or other courses of instruction for a 2 year period, the FAA would provide pilots currently conducting EFVS operations with a reasonable means of

demonstrating compliance with the proposed ground and flight training requirements of § 61.31(l)(1) and (l)(3). Providing pilots with time and a flexible means to show compliance with the proposed training requirements for EFVS should ensure that existing EFVS operators can comply with the new provisions with little or no impact.

F. Establish New Recent Flight Experience and Proficiency Requirements for Persons Conducting EFVS Operations (§ 61.57)

Part 61 does not currently contain recent flight experience or proficiency requirements in order to conduct EFVS operations. The FAA believes it is necessary to establish recent flight experience and proficiency requirements to ensure that an appropriate level of skill is maintained to permit a pilot to conduct EFVS operations in low visibility conditions. The FAA proposes to amend § 61.57 to require recent flight experience or a proficiency check for a person conducting an EFVS operation or acting as pilot in command during an EFVS operation. This requirement would apply to both EFVS operations conducted to 100 feet under the current EFVS rule and to EFVS operations conducted to touchdown and rollout under this proposal.

Although recent flight experience requirements are not currently specified in part 61 for the conduct of EFVS operations, the FAA believes that the proposal would lead to a significant increase in the scope and number of EFVS operations. EFVS operations are complex operations involving the use of a HUD with a sensor image that are typically conducted in low visibility conditions. The skills necessary to operate EFVS equipment under these conditions are perishable. In addition, the occurrence of these low visibility conditions is infrequent. Consequently, recent EFVS flight experience is necessary to prevent the loss of these skills and to ensure that EFVS operations are conducted safely. As EFVS equipment evolves to permit operations in lower visibility environments than are currently allowed, the need for pilots to maintain recent flight experience will become even more critical.

This proposal would permit a person to manipulate the controls of an aircraft during an EFVS operation or act as pilot in command of an aircraft during an EFVS operation only if, within 6 calendar months preceding the month of the flight, that person performs and logs six instrument approaches as the sole manipulator of the controls while using an EFVS. Unlike the instrument experience requirements specified in § 61.57(c), these approaches need not be conducted in actual weather conditions or under simulated conditions using a view-limiting device. Since the EFVS can present a sensor image to the pilot in both IFR and VFR weather conditions, the FAA proposes to permit these approaches to be conducted under any weather conditions. One approach would be required to terminate in a full stop landing. For persons seeking to maintain currency to conduct EFVS operations to touchdown and rollout, the full stop landing would be required to be conducted using the EFVS. This requirement could be met in an aircraft or in a simulator equipped with an EFVS. If an EFVS-equipped simulator is used, it would have to be a level ''C'' simulator, with a daylight visual display, or a level ''D'' simulator that has been qualified for EFVS by the National Simulator Program. The purpose of requiring recent EFVS flight experience is to ensure that a pilot remains proficient in the use of all EFVS system components and operating procedures.

Under the proposal, a person acting as pilot in command or a person who is manipulating the controls of an aircraft in an EFVS operation would either be required to meet the proposed EFVS recent flight experience requirements or pass an EFVS proficiency check. The proficiency check would consist of the training tasks listed in proposed § 61.31(l) and would be required to be performed in the category of aircraft for which the person is seeking the EFVS privilege or in a flight simulator that is representative of that category of aircraft. The proficiency check could also be accomplished in a level ''C'' simulator, with a daylight visual display, or a level ''D'' simulator that has been qualified for EFVS by the National Simulator Program. Under this proposal, an EFVS proficiency check must be performed by—

- An FAA Inspector or designated examiner who is qualified to perform EFVS operations in that same aircraft category;
- A person who is authorized by the U.S. Armed Forces to perform EFVS proficiency checks, provided the person being administered the check is also a member of the U.S. Armed Forces;
- A company check pilot who is authorized to perform EFVS proficiency checks under parts 121, 125, or 135, or subpart K of part 91 of this chapter, provided that both the check pilot and the pilot being tested are employees of that operator or fractional ownership program manager, as applicable;
- An authorized instructor who meets the additional training requirements for EFVS operations specified in § 61.31(l) of this chapter, and if conducting a proficiency check in an aircraft, the recent flight experience specified in paragraphs (h) or (i) of this section; or
- A person approved by the FAA to perform EFVS proficiency checks.

The FAA notes that in accordance with the provisions of § 61.57(e)(2), the proposed recent flight experience requirements would not apply to a pilot in command who is employed by an air carrier certificated to conduct operations under parts 121 or 135. The pilot, however, must be engaged in a flight operation under parts 91, 121, or 135 for that air carrier and in compliance with §§ 121.437 and 121.439, or §§ 135.243 and 135.247, as appropriate. Additionally, proposed § 91.176 would require each pilot flight crewmember to meet the applicable training, testing and qualification provisions of parts 121 or 135, as appropriate. The operation would also be required to be conducted in accordance with operations specifications authorizing the use of EFVS.

G. Permit EFVS-Equipped Aircraft To Be Dispatched, Released, or To Initiate a Flight When the Reported or Forecast Visibility at the Destination Airport Is Below Authorized Minimums (§§ 121.613, 121.615, 125.361, 125.363, 135.219)

Under current regulations, persons operating aircraft under part 121, 125, or 135 must evaluate weather reports and forecasts for the destination airport and determine that weather conditions at the expected time of arrival will be at or above the minimums authorized for the instrument approaches to be flown. This requirement must be met in order to dispatch a flight under part 121, release a flight under part 125, or takeoff under part 135, regardless of whether or not the aircraft is equipped with an approved EFVS. This limitation precludes operators from fully leveraging EFVS capabilities that would increase access, efficiency, and throughput at destination airports when low visibility is a factor.

The enhanced flight visibility provided by an EFVS enables instrument approach operations to be conducted safely in lower visibilities than would be possible using natural vision. To take full advantage of this capability and to provide improved operational reliability, the FAA proposes to amend the dispatch, flight release, and takeoff regulations found in §§ 121.613, 121.615, 125.361, 125.363,

and 135.219 to permit operators of EFVS-equipped aircraft to dispatch, release, or takeoff when weather reports or forecasts indicate that weather conditions will be below the minimums authorized for the approaches to be flown at the destination airport. In addition, the FAA proposes to amend the regulations to permit aircraft equipped with EFVS to initiate an approach under IFR when weather reports or forecasts, or any combination thereof, indicate the weather conditions at the destination airport are below the authorized minimums for the approach to be flown. Authorizations would be based on demonstrated EFVS capabilities. This proposal is discussed in more detail in Section III–H. These changes would enable operators to take full advantage of the operational capabilities provided by EFVS to improve access to runways, increase service reliability, and reduce the costs associated with operational delays, without compromising safety.

The FAA proposes to authorize operators of EFVS-equipped aircraft who plan to conduct EFVS operations at the destination airport to dispatch a flight under part 121, release a flight under part 125, or takeoff under part 135 when weather conditions at the destination airport will be below the minimums for the approach to be flown at the estimated time of arrival. This authorization is granted through OpSpecs for EFVS operations, or for part 125 LODA holders, their LOA for EFVS operations. The authorization would also apply to EFVS operations conducted to 100 feet above the touchdown zone elevation under proposed § 91.176(b), as well as to EFVS operations conducted to touchdown and rollout under proposed § 91.176(a). As further discussed in Section III–M, the FAA expects to manage this authorization through an operator's OpSpec or LOA for EFVS operations to ensure that an increase in the rate of missed approaches does not occur. Because EFVS performance can vary by sensor technology and design, meteorological conditions, and other factors, adjustments to the authorization could be made according to the performance demonstrated. Managing the authorization in this manner would permit the FAA to effectively respond to new technology developments and tailor an authorization to fit an operator's particular EFVS capabilities.

H. Permit operators of EFVS-Equipped Aircraft To Initiate or Continue an Approach When the Destination Airport Visibility Is Below Authorized Minimums (§§ 121.651, 125.325, 125.381, 135.225)

Under current § 121.651, no pilot may continue an approach past the FAF, or begin the final approach segment of an instrument approach procedure where a FAF is not used, when the latest weather report for that airport reports the visibility to be less than the visibility minimums prescribed for that procedure. There are two exceptions to this requirement. In the first exception, if a pilot has begun the final approach segment of an instrument approach procedure in accordance with § 121.651(b), and after that receives a weather report indicating below minimum conditions, he or she may continue the approach to DA/DH or MDA. Upon reaching DA/DH or at MDA, and at any time before the missed approach point, the pilot may continue the approach below DA/DH or MDA if either the requirements for conducting EFVS operations to 100 feet under current § 91.175(l) are met, or the requirements for continuing the approach using natural vision under § 121.651(c) are met.

The second exception permits a pilot to begin the final approach segment of an instrument approach procedure, other than a Category II or Category III procedure, at an airport when the visibility is less than the visibility minimums prescribed for that procedure if that airport is served by an operative instrument landing system (ILS) and an operative precision approach radar (PAR), and both are used by the pilot. The pilot may continue the approach below the authorized DA/DH if the requirements of current § 91.175(l) are met, or if the requirements for continuing the approach using natural vision under § 121.651(d) are met.

