

VOLUME 4 AIRCRAFT EQUIPMENT AND OPERATIONAL AUTHORIZATION

CHAPTER 7 ROTORCRAFT AUTHORIZATIONS AND LIMITATIONS

Section 4 Night Vision Imaging Systems

4-1125 GENERAL. The information outlined in the following paragraphs will be used by principal operations inspectors (POI), principal maintenance inspectors (PMI), and principal avionics inspectors (PAI) when evaluating a Title 14 of the Code of Federal Regulations (14 CFR) part 135 operator's request for use of night vision goggles (NVG). This guidance covers the evaluation of the operator's formal application, revision to the General Operations Manual (GOM), the addition of an NVG training program, and minimum equipment list (MEL).

4-1126 OVERVIEW.

A. Night Vision Enhancement Devices. In 1990, the Federal Aviation Administration (FAA) determined that night vision enhancement devices (NVED), including NVGs, which are used, or intended to be used, in the navigation, operation, or control of an aircraft in flight, are appliances. As appliances, NVEDs/NVGs require FAA certification and specific approval according to specific procedures outlined in 14 CFR part 21. The use of NVGs in part 135 operations may only be authorized with specific FAA approval.

B. Night Vision Imaging Systems. NVG is the common term used for Night Vision Imaging Systems (NVIS) operations. The limitations and provisions for conducting Helicopter Night Vision Goggle Operations (HNVGGO) are described in operation specification (OpSpec) A050. The complete description and performance standards of the NVG and cockpit lighting modifications appropriate to civil aviation are contained in the Minimum Operational Performance Standards for Integrated Night Vision Imaging System Equipment (RTCA/DO-275).

1) Currently, NVISs consist of the following:

- NVGs,
- Interior and exterior aircraft lighting modifications,
- Cockpit windows (windshield, windows, chin bubbles, etc.),
- Crew station design and components, and
- Radar altimeter.

2) See the current edition of AC 27-1, Certification of Normal Category Rotorcraft, and AC 29-2, Certification of Transport Category Rotorcraft, for additional information.

C. Civil Use of NVGs. The civil use of NVGs will be approved only for the purpose of enhancing operational safety. An FAA study (DOT/FAA/RD-94/21, 1994) summarized the need for NVGs by stating, "When properly used, NVGs can increase safety, enhance situational awareness, and reduce pilot workload and stress that are typically associated with night operations." The hours of darkness add to a pilot's workload by decreasing those visual cues commonly used during daylight operations. The pilot has a decreased ability to see and avoid

obstructions at night. Since the 1970s, NVEDs, such as NVGs, have provided the military with some limited ability to see at night and therefore enhance operations. Continual technological improvements have advanced the capability and reliability of NVGs and part 135 on-demand operators have requested use of NVGs in commercial operations as a tool for night flight. NVGs are used as an aid to night flight during visual meteorological conditions (VMC), and operators are not to use NVGs during inadvertent instrument meteorological conditions (IMC). This means that operators must comply with visual flight rules (VFR) weather minimums during a flight. For air carrier operations, these weather minimums are prescribed in the air carrier's OpSpecs. The use of NVGs will not change or modify any of the existing regulations.

D. NVIS Approval. RTCA, Inc. has developed and published the MOPS for NVGs in RTCA/DO-275. The Technical Standard Order TSO-C164 for NVIS was published on September 30, 2004. The approval for NVIS installation can only be accomplished through the type certificate (TC), amended TC, or Supplemental Type Certification (STC) process. The FAA must determine that an appliance can perform its intended function after installation and that its operation does not adversely affect the operation of the aircraft and its installed equipment. Flight deck lighting changes to support NVG use, or any approvals related to NVGs must comply with Volume 4, Chapter 9, Section 1, Perform Field Approvals of Major Repairs and Major Alterations, Figures 4-66 through 4-68.