Under §§ 125.325 and 125.381, no pilot may execute an instrument approach procedure when the latest reported visibility is less than the landing minimums specified in the certificate holder's OpSpecs. Under § 135.225, no pilot may begin an instrument approach procedure to an airport when the latest weather report indicates that weather conditions are below the authorized IFR landing minimums for that airport. There are several exceptions to these requirements for persons conducting operations under parts 125 or 135. If a pilot conducting EFVS operations under part 125 has already initiated the instrument approach procedure, or if a pilot conducting EFVS operations in accordance with § 135.225(b) has begun the final approach segment of an instrument approach procedure, and subsequently receives another weather report that indicates conditions are below the minimum requirements, the pilot may continue the approach only if the requirements of current § 91.175(l) are met for EFVS operations conducted to 100 feet. If EFVS is not used, then the approach can only be continued if the later weather report is received during one of the following three phases: when the aircraft is on an ILS approach and has passed the FAF; the aircraft is on an airport surveillance radar (ASR) or PAR final approach and has been turned over to the final approach controller; or the aircraft is on a nonprecision final approach and the aircraft has passed the appropriate facility or FAF, or where a FAF is not specified, has completed the procedure turn and is established inbound toward the airport on the final approach course within the distance prescribed in the procedure. Upon reaching the authorized MDA or DH the pilot must find that the actual weather conditions are at or above the minimums prescribed for the procedure being used.

The visibility requirements currently imposed for beginning or continuing an approach under parts 121, 125, and 135, prevent EFVS from being used to its full operational advantage. These restrictions significantly limit the utility of EFVS for these operators resulting in reduced access to airports in low visibility conditions. Currently, EFVS equipage is highest among part 91 operators because they are not limited by restrictions on the weather conditions required to begin or continue an approach.

Nine years of EFVS operational experience has shown that, under certain reduced visibility conditions, an EFVS can increase the likelihood that an approach and landing can be successfully completed. In cases where the visibility is marginal, such as during rapidly changing weather conditions, or when the reported visibility hovers at or near the minimum authorized, natural vision may be inadequate for a pilot to detect the required visual references necessary to complete the approach. EFVS provides a significant operational advantage under reduced visibility conditions, when natural vision is most compromised. Ground stops, holding delays, and diversions to an alternate airport could be reduced in these situations, especially if persons conducting operations under parts 121, 125, and 135 are authorized to use an EFVS in weather conditions that would

normally preclude an approach from being initiated or continued. Since the proposal would authorize an EFVS-equipped aircraft to be dispatched when the destination weather is reported or forecast to be below authorized minimums, the FAA believes that permitting that aircraft to initiate or continue an approach in those weather conditions would also be appropriate.

Recognizing the operational benefits of EFVS, Federal Express Corporation (FedEx) petitioned for exemption from § 121.651(b)(2) on March 21, 2008 (Docket No. FAA–2008–0370) to the extent necessary to allow FedEx aircraft equipped with EFVS to continue an approach beyond the FAF, or to begin the final approach segment of an instrument approach procedure, if the latest weather report for that airport reports the visibility to be less than the visibility minimums prescribed for that procedure. On January 13, 2009, NetJets International, Inc. (NJI) petitioned for exemption from § 135.225(a)(2) (Docket No. FAA–2009–0047) to the extent necessary to allow NJI aircraft equipped with an EFVS to begin an instrument approach procedure to an airport when the latest weather report for that airport indicates that weather conditions are less than the authorized visibility minimums for that procedure. Both petitioners requested relief from the prohibition on beginning or continuing an approach when the reported visibility is below the authorized minimum visibility for the approach. Both petitioners asserted that granting their petitions would benefit the public while maintaining an equivalent level of safety to that provided under the current regulations. On December 24, 2009, the FAA issued Grant of Exemption No. 9984 to FedEx, and on September 30, 2010, the FAA issued Grant of Exemption No. 10147 to NJI. Both Grants of Exemption, however, were subject to specific conditions and limitations.

To take full advantage of the operational capability of EFVS and to increase the likelihood that an approach would be successfully completed in low visibility conditions, the FAA proposes to amend §§ 121.651, 125.325, 125.381, and 135.225, to permit persons conducting operations under parts 121, 125, or 135 to begin or to continue an approach when the reported visibility is below the authorized minimum visibility for the approach to be flown, provided the aircraft is equipped with, and the pilot uses, an EFVS in accordance with proposed § 91.176. The FAA proposes to authorize this operational capability for part 121, 125, and 135 operators through their OpSpec for EFVS operations, or for part 125 LODA holders, their LOA for EFVS operations. This authorization would apply to EFVS operations conducted to 100 feet above the touchdown zone elevation under proposed § 91.176(b), as well as to EFVS operations conducted to touchdown and rollout under proposed § 91.176(a). Authorizations would be based on demonstrated EFVS capabilities.

As an alternative to the proposal, the FAA considered authorizing a ⅓ visibility credit for EFVS-equipped operators as is currently permitted by EASA. Under EASA regulations, for example, if the authorized minimum visibility for an instrument approach procedure is 2400 feet runway visual range (RVR), a person operating an EFVS-equipped aircraft could reduce the minimum visibility required for an approach by ⅓ resulting in an adjusted required minimum visibility of 1600 RVR for the approach. After careful consideration, the FAA determined that this alternative would be unnecessarily restrictive and would not provide the flexibility necessary to accommodate future advances in EFVS technology.

As further discussed in Section III–M, the FAA expects to manage this authorization through an operator's OpSpec or LOA for EFVS operations. For reasons identical to those discussed in Section III–G, this action would permit the FAA to effectively respond to new technology developments and tailor an authorization to fit an operator's particular EFVS capabilities.

I. Revise Category II and III General Operating Rules To Permit the Use of an EFVS (§ 91.189)

The general operating rules for Category II and III operations are contained in § 91.189. Section 91.189, however, only pertains to part 91 operators other than those conducting operations under part 91, subpart K (see § 91.189(g)). The provisions of § 91.189 do not apply to Category II or III operations conducted by certificate holders operating under parts 121, 125, 129, or 135, or holders of MSpecs issued in accordance with part 91, subpart K.

Under current regulations, no pilot operating an aircraft on a Category II or Category III approach that requires the use of a DA/DH can continue the approach below the authorized decision height unless at least one of the visual references listed in § 91.189(d)(2) is distinctly visible and identifiable. Under current regulations, the visual references must be seen using natural vision. The FAA proposes to amend § 91.189(d) to permit an EFVS to be used in lieu of natural vision to identify the visual references required for descent below the authorized decision height on a Category II or III approach. A pilot conducting a Category II or III approach in accordance with § 91.189(d) would comply with either the provisions of that paragraph for identifying required visual references using natural vision or with the provisions of proposed § 91.176 for identifying required visual references using EFVS.

The FAA proposes to amend § 91.189(e) to permit a pilot operating an aircraft in a Category II or III approach to continue the approach below the authorized DA/DH provided that the conditions specified in proposed § 91.176 are met. The proposed changes would permit required visual references to be identified using EFVS in lieu of natural vision.

The FAA notes that all of the equipment requirements and airmen certification requirements for the conduct of Category II and Category III operations would continue to apply when an EFVS is also used during the conduct of those operations. The FAA also notes that an operator intending to use an EFVS to descend below DA/DH during the conduct of a Category II or Category III operation would be required to revise its Category II or Category III manual specified in § 91.191 to reflect the use of EFVS. A person seeking to conduct Category II or Category III operations where the use of EFVS is necessary to conduct those operations would have to be authorized by the Administrator.

The FAA believes that the use of an EFVS could provide operational benefits during the conduct of Category II and Category III approaches, especially as advanced imaging sensor capabilities are developed to penetrate lower visibility conditions. Using EFVS in combination with Category II or III capabilities could improve situation and position awareness throughout the approach, landing, and rollout. It could also minimize the potential for missed approaches, reduce the cost associated with missed approaches and contribute to increased access, efficiency, and throughput when low visibility is a factor.

J. Revise Pilot Compartment View Rules To Establish Airworthiness Standards for Vision Systems With Transparent Displays Located in the Pilot's Outside View (§§ 23.773, 25.773, 27.773, and 29.773)

Sections 23.773, 25.773, 27.773, and 29.773 specify the requirements and conditions under which the pilot compartment must provide an

extensive, clear, and undistorted view to the pilot for safe operation of the aircraft within its operating limitations. Additionally, the regulations specify that the pilot compartment must be free of glare and reflection that could interfere with the normal duties of the minimum flightcrew.

When these rules were originally issued, the FAA did not anticipate the development of vision systems with transparent displays that could significantly enhance, or even substitute for, a pilot's natural vision. Vision systems are used to display an image of the external scene to the flightcrew. This proposal, however, would only address vision systems with a transparent display surface located in the pilot's outside view, such as a head-up-display, head-mounted display, or other equivalent display. Such ''vision systems'' include any enhanced vision system, EFVS, SVS, or combined vision system.

For over a decade, the FAA has certified vision systems for transport category aircraft that have head-up displays. During this process, the FAA found that the existing airworthiness standards governing the pilot compartment view set forth in § 25.773 were inadequate to address the novel or unusual design features of these systems. Therefore, the FAA issued special conditions under § 21.16 to provide airworthiness standards which could be used to enable the installation of vision systems that would meet a level of safety equivalent to that established in the regulations. Special conditions were issued to each applicant, because special conditions are only applicable to individual certification projects, and would be needed for new projects until the regulations are amended.

The first issuance of special conditions for a vision system occurred in 2001 for the Gulfstream G–V. Since 2005, special conditions for vision systems have been issued for the following aircraft: (1) Bombardier BD–700 Global Express; (2) Bombardier CL–600; (3) McDonnell Douglas MD–10–10F/30F; (4) Dassault Falcon 900EX and 2000EX; (5) Boeing 737–700/–800/–900; (6) Boeing 757–200; (7) Boeing 777F; (8) Dassault Falcon 7X; and (9) Gulfstream G–VI.

These special conditions were developed to ensure that the vision system could perform its intended functions with a level of safety equivalent to that established in the regulations. While the FAA issues special conditions to address novel or unusual design features in a particular aircraft, for consistency the FAA attempted to standardize these special conditions to the maximum extent possible. With over twelve years of experience, the process of developing special conditions for vision systems has become routine. Operational experience has shown that the certification requirements, set forth in the special conditions, have resulted in safe and effective vision system operations.

The FAA recognizes, however, that the issuance of these special conditions adds significant time and expense to a certification project. These concerns have also been noted in the May 22, 2012 *Report from the Aviation Certification Process Review and Reform Aviation Rulemaking Committee to the Federal Aviation Administration*.

In that report, the committee recommended that the FAA address the continued use of special conditions in lieu of rulemaking by updating airworthiness standards in cases where special conditions have been used for a period of time and the design being evaluated is no longer new or novel. Accordingly, the FAA has determined it would be in the public interest to revise pilot compartment view rules to establish airworthiness standards for vision systems with transparent displays. This action would respond to the committee's concerns, provide industry with known requirements for the certification of these systems, and eliminate the costs resulting from the process of issuing special conditions.

Based on the experience gained by the FAA in developing special conditions, the FAA now believes that it is appropriate to establish airworthiness standards for vision systems with transparent displays located in the pilot's outside view for airplanes and rotorcraft. Accordingly, the FAA proposes to amend §§ 23.773, 25.773, 27.773, and 29.773 to include those general requirements that were previously contained in special conditions. In recognition of the rapid development of vision system technology, the proposed amendments are also written to permit the certification of a wide range of current and future vision systems and to address display methods other than a HUD, such as head-mounted displays or other types of head-up presentations.

Although the proposed amendments differ slightly in structure to conform with the sections to which they have been added, the proposed requirements are essentially identical. The amendments would ensure that the system compensates for interference, provides an undistorted and conformal view of the external scene, provides a means to deactivate the display, and does not restrict the pilot from performing specific maneuvers.

Each section would be amended to ensure that, while the vision system display is in operation, it must compensate for interference with the pilot's outside view. The combination of what is visible in the display and what remains visible through and around it must enable the pilot using a vision system to perform those actions necessary for the operation of the aircraft as safely and effectively as would a pilot without a vision system.

The FAA proposes that while the vision system is in operation, it must provide an undistorted view of the external scene. To ensure that the information provided by the vision system to the pilot is conformal to the external scene, the FAA would require that the imagery, attitude symbology, flight path vector, flight path angle reference cue, and other cues which are referenced to this imagery and external scene topography, be presented in a manner that is aligned with, and scaled to, the external scene.

The vision system would be required to provide a means to allow the pilot using the display to immediately deactivate and reactivate the vision system imagery, on demand, without removing the pilot's hands from the primary flight controls and thrust, or power, controls. The FAA believes that this proposed requirement is necessary in the unlikely event that the vision system does not provide a clear and undistorted image of the external scene or when the pilot does not wish to utilize the system's full capabilities in time critical situations.

When the vision system is not in operation, it must not restrict the pilot from performing those maneuvers necessary for the safe operation of the aircraft or detract from the ability of the pilot compartment to meet applicable airworthiness standards. This proposed requirement would ensure that when the vision system is not in operation the pilot would be able to operate the aircraft as safely and effectively as would a pilot without a vision system.

The FAA notes that previously issued special conditions contained additional requirements that have not been set forth in this proposal. The FAA proposes that those previous requirements be specified in guidance material as a means of compliance with the proposed requirements set forth in §§ 23.773, 25.773, 27.773, and 29.773. This guidance would be contained in proposed AC 20–167A, Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined

Vision System, and Enhanced Flight Vision System Equipment. Additionally, certification criteria for head-up displays is contained in AC 25–11A, Change 1, Electronic Flight Deck Displays.

K. Related Amendments (§§ 91.175, 91.189, and 91.905)

The reference in current § 91.175(c)(3)(vi) to the term ''visual approach slope indicator'' would be revised to ''the visual glideslope indicator.'' The FAA proposes to revise this term because the term ''visual approach slope indicator'' is excessively restrictive. The proposed revision would permit other devices, such as a precision approach path indicator (PAPI) and a pulsating visual approach slope indicator (PVASI), that provide visual glideslope information to be used as a required visual reference for operations below DA/DH or MDA during the conduct of an instrument approach procedure.

In a previous rulemaking action, Area Navigation (RNAV) and Miscellaneous Amendments (72 FR 31678; Jun 7, 2007), the FAA changed most of the references to ''DH or MDA'' in § 91.175 to ''DA/DH or MDA.'' However, the references to ''DH or MDA'' in § 91.175(l) were not changed. The FAA proposes to correct this inadvertent omission and amend proposed § 91.176(b) accordingly.

Currently § 91.175 is listed as one of the rules in § 91.905 that is subject to waiver. As the proposal moves the provisions applicable to EFVS operations to 100 feet currently contained in § 91.175(l) and (m) to proposed § 91.176, the FAA proposes to amend § 91.905 to include proposed § 91.176 as a rule subject to waiver. Proposed § 91.176 would also contain regulatory provisions applicable to EFVS operations to touchdown and rollout. As the FAA has already permitted EFVS operations to 100 feet to be subject to waiver, the FAA proposes that the provisions of the rule applicable to EFVS operations to touchdown and rollout also be subject to waiver.

L. Conforming Amendments (§§ 91.175 and 91.189)

Certain conforming amendments consisting of revisions to regulatory citations and updates to terms need to be made as the result of this proposed rulemaking action and a previous rulemaking action.

The introductory text of § 91.175(c) would be amended to change the reference to ''paragraph (l) of this section'' to ''§ 91.176'' since proposed § 91.176 would contain the current and proposed rules for EFVS.

The FAA proposes to amend § 91.175(d)(1) to refer to proposed § 91.176 because proposed § 91.176 would contain rules for EFVS operations. The FAA also proposes to amend § 91.175(d)(1) to delete the reference to paragraph (l)(4) of that section and refer to paragraphs (a)(3)(iii) and (b)(3)(iii) of proposed § 91.176. These paragraphs would contain the visual references required for descent below 100 feet above the touchdown zone elevation for EFVS operations to touchdown and rollout and EFVS operations to 100 feet, respectively.

Paragraph (e)(1) of § 91.175 would be amended to revise the reference to paragraph (l) of that section to refer to proposed § 91.176 which would contain the rules for EFVS operations.

M. Implementation

The FAA proposes to limit initial implementation of EFVS operations to touchdown and rollout to visibilities of no lower than 1000 RVR because airworthiness and certification criteria have not been developed to support EFVS operations below 1000 RVR. All operators who wish to conduct EFVS operations to touchdown and rollout under this proposal would be required to obtain an OpSpec, MSpec, or LOA, as appropriate.

Airworthiness and certification criteria to support EFVS operations to touchdown and rollout in visibilities as low as 1000 RVR were developed through FAA and industry participation on RTCA Special Committee 213 (SC–213). RTCA SC–213 was tasked with developing minimum aviation system performance standards (MASPS) for both EFVS operations to 100 feet and EFVS operations to touchdown and rollout. The special committee was also tasked with developing MASPS for synthetic vision systems (which are not the subject of the operational requirements of this rule) and combined vision systems. On December 16, 2008, RTCA published DO–315, which contained the MASPS for EFVS operations to 100 feet above the touchdown zone elevation. The FAA subsequently incorporated these MASPS into AC 20–167, Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined Vision System, and Enhanced Flight Vision System Equipment. RTCA SC–213 then began work on MASPS for EFVS to touchdown operations. Because the airworthiness requirements to support EFVS operations in very low visibilities would be different than those conducted in a higher visibility range, SC–213 recommended parsing the MASPS for touchdown and rollout operations into two activities—MASPS for EFVS to touchdown and rollout down to 1000 RVR and MASPS for EFVS to touchdown and rollout down to 300 RVR. RTCA published DO–315A on September 15, 2010, which contains the MASPS for EFVS operations to touchdown and rollout down to 1000 RVR. The FAA currently only plans to revise AC 20–167 to incorporate these MASPS for EFVS operations to touchdown and rollout down to 1000 RVR. RTCA SC–213, however, is currently working to develop MASPS for EFVS operations to touchdown and rollout in visibilities down to 300 RVR.