E. Additional Documents. In addition to RTCA/DO-275, RTCA Special Committee 196 completed two other documents, RTCA/DO-268, Concept of Operations, Night Vision Imaging System for Civil Operators, and RTCA/DO-295, Civil Operators' Training Guidelines for Integrated Night Vision Imaging System Equipment. These documents may provide operators with additional insight into the implementation of NVGs.

4-1127 OFFICE COORDINATION AND RESPONSIBILITIES. Direct coordination with the Rotorcraft Directorate, Aircraft Certification Office (ACO), and the Flight Standards Inspector Resource Program, is essential for timely completion of the STC certification process. The operator must specify on the STC application to the ACO whether approval is sought for a single aircraft or a series of aircraft, and under what operating rule the aircraft will be operated. Operations inspectors assigned to evaluate, test, and check job functions using NVGs will be qualified and current in accordance with FAA Order 4040.9, FAA Aircraft Management Program (current edition). Inspectors who maintain currency in military helicopter NVG operations may credit that experience toward currency requirements in accordance with Order 4040.9, which can be found at http://www1.airweb.faa.gov/regulatory_and_guidance_library/rgorders.nsf/0/2FBFDE4E8B92F17F862572FF006FFD4D?OpenDocument.) It is recommended that the POI consult with an NVG national resource specialist (NRS). Contact Southwest Region Flight Standards Division, Flight Program Branch, ASW-260, for the list of current NVG NRSs.

A. The ACO is Responsible for:

- Approving the STC for installation of NVG-compatible equipment modifications,
- Flight testing for NVIS compatibility, and
- Approving the Rotorcraft Flight Manual (RFM) supplement.

B. The POI is Responsible for:

- Evaluating part 135 NVG training program and GOM,
- Designating operator or contract authorized instructors,
- Operational approval of NVGs through the issuance of OpSpec A050,
- Monitoring training, and
- Ensuring competency flights are conducted.

C. An NVG NRS May Assist the POI in the Following Areas:

- Monitoring training,
- Conducting competency flights, and
- Advising POIs on recommended changes to the training program and GOM.

4-1128 CERTIFICATION PROCESS. The standard five-phase certification process will be followed for NVG approval. The phases are:

- Preapplication,
- Formal Application,
- Document Compliance,
- Demonstration and Inspection, and
- Certification.

A. Preapplication Phase. During this phase, there are several important issues that the POI must present to the operator. These issues include:

- 1) OpSpec A050 authorizes approval for HNVGO and outlines additional NVG requirements, restrictions, and limitations.
- 2) Applicants should review the RFM NVG supplement to ensure that the types of approved operations, crew requirements and other operational requirements and limitations are compatible with their intended NVG operations.
- 3) Applicants should note that NVGs with image intensifier tube(s) which are marked “Not for Aviation Use” or with other similar marking(s), or whose serial number(s) is listed as not suitable for aviation use by the manufacturer, or whose tube data sheet(s) indicates that the tube(s) is not suitable for aviation use, may not be used in HNVGO under OpSpec A050.
- 4) It is recommended that operators select NVG flight instructors from the most experienced pilots, preferably those with experience as flight instructors and/or NVG pilots. Pilots with prior NVG qualifications with another certificated operator, or who have military NVG training, would typically be good candidates for authorized company NVG flight instructors. See Volume 3, Chapter 20, Section 1, General, for additional information on air transportation flight instructors.
- 5) While NVGs provide great benefits for night operations, they have specific performance limitations that affect the visual cues and references available to the pilot. Detailed

technical descriptions of NVGs and NVG operations may be found in RTCA/DO-268 and DO-275. Some of the general limitations of NVGs referenced in these documents include:

- a) Visual Acuity. The user's visual acuity with NVGs is less than normal daytime visual acuity.
- b) Field of View (FOV). Both the reduced FOV of the image and the resultant decrease in peripheral vision can increase the operator's susceptibility to misperceptions and illusions.
- c) Field of Regard (FOR). The NVG has a limited FOV but, because it is head-mounted, that FOV can be scanned when viewing the outside scene. The total area that the FOV can be scanned is the FOR. The FOR will vary depending on both human limitations and aircraft design.
- d) Monochromatic Image. The NVG image appears in shades of green. The image is said to be "monochromatic" because there is only one color. The lack of color variation in the NVG image will degrade object recognition, depth perception and distance estimation capabilities to varying degrees.
- e) Monochromatic Adaptation. After using NVGs for a period of time, transition to normal vision, either by looking under or around the NVGs, or by discontinuing their use, initially, color distortion may occur, often with white lights taking on a pinkish color.
- f) Dark Adaptation Time. Depending on the level of ambient light, transition from aided (NVG) to unaided (no NVG) operations will require different time periods to obtain dark adaptation and the best visual acuity. In brightly lit areas (urban areas, well-lit airports/heliports) transition to maximum unaided acuity may be instantaneous. In dark areas, typically in remote areas with little cultural lighting, especially when lunar illumination is absent, dark adaptation may take up to five minutes.
- g) Crewmember Performance. Night operations impose different stresses on pilots than day operations, and these factors may become worse in NVG operations, with a resulting negative effect on crewmember performance. Included in these factors are fatigue, stresses, eyestrain, working outside the crewmember's normal circadian rhythm envelope, increased helmet weight, and the aggressive scanning techniques required to deal with reduced FOV. These limitations may be mitigated through proper training and recognition, experience, adaptation, rest, risk management, and proper crew rest/duty cycles.
- h) Depth Perception & Distance Estimation. When flying, it is important for pilots to be able to accurately employ depth perception and distance estimation techniques. When viewing an NVG image, monocular vision is used, even though the NVG used when flying is a binocular system. This has to do with the way the eyes function and the design of the NVG. Typically, monocular vision is the type of vision used to support depth perception beyond 100 feet, not while flying a helicopter near the ground (takeoff, landing, hovering, etc.). Depth perception and distance estimation when viewing the surface or objects within 100 feet using NVGs is degraded to varying degrees, depending on the quality of the NVG image.

6) Accordingly, NVG training programs, and the associated qualification segment (pilot flight check) must include maneuvers and procedures that are accomplished using external visual references (VFR maneuvers). Emphasis must be placed on maneuvers and procedures, which rely on visual cues and references, such as, but not limited to, high and low reconnaissance, approaches, landings, hovering maneuvers, slope operations, pinnacle operations, and confined area operations. Training and checking must include hovering autorotations in single engine helicopters, and one-engine inoperative operations (including landings) in multiengine helicopters. Qualification segments (flight checks) will consist of the maneuvers and procedures identified in Volume 3, Chapter 19, Section 7, Flightcrew Qualification Curriculum Segments, Table 3-71, Part 135 Checking Modules—Helicopters, using the performance standards provided in the Commercial Pilot Practical Test Standards (Rotorcraft-Helicopter), and supplemented by guidance in Order 8900.1 and this chapter.

B. Formal Application and Document Compliance Phase. During these phases, the operator submits, and the POI reviews, appropriate company manuals and training programs.

1) GOM. The standard guidance for a GOM is outlined in Volume 3, Chapter 32, Manuals, Procedures, and Checklists for parts 91K, 121, 125, and 135. Additional manual guidance is contained in Volume 4, Chapter 5, Air Ambulance Operations. A revision to an operator's GOM will be required for NVG authorization. NVG operational control issues and responsibilities must be listed in the GOM. Specific procedures for crewmembers (including flight nurses, emergency medical technicians (EMT), etc.) will be listed in the GOM for HNVGO. If there are changes in these procedures and responsibilities between existing unaided operations and proposed NVG operations, the applicant should indicate that the procedures and responsibilities are the same. Where changes are appropriate, the operator should annotate the basic procedures and responsibilities with the NVG operations differences.