Current enhanced flight vision systems use infrared-based (IR-based) sensors. While IR-based sensors provide the required enhanced flight visibility in certain visibility-limiting conditions, they currently do not provide the enhanced flight visibility required by the operating rules for EFVS to support operations in lower visibility ranges. Industry is developing other sensor technologies, such as millimeter wave radar, that are not limited in the same ways that IR-based sensors are limited. These efforts are still developmental, but show promise. Anticipating that industry's sensor development efforts will produce sensors or sensor combinations that will provide adequate enhanced flight visibility to support operations at less than 1000 RVR, the FAA's proposed rule language has been written in a performance-based manner.

The FAA intends to manage these authorizations for EFVS to touchdown and rollout through OpSpecs, MSpecs, and LOAs. Managing authorizations in this manner would enable the FAA to structure an operator's operational approval in a way that is performance-based—a way that links equipage and system performance to specific operational capabilities and authorizations. It would also permit the FAA to respond more rapidly to new technology. Rather than restricting the use of all vision technologies to a rigid and limiting set of visibility values, the FAA, for example, could permit new EFVS operations as vision technologies and appropriate equipment certification criteria are developed. The FAA believes that its actions would accommodate future growth in real-time sensor technologies without having to amend the regulations to address these future technological advancements.

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 (Public Law 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Public Law 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. We suggest that readers seeking greater details read the full regulatory evaluation, a copy of which we placed in the docket for this rulemaking.

In conducting these analyses, the FAA has determined that this proposed rule: (1) Has benefits that justify the costs; (2) is not an economically ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866; (3) is not ''significant'' as defined in DOT's Regulatory Policies and Procedures; (4) would not have a significant economic impact on a substantial number of small entities; (5) would not create unnecessary obstacles to the foreign commerce of the United States; and (6) would not impose an unfunded mandate on state, local, or tribal governments, or other private sectors by exceeding the threshold identified above. These analyses are summarized below.

Parties Potentially Affected by This Rulemaking

- Original equipment manufacturers (OEMs) producing enhanced flight vision systems (EFVS) or other vision systems, in accordance with parts 23, 25, 27, or 29
- Persons installing EFVS or other vision systems with a transparent display surface located in the pilot's outside view
- Persons conducting EFVS operations under parts 91, 121, 125, 129, or part 135
- Persons conducting EFVS training

Principal Assumptions and Sources of Information

- A 10-year period for this analysis is used because this period captures all significant cost impacts
- Discount rate is 7 percent (Office of Management & Budget, Circular A–4, ''Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs,'' October 29, 1992, p. 8, *www.whitehouse.gov/omb/circulars/index.html*)
- An average of 4 pilots assigned to each EFVS-equipped aircraft
- OEMs and two operators provided the number of EFVS-equipped aircraft
- Operators of some aircraft equipped with older EFVS units would not seek certification for EFVS to touchdown and rollout
- The estimation of the incremental training cost per person is approximately $750 based on data collected from training centers
- Certification costs of incremental EFVS capabilities to touchdown and rollout are approximately $1 million in the aggregate
- Aircraft operations over the next 10 years will grow about 3.7% per year based on the FAA 2012 forecast (Table 28, FAA Aerospace Forecast Fiscal Years 2012–2032) [1]

Benefits of This Rule

Since the decision to conduct EFVS operations is voluntary, the FAA expects those who choose to engage in those operations would do so only if the expected benefit to them exceeds the cost they incur. The proposed rule would enable expanded EFVS operations, which would increase access, efficiency and throughput in low visibility conditions, and minimize potential for missed approaches and delayed take-offs. In addition, EFVS permits low visibility operations on a greater number of approach procedure types. Changes in the U.S. aviation infrastructure,[2], for example, the transition from incandescent to light-emitting diode (LED) approach lights, could potentially impact the near term benefits for persons using EFVS equipment but may not impact future benefits of EFVS equipment designed to be interoperable with LEDs. The impact on the benefits is unknown because both the infrastructure and EFVS capabilities are evolving. Benefits of this proposed rule would be realized by averting costs related to interrupted flight operations due to low visibility resulting in lost passenger time and extra fuel consumption.

Since aircraft currently cannot use EFVS to touchdown and rollout, we do not have sufficient historical data to quantify these benefits. We invite comments from existing EFVS operators about their expected benefits. We request comments to include airplanes affected, type of operation, number of approaches that would be completed as a result of adopting the provisions of the proposed rule, and extra costs of missed approaches and delayed departures and arrivals.

Revisions to pilot compartment view requirements for vision systems with a transparent display surface located in the pilot's outside view would codify the current practice of issuing special conditions for each of these vision systems by providing industry with known requirements for the certification of these systems under parts 23, 25, 27, and 29. Because the proposed changes would streamline the certification process for these vision systems by eliminating the need to issue special conditions, the FAA and applicants would save the time and expense associated with the issuance of these special conditions. The full extent of these benefits is not known and therefore has not been quantified in this analysis.

Costs of This Rule

The regulatory costs attributed to the proposed requirements are those above and beyond the current regulation and common practice. The FAA estimates compliance costs as the incremental differences in costs, resulting from the proposed changes in training, equipment and certification requirements. Data were obtained from EFVS original equipment manufacturers, training centers, and two operators. The total incremental cost attributable to the proposed requirements equals nominal training cost ($4.3 million) plus the initial certification cost ($1 million). The compliance cost of the proposed equipment requirements is negligible. The total incremental cost of the proposed rule is approximately $5.3 million for the ten year period. The present value cost is approximately $4.5 million using a seven percent discount

[1] The FAA forecast for active general aviation (GA) turbojets is 3.7% for the period of 2011–2021.

[2] FAA airport infrastructure decisions are independent from this analysis.

rate. The following table presents the summary of the regulatory costs in 2012 dollars (nominal value) and present value (PV).

Cost component	Cost in 2012 dollars ($ million)	PV at 7% ($ million)
Training Cost	$4.3	$3.5
Certification Cost	1	1
Total	5.3	4.5

Revisions to pilot compartment view requirements for vision systems with a transparent display surface located in the pilot's outside view would not result in additional certification costs compared to the current process of issuing special conditions for each vision system installation because the amendment would not require the FAA or an applicant to take additional actions to certificate these systems. The full extent of the costs for the certification of new vision systems with a transparent display surface located in the pilot's outside view is not known and has not been quantified in the analysis.

Benefit/Cost Summary

The total estimated cost of this proposed rule over 10 years is approximately $5.3 million nominal value or $4.5 million present value at a 7% discount rate. The annualized cost of this proposed rule in current dollar value is a half million dollars. These estimated compliance costs would be incurred by those operators who want improved EFVS capabilities. OEMs are already proceeding with efforts to expand EFVS capabilities, which indicate the benefits of conducting expanded EFVS operations would likely exceed the costs. Operators have also expressed an interest in obtaining EFVS capabilities to conduct operations to touchdown and rollout. The revisions to pilot compartment view requirements for vision systems with a transparent display surface located in the pilot's outside view would not impose additional costs from those currently incurred using the special conditions process. The FAA believes the proposed rule would have benefits exceeding costs based on the likelihood that OEMs and operators would voluntarily incur the costs of the proposed rule in order to realize expected benefits. To quantify benefits, we request comments about expected benefits attributable to the proposed rule.

B. Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Public Law 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 FAA expects many small entities would benefit from this proposed rule. The purpose of the rule is to provide the safe operating requirements which would allow EFVS to extend operations from the current 100 feet above the touchdown zone elevation to landing. As these systems are largely installed in general aviation turbojets, we expect a substantial number of small entities to be affected. However, as the rule is voluntary, these small entities must choose to comply with this rule to obtain additional EFVS capabilities. Given the value of these turbojets, the value of EFVS and the value of the flights, the additional training cost would not result in a significant economic impact. Therefore, the FAA certifies that this proposed rule would not have 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 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 rule would not impose obstacles to foreign commerce, as foreign exporters do not have to change their current export products to the United States.

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 $143.1 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.

According to the 1995 amendments to the Paperwork Reduction Act (5 CFR 1320.8(b)(2)(vi)), an agency may not collect or sponsor the collection of information, nor may it impose an information collection requirement unless it displays a currently valid Office of Management and Budget (OMB) control number.

This action contains the following proposed information collection requirements. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has submitted these proposed information collection requirements to OMB for its review.

The paperwork burden comprises documentation of requirements for training, recent flight experience, and proficiency under § 61.31. The following analyses were conducted under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501). If some operators eventually choose to conduct EFVS operations to touchdown and rollout, the provisions of proposed § 61.31(l) would result in a requirement to keep records of training, recent flight experience, and proficiency. It would not require mandatory reporting. We estimate the paperwork burden of these requirements to be $86,000.

The total cost of the annualized paperwork burden is determined by multiplying the number of pilots per EFVS-equipped aircraft (four) by the number of EFVS aircraft (982) and then by the time of complying with the paperwork requirements for each pilot. The requirement of keeping flight crewmembers' training documentation is covered under current Federal aviation regulations. Therefore, we would not repeat the cost estimate of recordkeeping due to current training requirement. Operators, however, are required to log their approaches using EFVS in 6 months in compliance with the recent flight experience and proficiency requirements of the proposed rule. The action of logging each approach in a semiannual frequency can be done manually or electronically. We estimated the time required to complete recordkeeping by flight crewmembers would be about 0.10 hours semiannually or 0.20 hours annually. Assuming 3,928 pilots would be affected by the recordkeeping provisions of the rule, it would require about 786 hours of annual paperwork, and approximately $86,000 nominal cost at the maximum based on the average wage rate of $109 for flight crewmembers from the RITA–BTS Form 41.

Individuals and organizations may submit comments on the information collection requirement by September 9, 2013, and should direct them to the address listed in the **ADDRESSES** section of this document. Comments also should be submitted to the Office of Management and Budget, Office of Information and Regulatory Affairs, Attention: Desk Officer for FAA, New Executive Building, Room 10202, 725 17th Street NW., Washington, DC 20053 or via facsimile at (202) 395–6974.

According to the 1995 amendments to the Paperwork Reduction Act (5 CFR 1320.8(b)(2)(vi)), an agency may not collect or sponsor the collection of information, nor may it impose an information collection requirement unless it displays a currently valid OMB control number. The OMB control number for this information collection will be published in the **Federal Register**, after the Office of Management and Budget approves it.

F. International Compatibility

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 1050.1E 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. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 312f and involves no extraordinary circumstances.

V. Executive Order Determinations

A. Executive Orders 12866 and 13563

See the ''Regulatory Evaluation'' discussion in the ''Regulatory Notices and Analyses'' section elsewhere in this preamble.

B. 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.

C. 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), when 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 or notice 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.

VII. The Proposed Amendment

List of Subjects

14 CFR Part 1

Air transportation.

14 CFR Part 23

Aircraft, Aviation safety.

14 CFR Part 25

Aircraft, Aviation safety.

14 CFR Part 27

Aircraft, Aviation safety.

14 CFR Part 29

Aircraft, Aviation safety.

14 CFR Part 61

Aircraft, Airmen, Reporting and recordkeeping requirements.

14 CFR Part 91

Air traffic control, Aircraft, Airmen, Airports, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 121

Air carriers, Aircraft, Airmen, Aviation safety, Charter flights, Safety, Transportation.

14 CFR Part 125

Aircraft, Airmen, Aviation safety.

14 CFR Part 135

Air taxis, Aircraft, Airmen, 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 1—DEFINITIONS AND ABBREVIATIONS

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

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

■ 2. Amend § 1.1 by adding the definition of ''EFVS operation'' in alphabetical order, and revising the definition for ''Enhanced flight vision system (EFVS)'' to read as follows:

§ 1.1 General definitions.

* * * * *

EFVS operation means an operation in which an EFVS is required to be used to perform an approach or landing, determine enhanced flight visibility, identify required visual references, or conduct the rollout.

* * * * *

Enhanced flight vision system (EFVS) means an installed aircraft system which uses an electronic means to provide a display of the forward external scene topography (the applicable natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as forward-looking infrared, millimeter wave radiometry, millimeter wave radar, or low-light level image intensification. The EFVS sensor imagery and required aircraft flight information and flight symbology is displayed on a head-up display, or an equivalent display, so that the imagery and symbology is clearly visible to the pilot flying in his or her normal position with the line of vision looking forward along the flight path. An EFVS includes the display element, sensors, computers and power supplies, indications, and controls.

* * * * *

PART 23—AIRWORTHINESS STANDARDS: NORMAL, UTILITY, ACROBATIC, AND COMMUTER CATEGORY AIRPLANES

■ 3. The authority citation for part 23 continues to read as follows:

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

■ 4. Amend § 23.773 by adding paragraph (c) to read as follows:

§ 23.773 Pilot compartment view.

* * * * *

(c) A vision system with a transparent display surface located in the pilot's outside view, such as a head-up-display, head-mounted display, or other equivalent display, must meet the following requirements:

(1) While the vision system display is in operation, it must compensate for interference with the pilot's outside view such that the combination of what is visible in the display and what remains visible through and around it, enables the pilot to perform the maneuvers as specified in paragraph (a)(1) of this section and the pilot compartment to meet the provisions of paragraph (a)(2) of this section.

(2) While the vision system display is in operation, it must provide an undistorted view of the external scene. The vision system display must present the imagery, attitude symbology, flight path vector, flight path angle reference cue, and other cues which are referenced to this imagery and external scene topography, so that they are aligned with, and scaled to, the external scene.

(3) The vision system must provide a means to allow the pilot using the display to immediately deactivate and reactivate the vision system imagery, on demand, without removing the pilot's hands from the primary flight controls (yoke or equivalent) or thrust controls.

(4) When the vision system is not in operation it must not restrict the pilot from performing the maneuvers as specified in paragraph (a)(1) of this section and the pilot compartment from meeting the provisions of paragraph (a)(2) of this section.

PART 25—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

■ 5. The authority citation for part 25 continues to read as follows:

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

■ 6. Amend § 25.773 by adding paragraph (e) to read as follows:

§ 25.773 Pilot compartment view.

* * * * *

(e) *Vision systems with transparent displays.* A vision system with a transparent display surface located in the pilot's outside view, such as a head-up-display, head-mounted display, or other equivalent display, must meet the following requirements:

(1) While the vision system display is in operation, it must compensate for interference with the pilot's outside view such that the combination of what is visible in the display and what remains visible through and around it, enables the pilot to perform the maneuvers and normal duties as specified in paragraph (a) of this section.

(2) While the vision system display is in operation, it must provide an undistorted view of the external scene. The vision system display must present the imagery, attitude symbology, flight path vector, flight path angle reference cue, and other cues which are referenced to this imagery and external scene topography, so that they are aligned with, and scaled to, the external scene.

(3) The vision system must provide a means to allow the pilot using the display to immediately deactivate and reactivate the vision system imagery, on demand, without removing the pilot's hands from the primary flight controls (yoke or equivalent) or thrust controls.

(4) When the vision system is not in operation it must not restrict the pilot from performing the maneuvers as specified in paragraph (a)(1) of this section and the pilot compartment from meeting the provisions of paragraph (a)(2) of this section.

PART 27—AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

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

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

■ 8. Amend § 27.773 by adding paragraph (c) to read as follows:

§ 27.773 Pilot compartment view.

* * * * *

(c) A vision system with a transparent display surface located in the pilot's outside view, such as a head-up-display, head-mounted display, or other equivalent display, must meet the following requirements:

(1) While the vision system display is in operation, it must compensate for interference with the pilot's outside view such that the combination of what is visible in the display and what remains visible through and around it, provides for the same level of safe operation as specified in paragraphs (a)(1) and (b) of this section.

(2) While the vision system display is in operation, it must provide an undistorted view of the external scene. The vision system display must present the imagery, attitude symbology, flight path vector, flight path angle reference cue, and other cues which are referenced to this imagery and external scene topography, so that they are aligned with, and scaled to, the external scene.

(3) The vision system must provide a means to allow the pilot using the display to immediately deactivate and reactivate the vision system imagery, on demand, without removing the pilot's hands from the primary flight and power controls (cyclic and collective or equivalent).

(4) When the vision system is not in operation it must permit the same level of safe operation as specified in paragraphs (a)(1) and (b) of this section.

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

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

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

■ 10. Amend § 29.773 by adding paragraph (c) to read as follows:

§ 29.773 Pilot compartment view.

* * * * *

(c) A vision system with a transparent display surface located in the pilot's outside view, such as a head-up-display, head-mounted display, or other equivalent display, must meet the following requirements:

(1) While the vision system display is in operation, it must compensate for interference with the pilot's outside view such that the combination of what is visible in the display and what remains visible through and around it, provides for the same level of safe operation as specified in paragraph (a) of this section.

(2) While the vision system display is in operation, it must provide an undistorted view of the external scene. The vision system display must present the imagery, attitude symbology, flight path vector, flight path angle reference cue, and other cues which are referenced to this imagery and external scene topography, so that they are aligned with, and scaled to, the external scene.

(3) The vision system must provide a means to allow the pilot using the display to immediately deactivate and reactivate the vision system imagery, on demand, without removing the pilot's hands from the primary flight and power controls (cyclic and collective or equivalent).

(4) When the vision system is not in operation it must permit the same level of safe operation as specified in paragraph (a) of this section.

PART 61—CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND GROUND INSTRUCTORS

■ 11. The authority citation for part 61 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44703, 44707, 44709–44711, 45102–45103, 45301–45302.

■ 12. Amend § 61.31 by redesignating paragraph (l) as paragraph (m) and adding a new paragraph (l) to read as follows:

§ 61.31 Type rating requirements, additional training, and authorization requirements.