2) NVG Revisions to the GOM. In addition to the requirements in Volume 4, Chapter 5, specific procedures and responsibilities will include:

- Pilot NVG currency requirements (category and class, type if a type rating is required),
- Proficiency check requirements,
- Pilot training requirements,
- Check airman and company flight instructor requirements,
- Crewmember training and currency requirements for use of NVGs,
- Recordkeeping requirements,
- Minimum safe altitudes for HNVGO,
- NVG weather minimums,
- Aircraft equipment requirements for HNVGO and MEL deferrals,
- Use of aircraft external lighting,
- NVG-authorized area of operations,
- NVG maintenance and inspections,
- NVG preflight inspection procedures,
- Reporting of NVIS irregularities and discrepancies,
- Crew flight time and rest requirements,

- Crew Resource Management (CRM),
- Preflight planning, including aircraft performance requirements,
- Detailed crew briefings,
- Light discipline, internal and external,
- Scene landings (unimproved landing sites),
- Abort/Go Around Criteria,
- Inadvertent IMC procedures, and
- Any additional information as needed by the operator.

NOTE: The above items are intended as a guide for initial development of the NVG portion of a GOM.

3) MEL. MEL guidance is contained in Volume 4, Chapter 4, Minimum Equipment Lists (MEL) and Configuration Deviation Lists (CDL). NVIS includes all of the elements (including the NVG, windshield, lighting system, etc.) required to successfully and safely operate an aircraft with the aid of NVGs. Request for MEL relief should be made to The Southwest Region's Fort Worth Aircraft Evaluation Group (FTW-AEG) as specified in FAA guidance. Operators requesting an MEL revision or an interim global change policy letter addressing NVIS may refer to the guidance outlined in Volume 4, Chapter 4 or at <http://www.opspecs.com/>.

NOTE: The installation of search lights, landing lights, and the aircraft's internal lighting system will be approved during the STC process. The FAA will not certify a helicopter for NVG operations without a radar altimeter.

4) Training Program. NVG training may be conducted within the initial new hire, initial equipment, transition, upgrade or recurrent training programs or in a special qualification program for pilots already serving in the type of aircraft for which NVG qualification is desired.

a) The ground training for initial NVG qualification must include at least five hours of ground school. These hours must be added to existing initial new-hire and initial equipment ground training curricula. In the case of transition, upgrade, or recurrent training, one hour of ground is required.

b) Refer to the following table to determine the national norm for flight training hours for training programs that include NVG operations:

Table 4-21, NVG Flight Training Hours

	Kind of Operations	Category of Flight Training				
		Initial New Hire	Initial Equipment*	Transition*	Upgrade*	Recurrent*
Helicopter	IFR and VFR/NVG	PIC – 14 SIC – 14	PIC – 12 SIC – 12	PIC – 4 SIC – 4	SIC to PIC-5	PIC – 5 SIC – 5

i c o	VFR/NVG	PIC – 8 SIC – 8	PIC – 7 SIC – 7	PIC – 4 SIC – 4	SIC to PIC 3	PIC – 3 SIC – 3
P t e r	Minimum NVG Flight Training Hours	5	2	1	1	1

*These categories assume that the pilot is already NVG qualified.

1. Volume 3, Chapter 19, Section 6, Flight Training Curriculum Segments, applies in cases where the pilot has demonstrated proficiency before accumulating the program flight hours.

2. If a pilot is currently qualified as a pilot crewmember, but is not NVG qualified, initial equipment, transition, upgrade and recurrent training hours are governed by the national norms identified in Tables 3-60 and 3-61 found in Volume 3, Chapter 19, Section 6, as appropriate. If NVG qualification is desired, these training programs must be augmented by no less than five hours of ground and five hours of flight training on NVG operations.

NOTE: These five hours of flight training may be integrated with aircraft-specific training, but in no case must programs contain less than five hours of NVG flight time.

3. If NVG training is conducted under a special qualification program, the minimum number of flight training hours is five. For subsequent transition, upgrade or recurrent training programs, refer to Table 4-21.

4. For air transportation flight instructor and check airman training, see Volume 3, Chapter 20, Section 4, Check Airman and Air Transportation Flight Instructor Training.

c) Guidelines for the development of NVG training programs are contained in Volume 3, Chapter 19, Training Programs and Airman Qualifications. During the formal application phase, the POI will review the training program for appropriate content. If the program requires additional information, the POI will inform the operator in writing. After the satisfactory review of the training program, the POI will approve the NVG training program. If necessary, the POI may request an NVG NRS to assist in reviewing the training program prior to POI approval. Initial and final approval processes are the same as for other training program approvals. Inspectors should ensure the elements outlined in Volume 4, Chapter 5 are included in an operator's training program for flightcrew and medical personnel in air ambulance operations. This section also contains elements that inspectors should consider when making evaluations, as appropriate to the operator's operations (see Volume 3, Chapter 19 for the types of training categories that operators must use in training curricula in general).

d) All categories of training have both ground training and flight training curricula. Portions of ground training can be divided into airman-specific and operator-specific segments, normally included in basic indoctrination.

1. Modules within the airman-specific segment include, appropriate to the crewmember position (pilot, medical crewmember, etc.):

- Introduction to NVGs;
- Limitations/Emergency Procedures;
- NVG Aeromedical Consideration/Aviation Physiology, including visual illusions;
- NVG/Night Flight planning (including terrain interpretation); and
- Risk management tool for each phase of flight (see FAA Handbook 8083-21, Rotorcraft Flying Handbook, Chapter 14, Aeronautical Decision Making. This handbook may be found at: <http://www.faa.gov/library/manuals/aircraft/media/faa-h-8083-21.pdf>).

2. Modules within the operator-specific segment include:

- Authorized Operations,
- Forms and Records,
- Responsibilities of the Duty Position,
- Applicable regulations and OpSpecs, and
- GOM.

3. Modules within the aircraft ground-training segment include:

- Lighting systems,
- Caution/warning systems, and
- Cockpit familiarization and NVG compatibility.

e) Detailed descriptions of the normal, abnormal, and emergency maneuvers must be a part of the NVG training program. These descriptions may be the same as those used for unaided VFR operations. If differences exist, however, those differences should be noted in the basic description package. Volume 3, Chapter 19, Section 7, Table 3-71, outlines the minimum maneuvers to be covered on a Part 135 Checking Modules—Helicopters. The POI will verify that an adequate amount of time is allocated to meet the flight-training curriculum. It must be realistic in meeting the stated training objectives. The company pilot must be proficient in recognizing visual illusions, spatial disorientation, and performing inadvertent IMC recovery procedures. The total time within the flight-training curriculum can only be determined by direct observation as described in Volume 3, Chapter 19, Section 1, paragraph 3-1074.

f) In addition to pilot crewmembers, the additional crewmembers (e.g., flight nurses and EMTs, who perform duties in flight, are required to have an approved training curriculum. This training includes five hours ground training that must include one hour of NVG demonstration and use, which must be accomplished at night and may be accomplished in flight or on the ground. These crewmembers will receive the same ground training segments as the

pilot crewmembers, including the aircraft-specific and operator-specific segments. CRM will be emphasized during crewmember training.

g) If only one NVG crewmember is required for takeoff from unimproved sites, the operator must develop and use appropriate operational procedures and training for dual NVG high and low reconnaissance, which must include the evaluation of egress route(s). The single pilot using NVGs provided no substantial change in conditions (wind, obstructions, and weather conditions) has occurred between the time of the reconnaissance and the departure may use egress routes selected during high and low reconnaissance.

h) It is highly recommended that personnel who support HNVGO also receive training regarding NVG operations. For example, ground ambulance operators and local law enforcement officers should receive training to ensure appropriate light discipline is used when helicopters are landing in remote areas. While encouraged to do so, records of such training are not required to be maintained by the certificate holder, as these personnel are not employees or agents of the certificate holder. It is suggested that this training be conducted during county, city, or state first responder meetings or training seminars to cover the greatest possible audience. Ground personnel should also be referred to the Aeronautical Information Manual, Chapter 10, for landing zone guidance.