* * * * *

(l) *Additional training required for EFVS operations.* (1) Except as provided under paragraph (l)(7) of this section, no person may manipulate the controls of an aircraft or act as pilot in command of an aircraft during an EFVS operation as specified in § 91.176(a) or (b) of this chapter, or serve as a required pilot flight crewmember during an EFVS operation as specified in § 91.176(a) of this chapter, unless that person—

(i) Receives and logs ground training from an authorized instructor under a training program approved by the Administrator; and

(ii) Obtains a logbook or other endorsement from an authorized instructor who certifies the person completed the ground training.

(2) The ground training specified in paragraph (a)(1)(i) of this section must include the following subjects:

(i) Applicable portions of this chapter that relate to EFVS flight operations and limitations, including AFM limitations;

(ii) EFVS display, controls, modes, features, symbology, annunciations, and associated systems and components;

(iii) EFVS sensor performance, sensor limitations, scene interpretation, visual anomalies, and other visual effects;

(iv) Preflight planning and operational considerations associated with using EFVS during taxi, takeoff, climb, cruise, descent and landing phases of flight, including the use of EFVS for instrument approaches, operating below DA/DH or MDA, executing missed approaches, landing, rollout, and balked landings;

(v) Weather associated with low visibility conditions and its effect on EFVS performance;

(vi) Normal, abnormal, emergency, and crew coordination procedures when using EFVS; and

(vii) Interpretation of approach and runway lighting systems and their display characteristics when using an EFVS.

(3) Except as provided under paragraph (l)(7) of this section, no person may manipulate the controls of an aircraft or act as pilot in command of an aircraft during an EFVS operation as specified in § 91.176(a) or (b) of this chapter unless that person—

(i) Receives and logs flight training from an authorized instructor who meets the requirements in this paragraph (l) under a training program approved by the Administrator; and

(ii) Obtains a logbook or other endorsement from an authorized instructor who found the person proficient in the use of EFVS for the EFVS operations to be conducted.

(4) The flight training specified in paragraph (l)(3)(i) of this section must include the following tasks—

(i) Preflight and inflight preparation of EFVS equipment for EFVS operations, including EFVS setup and use of display, controls, modes and associated systems, including adjustments for brightness and contrast under day and night conditions;

(ii) Proper piloting techniques associated with using EFVS during taxi, takeoff, climb, cruise, descent, landing, and rollout, to include missed approaches and balked landings;

(iii) Proper piloting techniques for the use of EFVS during instrument approaches, to include operations below DA/DH or MDA as applicable, under both day and night conditions;

(iv) Determining enhanced flight visibility;

(v) Identifying required visual references appropriate to EFVS operations;

(vi) Transitioning from EFVS sensor imagery to natural vision acquisition of required visual references and the runway environment;

(vii) Using EFVS sensor imagery to touchdown and rollout, if EFVS operations as specified in § 91.176(a) of this chapter are to be conducted; and

(viii) Normal, abnormal, emergency, and crew coordination procedures when using an EFVS.

(5) A flight simulator equipped with an EFVS may be used to meet the flight training requirements specified in paragraph (l)(3) of this section. The flight simulator must be a level 'C' simulator with a daylight visual display, or a level 'D' simulator. Each simulator must be qualified for EFVS by the National Simulator Program.

(6) A person qualified to conduct EFVS operations under § 91.176(a) or (b) of this chapter who seeks to conduct additional EFVS operations for which that person has not received training must receive—

(i) The flight training and endorsement specified in paragraph (l)(3) of this section appropriate to the additional EFVS operations to be conducted; or

(ii) A pilot proficiency check on the additional EFVS operations administered by an FAA inspector, designated examiner, a check airman under parts 121, 125, 135, or a program manager check pilot under part 91 subpart K of this chapter.

(7) The requirements under paragraphs (l)(1) and (3) of this section do not apply if a person has satisfactorily completed—

(i) A pilot proficiency check on EFVS operations as specified in § 91.176(a) or (b) of this chapter, as applicable, conducted by:

(A) An FAA Inspector or designated examiner;

(B) A person authorized by the U.S. Armed Forces to administer an EFVS proficiency check provided the person receiving the check was a member of the U.S. Armed Forces at the time the check was administered;

(C) An authorized instructor employed by a Federal, State, county, or municipal agency to administer an EFVS proficiency check provided the person receiving the check was employed by that agency at the time the check was administered; or

(D) A check airman under parts 121, 125, 135, or a program manager check pilot under part 91 subpart K of this chapter; or

(ii) A training program, proficiency check, or other course of instruction applicable to EFVS operations conducted under § 91.176(b) of this chapter that is acceptable to the Administrator before [*DATE TWO YEARS AFTER THE EFFECTIVE DATE OF THE FINAL RULE*].

* * * * *

■ 13. Amend § 61.57 by adding paragraphs (h) and (i) to read as follows:

§ 61.57 Recent flight experience: Pilot in command.

* * * * *

(h) *EFVS operating experience.* (1) A person may manipulate the controls of an aircraft during an EFVS operation or act as pilot in command of an aircraft during an EFVS operation only if, within 6 calendar months preceding the month of the flight, that person performs and logs six instrument approaches under any weather conditions as the sole manipulator of the controls using an EFVS. One approach must terminate in a full stop landing. For persons authorized to exercise the privileges of § 91.176(a), the full stop landing must be conducted using the EFVS.

(2) A flight simulator equipped with an EFVS may be used to meet the EFVS operating experience requirements specified in paragraph (h)(1) of this section. The flight simulator must be a level 'C' simulator with a daylight visual display, or a level 'D' simulator. Each simulator must be qualified by the National Simulator Program for EFVS.

(i) *EFVS proficiency check.* A person who does not meet the EFVS experience requirements of this paragraph (h) must pass an EFVS proficiency check to act as pilot in command in an EFVS operation or to manipulate the controls of an aircraft during an EFVS operation. The proficiency check must be performed in the category of aircraft for which the person is seeking the EFVS privilege or in a flight simulator that is representative of that category of aircraft. The flight simulator must be a level 'C' simulator with a daylight visual display, or a level 'D' simulator. Each simulator must be qualified by the National Simulator Program for EFVS. The check must consist of the tasks listed in § 61.31(l), and the check must be performed by:

(1) An FAA Inspector or designated examiner who is qualified to perform EFVS operations in that same aircraft category;

(2) A person who is authorized by the U.S. Armed Forces to perform EFVS proficiency checks, provided the person being administered the check is also a member of the U.S. Armed Forces;

(3) A company check pilot who is authorized to perform EFVS proficiency checks under parts 121, 125, or 135, or subpart K of part 91 of this chapter, provided that both the check pilot and the pilot being tested are employees of that operator or fractional ownership program manager, as applicable;

(4) An authorized instructor who meets the additional training requirements for EFVS operations specified in § 61.31(l) of this chapter, and if conducting a proficiency check in an aircraft, meets the recent flight experience specified in paragraph (h) of this section or this paragraph (i); or

(5) A person approved by the FAA to perform EFVS proficiency checks.

PART 91—GENERAL OPERATING AND FLIGHT RULES

■ 14. The authority citation for part 91 continues to read as follows:

Authority: 49 U.S.C. 106(g), 1155, 40103, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316, 46504, 46506–46507, 47122, 47508, 47528–47531, articles 12 and 29 of the Convention on International Civil Aviation (61 Stat. 1180).

■ 15. Amend § 91.175 by revising paragraphs (c) introductory text, (c)(3)(vi), (d)(1), and (e)(1), and removing paragraphs (l) and (m).

The revisions read as follows:

§ 91.175 Takeoff and landing under IFR.

* * * * *

(c) *Operation below DA/DH or MDA.* Except as provided in § 91.176 of this chapter, where a DA/DH or MDA is applicable, no pilot may operate an aircraft, except a military aircraft of the United States, below the authorized MDA or continue an approach below the authorized DA/DH unless—

* * * * *

(3) * * *

(vi) The visual glideslope indicator.

* * * * *

(d) * * *

(1) For operations conducted under § 91.176 of this chapter, the requirements of paragraphs (a)(3)(iii) or (b)(3)(iii), as applicable, of that section are not met; or

* * * * *

(e) * * *

(1) Whenever operating an aircraft pursuant to paragraph (c) of this section or § 91.176 of this chapter, the requirements of that paragraph are not met at either of the following times:

* * * * *

■ 16. Add § 91.176 to read as follows:

§ 91.176 Operation below DA/DH or MDA using an enhanced flight vision system (EFVS) under IFR.

(a) *EFVS operations to touchdown and rollout.* No person may conduct an EFVS operation in an aircraft, except a military aircraft of the United States, at any airport below the authorized DA/DH to touchdown and rollout using a straight-in, precision instrument approach procedure or an approach procedure with approved vertical guidance unless the following requirements are met:

(1) *Equipment.* (i) The aircraft is equipped with an operable EFVS that has either an FAA type design approval certified for EFVS operations to touchdown and rollout, or for a foreign-registered aircraft that does not have an FAA-type design approval, an EFVS that otherwise meets the requirements of this chapter for those operations. The EFVS must:

(A) Have an electronic means to provide a display of the forward external scene topography (the applicable natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as forward-looking infrared, millimeter wave radiometry, millimeter wave radar, or low-light level image intensification.

(B) Present EFVS sensor imagery and aircraft flight symbology on a head-up display, or an equivalent display, so that the imagery and symbology is clearly visible to the pilot flying in his or her normal position with the line of vision looking forward along the flight path. Aircraft flight symbology must consist of at least airspeed, vertical speed, aircraft attitude, heading, altitude, height above ground level such as that provided by a radio altimeter or other device capable of providing equivalent performance, command guidance, as appropriate, for the approach to be flown, path deviation indications, flight path vector, and flight path angle reference cue. Additionally, the EFVS must display flare prompt or flare guidance, as appropriate, for achieving acceptable touchdown performance.

(C) Present the displayed EFVS sensor imagery, attitude symbology, flight path vector, and flight path angle reference cue, and other cues, which are referenced to the EFVS sensor imagery and external scene topography, so that they are aligned with, and scaled to, the external view.

(D) Display the flight path angle reference cue with a pitch scale that is selectable by the pilot to the desired descent angle for the approach and suitable for monitoring the vertical flight path of the aircraft.

(E) Display the EFVS sensor imagery and aircraft flight symbology such that they do not adversely obscure the pilot's outside view or field of view through the cockpit window.

(F) Have display characteristics, dynamics, and cues that are suitable for manual control of the aircraft to touchdown in the touchdown zone of the runway of intended landing and during rollout.

(ii) When a minimum flightcrew of more than one pilot is required, the aircraft must be equipped with a display that provides the pilot monitoring with EFVS sensor imagery. The display must be located within the maximum primary field of view of the pilot monitoring and any symbology displayed must not adversely obscure the sensor imagery of the runway environment. Based upon the EFVS operation to be performed, the Administrator may require the display of the EFVS sensor imagery and aircraft flight symbology to be provided to the pilot monitoring on a head-up display, or other equivalent display appropriate to the operation to be conducted.

(2) *Operations.* (i) Each required pilot flight crewmember has adequate knowledge of, and familiarity with, the aircraft, the EFVS, and the procedures to be used.

(ii) The aircraft is equipped with, and the pilot flying uses, an operable EFVS that meets the equipment requirements specified in paragraph (a)(1) of this section.

(iii) When a minimum flightcrew of more than one pilot is required, the pilot monitoring must use the display specified in paragraph (a)(1)(ii) of this section to monitor and assess the safe conduct of the approach, landing, and rollout.

(iv) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers.

(v) The descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing.

(vi) Each required pilot flight crewmember meets—

(A) The applicable training, recent flight experience, and proficiency requirements of part 61 of this chapter, and for a part 119 or 125 certificate holder, the applicable training, testing and qualification provisions of parts 121, 125, and 135 of this chapter; or

(B) For a foreign person, the requirements of the civil aviation authority of the State of the operator.

(vii) For a person conducting operations under part 91, other than those conducted under subpart K, the operation is conducted in accordance with a Letter of Authorization authorizing the use of EFVS.

(viii) For a person conducting operations under part 91, subpart K, the operation is conducted in accordance with Management Specifications authorizing the use of EFVS.

(ix) For a person conducting operations under part 121, 129, or 135 of this chapter, the operation is conducted in accordance with operations specifications authorizing the use of EFVS.

(x) For a person conducting operations under part 125 of this chapter, the operation is conducted in accordance with operations specifications authorizing the use of

EFVS or the operator holds a Letter of Authorization for the use of EFVS.

(3) *Visibility and Visual Reference Requirements.* No pilot operating under this section or §§ 121.651, 125.381, and 135.225 of this chapter may operate an aircraft at any airport below the authorized DA/DH and land unless:

(i) The pilot determines that the enhanced flight visibility observed by use of a certified EFVS is not less than the visibility prescribed in the instrument approach procedure being used.

(ii) From the authorized DA/DH to 100 feet above the touchdown zone elevation of the runway of intended landing, the approach light system (if installed) or both the runway threshold and the touchdown zone are distinctly visible and identifiable to the pilot using an EFVS.

(A) The runway threshold must be identified using at least one of the following visual references—

(*1*) The beginning of the runway landing surface;

(*2*) The threshold lights; or

(*3*) The runway end identifier lights.

(B) The touchdown zone must be identified using at least one of the following visual references—

(*1*) The runway touchdown zone landing surface;

(*2*) The touchdown zone lights;

(*3*) The touchdown zone markings; or

(*4*) The runway lights.

(iii) At 100 feet above the touchdown zone elevation of the runway of intended landing and below that altitude, one of the following visual references are distinctly visible and identifiable to the pilot using an EFVS—

(A) The runway threshold;

(B) The lights or markings of the threshold;

(C) The runway touchdown zone landing surface; or

(D) The lights or markings of the touchdown zone.

(b) *EFVS operations to 100 feet above the touchdown zone elevation.* No person may conduct an EFVS operation in an aircraft, except a military aircraft of the United States, at any airport below the authorized DA/DH or MDA to 100 feet above the touchdown zone elevation using a straight-in, instrument approach procedure unless the following requirements are met:

(1) *Equipment.* The aircraft is equipped with an operable EFVS that—

(i) Meets the requirements of paragraph (a)(1)(i) of this section;

(ii) Has an FAA-type design approval for EFVS operations to 100 feet above touchdown zone elevation and meets the requirements of paragraph (a)(1)(i) of this section but need not present flare prompt, flare guidance, or height above ground level; or

(iii) For a foreign-registered aircraft that does not have an FAA-type design approval, an EFVS that otherwise meets the requirements of this chapter for those operations.

(2) *Operations.* (i) Each required pilot flight crewmember has adequate knowledge of, and familiarity with, the aircraft, the EFVS, and the procedures to be used.

(ii) The aircraft is equipped with, and the pilot flying uses, an operable EFVS that meets the equipment requirements specified in paragraph (b)(1) of this section.

(iii) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers.

(iv) For operations conducted under part 121 or part 135 of this chapter, the descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing.

(v) Each required pilot flight crewmember meets—

(A) The applicable training, recent flight experience and proficiency requirements of part 61 of this chapter, and for a part 119 or 125 certificate holder, the applicable training, testing, and qualification provisions of parts 121, 125, and 135 of this chapter; or

(B) For a foreign person, the requirements of the civil aviation authority of the State of the operator.

(vi) For a person conducting operations under part 91, subpart K, the operation is conducted in accordance with Management Specifications authorizing the use of EFVS.

(vii) For a person conducting operations under part 121, 129, or 135 of this chapter, the operation is conducted in accordance with operations specifications authorizing the use of EFVS.

(viii) For a person conducting operations under part 125 of this chapter, the operation is conducted in accordance with operations specifications authorizing the use of EFVS or a Letter of Authorization for the use of EFVS.

(3) *Visibility and Visual Reference Requirements.* No pilot operating under this section or §§ 121.651, 125.381, and 135.225 of this chapter may operate an aircraft at any airport below the authorized MDA or continue an approach below the authorized DA/DH and land unless:

(i) From the authorized MDA or DA/DH to 100 feet above the touchdown zone elevation of the runway of intended landing, the pilot determines that the enhanced flight visibility observed by use of a certified enhanced flight vision system is not less than the visibility prescribed in the instrument approach procedure being used.

(ii) From the authorized MDA or DA/DH to 100 feet above the touchdown zone elevation of the runway of intended landing, the approach light system (if installed) or both the runway threshold and the touchdown zone are distinctly visible and identifiable to the pilot using an EFVS.

(A) The runway threshold must be identified using at least one of the following visual references—

(*1*) The beginning of the runway landing surface;

(*2*) The threshold lights; or

(*3*) The runway end identifier lights.

(B) The touchdown zone must be identified using at least one of the following visual references—

(*1*) The runway touchdown zone landing surface;

(*2*) The touchdown zone lights;

(*3*) The touchdown zone markings; or

(*4*) The runway lights.

(iii) At 100 feet above the touchdown zone elevation of the runway of intended landing and below that altitude, the flight visibility must be sufficient for one of the following visual references to be distinctly visible and identifiable to the pilot without reliance on the EFVS to continue to a landing—

(A) The runway threshold;

(B) The lights or markings of the threshold;

(C) The runway touchdown zone landing surface; or

(D) The lights or markings of the touchdown zone.

■ 17. Amend § 91.189 by revising paragraphs (d) introductory text and (e) to read as follows:

§ 91.189 Category II and III operations: General operating rules.

* * * * *

(d) Except as provided in § 91.176 of this part or unless otherwise authorized by the Administrator, no pilot operating an aircraft in a Category II or Category III approach that provides and requires the use of a DA/DH may continue the approach below the authorized decision height unless the following conditions are met:

* * * * *

(e) Except as provided in § 91.176 of this part or unless otherwise authorized by the Administrator, each pilot operating an aircraft shall immediately execute an appropriate missed approach whenever, prior to touchdown, the requirements of paragraph (d) of this section are not met.