C. Demonstration and Inspection Phase. During this phase, the POI determines that an operator's proposed procedures and programs are effective. This is a total evaluation of the operator's system to include crewmembers and maintenance personnel. Draft OpSpecs will be provided to the operator for use in its ground and flight training curriculums.

1) HNVGO is an advancing field of civil helicopter operations. Some certificated operators may not have the expertise to effectively conduct an NVG ground curriculum without using a contract-training provider. A training vendor, with special qualifications in HNVGO, may contract with an operator to conduct the ground training in accordance with part 135, § 135.323(a)(2) and Volume 3, Chapter 20, Section 1.

2) Company flight instructors and check airmen must meet the requirements of part 135, §§ 135.337 through 135.340 and Volume 3, Chapter 20, Section 1, paragraph 3-1387. A training vendor cannot conduct any flight training unless the vendor meets the requirements of § 135.324(a). This section of the regulations states "Other than the certificate holder, only another certificate holder certificated under this part or a training center certificated under part 142 of this chapter is eligible under this subpart to conduct training, testing, and checking under contract or other arrangement to those persons subject to the requirements of this subpart." Any training vendor who does not hold an operating certificate and OpSpecs for the same type of operation for which training is provided, or does not hold a part 142 training center certificate, with approved courses applicable to the training provided, must be qualified as a pilot and flight instructor for operations by the certificate holder. Policy pertaining to NVG contract flight instructors and contract NVG check airmen is covered in Volume 3, Chapter 54, Section 5. This section also applies to vendors (other part 135 or 142 certificate holders) who provide outsourced contract training and checking. Additional guidance pertaining to outsource training can be found on the AFS-210 Web site (http://www.faa.gov/pilots/training/part_142/).

3) The POI should observe all ground and flight training curricula with the operator's initial cadre crewmembers. This procedure allows the responsible inspectors to evaluate and make recommendations for improvements in training in a very timely manner.

4) The final portion of this phase is completion of the qualification segment. An FAA aviation safety inspector (ASI) or NRS will conduct or observe the conduct of the initial cadre pilot qualification checks, including any check airman evaluations for the initial cadre of check airmen. The ASI/NRS must be current in the general helicopter tasks and the HNVGO tasks as required by FAA Order 4040.9 in order to accomplish qualification checks.

D. Certification Phase. In this phase, OpSpecs are issued to the operator authorizing HNVGO. OpSpecs A050 and D093 are NVG-specific. Program Tracking and Reporting Subsystem (PTRS) records should be completed and the surveillance plan established. A certification report should not be required if proper PTRS reporting procedures are followed by all specialties. This action is necessary to ensure that Flight Standards is able to satisfy its oversight responsibilities in providing clear and effective national policy guidance for both agency and consumer use concerning approval of NVG in part 135 operations.

E. OpSpecs. Once the certificate holder has revised the applicable sections of its GOM, maintenance manual, training program, and the aircraft has completed the NVG STC certification requirements, the POI and PMI may approve the HNVGO with the issuance of OpSpec A050, Helicopter Night Vision Goggle Operations (HNVGO), and OpSpec D093, Helicopter Night Vision Goggle Operations (HNVGO) Maintenance Program.

F. OpSpec Currency Requirements.

1) In order for a pilot to act as a pilot in command (PIC) using NVGs while carrying passengers, the pilot must have performed and documented within the preceding 90 days three HNVGOs as the sole manipulator of the controls during the period that begins one hour after sunset and ends one hour before sunrise. These HNVGOs must be performed in the same category, class, and, if a type rating is required, type of aircraft in which HNVGOs will be performed. Each HNVGO must include, at a minimum, the tasks listed by the OpSpec A050. If a pilot has not performed and documented these tasks, the pilot will be allowed an additional 90 days to perform and document them but will not be allowed to carry passengers using NVGs during that time. If the pilot has still not performed and documented these tasks during those additional follow-on 90 days, then the pilot will be required to pass an NVG proficiency check in order to act as a PIC using NVGs. The proficiency check will consist of the NVED/NVG maneuvers contained in the Table 3-71.