* * * * *

■ 18. Amend § 91.905 by adding an entry for § 91.176 in numerical order to read as follows:

§ 91.905 List of rules subject to waivers.

* * * * *

91.176 Operation below DA/DH or MDA using an enhanced flight vision system (EFVS) under IFR.

* * * * *

PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

■ 19. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 40119, 41706, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 46105.

■ 20. Revise § 121.613 to read as follows:

§ 121.613 Dispatch or flight release under IFR or over-the-top.

No person may dispatch or release an aircraft for operations under IFR or over-the-top, unless appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at the airport or airports to which dispatched or released except—

(a) As provided in § 121.615; or

(b) In accordance with the certificate holder's operations specifications for EFVS operations.

■ 21. Amend § 121.615 by revising paragraph (a) to read as follows:

§ 121.615 Dispatch or flight release over water: Flag and supplemental operations.

(a) Except as provided in the certificate holder's operations specifications for EFVS operations, no person may dispatch or release an aircraft for a flight that involves extended overwater operation, unless appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at any airport to which dispatched or released, or to any required alternate airport.

* * * * *

■ 22. Amend § 121.651 by revising paragraphs (b) introductory text, (c) introductory text, (d) introductory text, redesignating paragraphs (e) and (f) as paragraphs (f) and (g), and adding new paragraph (e) to read as follows:

§ 121.651: Takeoff and landing weather minimums: IFR: All certificate holders.

* * * * *

(b) Except as provided in paragraphs (d) and (e) of this section, no pilot may continue an approach past the final approach fix, or where a final approach fix is not used, begin the final approach segment of an instrument approach procedure—

* * * * *

(c) Except as provided in paragraph (e) of this section, a pilot who has begun the final approach segment of an instrument approach procedure in accordance with paragraph (b) of this section and, after that, receives a later weather report indicating below-minimum conditions, may continue the approach to DA/DH or MDA. Upon reaching DA/DH or at MDA, and at any time before the missed approach point, the pilot may continue the approach below DA/DH or MDA if the following requirements are met—

* * * * *

(d) Except as provided in paragraph (e) of this section, a pilot may begin the final approach segment of an instrument approach procedure, other than a Category II or Category III procedure at an airport when the visibility is less than the visibility minimums prescribed for that procedure if the airport is served by an operative ILS and an operative PAR, and both are used by the pilot. However, no pilot may continue an approach below the authorized DA/DH unless the following requirements are met:

* * * * *

(e) A pilot may begin the final approach segment of an instrument approach procedure, or continue that approach procedure, at an airport when the visibility is reported to be less than the visibility minimums prescribed for that procedure if the aircraft is equipped with, and a pilot uses, an operable EFVS in accordance with § 91.176 of this chapter and the certificate holder's operations specifications for EFVS operations.

* * * * *

PART 125—CERTIFICATION AND OPERATIONS: AIRPLANES HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE; AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

■ 23. The authority citation for part 125 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44705, 44710–44711, 44713, 44716–44717, 44722.

■ 24. Revise § 125.325 to read as follows:

§ 125.325 Instrument approach procedures and IFR landing minimums.

Except as specified in § 91.176 of this chapter, no person may make an instrument approach at an airport except in accordance with IFR weather minimums and unless the type of instrument approach procedure to be used is listed in the certificate holder's operations specifications.

■ 25. Revise § 125.361 to read as follows:

§ 125.361 Flight release under IFR or over-the-top.

No person may release an airplane for operations under IFR or over-the-top, unless appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at the airport or airports to which released except—

(a) As provided in § 125.363; or

(b) In accordance with the certificate holder's operations specifications for EFVS operations.

■ 26. Amend § 125.363 by revising paragraph (a) to read as follows:

§ 125.363 Flight release over water.

(a) Except as provided in the certificate holder's operations specifications for EFVS operations, no person may release an airplane for a flight that involves extended overwater operation, unless appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at any airport to which released, or to any required alternate airport.

* * * * *

■ 27. Amend § 125.381 by revising paragraphs (a)(2), (b), and (c) introductory text, and adding paragraph (d) to read as follows:

§ 125.381 Takeoff and landing weather minimums: IFR.

(a) * * *

(2) Except as provided in paragraphs (c) and (d) of this section, land an airplane under IFR.

(b) Except as provided in paragraphs (c) and (d) of this section, no pilot may execute an instrument approach procedure if the latest reported visibility is less than the landing minimums specified in the certificate holder's operations specifications.

(c) Except as provided in paragraph (d) of this section, a pilot who initiates an instrument approach procedure based on a weather report that indicates that the specified visibility minimums

exist and subsequently receives another weather report that indicates that conditions are below the minimum requirements, may continue the approach if the following conditions are met—

* * * * *

(d) A pilot may execute an instrument approach procedure, or continue the approach, at an airport when the visibility is reported to be less than the visibility minimums prescribed for that procedure if the aircraft is equipped with, and a pilot uses, an operable EFVS in accordance with § 91.176 of this chapter, and the certificate holder's operations specifications for EFVS operations.

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

■ 28. The authority citation for part 135 continues to read as follows:

Authority: 49 U.S.C. 106(g), 41706, 40113, 44701–44702, 44705, 44709, 44711–44713, 44715–44717, 44722, 45101–45105.

■ 29. Revise § 135.219 to read as follows;

§ 135.219 IFR: Destination airport weather minimums.

Except as provided in the certificate holder's operations specifications for EFVS operations, no person may take off an aircraft under IFR or begin an IFR or over-the-top operation unless the latest weather reports or forecasts, or any combination of them, indicate that weather conditions at the estimated time of arrival at the next airport of intended landing will be at or above authorized IFR landing minimums.

■ 30. Amend § 135.225 by:

a. Revising paragraphs (a) introductory text and (c) introductory text;

b. Amending paragraph (d) introductory text by removing the word ''If'' and adding in its place the words ''Except as provided in paragraph (j) of this section, if''; and

c. Adding paragraph (j).

The revisions and addition read as follows:

§ 135.225 IFR: Takeoff, approach and landing minimums.

(a) Except to the extent permitted by paragraphs (b) and (j) of this section, no pilot may begin an instrument approach procedure to an airport unless—

* * * * *

(c) Except as provided in paragraph (j) of this section, a pilot who has begun the final approach segment of an instrument approach to an airport under paragraph (b) of this section, and receives a later weather report indicating that conditions have worsened to below the minimum requirements, may continue the approach if the following conditions, are met—

* * * * *

(j) A pilot may begin an instrument approach procedure, or continue the approach, at an airport when the visibility is reported to be less than the visibility minimums prescribed for that procedure if the aircraft is equipped with, and a pilot uses, an operable EFVS in accordance with § 91.176 of this chapter, and the certificate holder's operations specifications for EFVS operations.

Issued under authority provided by 49 U.S.C. 40103 and 44701(a)(5) in Washington, DC, on May 30, 2013.

Margaret Gilligan,

Associate Administrator for Aviation Safety, AVS–1.

[FR Doc. 2013–13454 Filed 6–10–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2013–0500; Directorate Identifier 2012–SW–45–AD]

RIN 2120–AA64

Airworthiness Directives; Bell Helicopter Textron, Inc. (Bell), Model Helicopters

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes to supersede an existing airworthiness directive (AD) for the Bell Model 412, 412CF, and 412EP helicopters. The AD currently requires reidentifying each affected part-numbered main rotor yoke (yoke) on its data plate, reducing the retirement life of the reidentified yoke, and revising the Airworthiness Limitations section of the maintenance manual or the Instructions for Continued Airworthiness (ICAs) accordingly. Since we issued the AD, we have discovered that the affected yokes do not have a data plate, making compliance with the part-marking requirements of the existing AD impossible. This proposed AD would retain the current requirements with the exception of the P/N marking location. The actions specified in this AD are intended to prevent fatigue cracking of a yoke, failure of the yoke, and subsequent loss of control of the helicopter.

DATES: We must receive comments on this proposed AD by August 12, 2013.

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

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

Examining the AD Docket

You may examine the AD docket on the Internet at *http://www.regulations.gov* or in person at the Docket Operations Office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the economic evaluation, any comments received and other information. The street address for the Docket Operations Office (telephone 800–647–5527) is in the **ADDRESSES** section. Comments will be available in the AD docket shortly after receipt.

For service information identified in this proposed AD, contact Bell Helicopter Textron, Inc., P.O. Box 482, Fort Worth, TX 76101; telephone (817) 280–3391; fax (817) 280–6466; or at *http://www.bellcustomer.com/files/.* You may review service information at the FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth, Texas 76137.

FOR FURTHER INFORMATION CONTACT: Michael Kohner, ASW–170, Aviation Safety Engineer, Rotorcraft Directorate, Rotorcraft Certification Office, 2601 Meacham Blvd., Fort Worth, Texas 76137, telephone (817) 222–5170, fax (817) 222–5783, email *7-avs-asw-170@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to participate in this rulemaking by submitting written comments, data, or views. We also invite comments relating to the economic, environmental, energy, or