2) During the Demonstration and Inspection Phase, oversight of the operator's recordkeeping is essential. The tracking of NVG currency will be a continuous 90-day review, similar to the pilot flight and rest requirements of part 135.

3) The reliability of the NVIS and safety of flight operations is dependant on the operators adhering to the instructions for continued airworthiness (ICA). These ICAs are developed by the NVG manufacturer and the STC applicant, and will be referenced in OpSpec D093.

4) A common misconception in pilot NVG qualification requirements is that qualified NVG pilots must always be trained and checked in “each aircraft” approved for NVG use on an annual basis. Section 135.293, Initial and Recurrent Pilot Testing Requirements, requires part 135 pilots to have completed an annual written or oral test, and a competency check in each aircraft type. Furthermore, § 135.293(a)(2) states that each pilot must be tested on the installed major appliances and contents of the Aircraft Flight Manual (AFM) or equivalent. Section 135.293(b) of the regulations refers to helicopter type as “basic make and model” when completing pilot testing. This language has led operators to believe that training and checking of NVG qualified pilots in each NVG approved make and model aircraft was always required on an annual basis. However, there are limitations to the number of § 135.293 checks that are necessary to meet the NVG qualification and currency requirements.

5) In addition to the checking requirements outlined in § 135.293, FAA Order 8900.1 and OpSpec A050 provide supplemental information for NVG currency requirements. These documents require NVG qualified pilots to maintain a 90-day currency requirement when conducting NVG operations, and such currency is limited to aircraft “category and class” (i.e., rotorcraft/helicopter) and type, if applicable.

6) The NVG requirements are determined to be similar within most helicopters, (i.e., there are no make/model specific NVG currency requirements). However, there are 90-day HNVGO currency requirements pertaining to category/class, and type, if applicable.

7) Regarding initial and recurrent pilot testing requirements, such testing shall be conducted in accordance with § 135.293, in make/model, for helicopters. Similarly, NVG checks can be alternated between aircraft during each successive § 135.293 check (after the initial NVG competency check in that make/model), thereby eliminating redundant NVG checks thereafter, provided all aircraft in which the pilot is qualified are equipped with the same manufactured model of NVGs. However, during the annual § 135.293 check, the pilot, if qualified in NVG operations, should be tested on those NVG operations specific to that make/model aircraft.

8) If an NVG qualified pilot receives NVG-only differences or transition training in the same duty position on an additional make/model aircraft, in which they are already qualified under part 135 for VFR-day/night operations, they are required to have an initial NVG competency check in that aircraft. However, once the initial competency check is completed, the pilot may alternate between other make/model aircraft (with the same manufactured model of NVGs) during each successive § 135.293 check.

9) At a minimum, operators should ensure that pilots receiving transition training or differences training on other make/model aircraft receive NVG ground and flight training in the following special emphasis areas: specific lighting considerations, switchology, aircraft configuration (e.g., wheel or skid gear; single or multiengine), and aircraft ergonomics that are applicable and relevant to the safety and efficiency of NVG operations in that aircraft. Once the pilot completes the initial NVG check for that make/model aircraft, the pilot may alternate NVG checks between aircraft in subsequent checks to meet the annual NVG checking requirements, unless the operator chooses to conduct all required § 135.293 checking events during HNVGOs to satisfy both the § 135.293 aircraft-specific (to include § 135.299 checks) and HNVGO requirements simultaneously. Combining the aircraft-specific and HNVGO events may be

desired, to eliminate unnecessary additional checking, while still providing an equivalent level of safety and standardization.

10) Guidelines for NVG check airman and instructor approvals should follow the same principles cited above. However, the NVG check airman and instructor must still meet the regulatory requirement to remain a qualified crewmember in the same types of operations for which he holds check airman or instructor authority. Evaluations of check airmen conducting NVG checks in multiple aircraft should be alternated between aircraft when possible.

RESERVED. Paragraphs 4-1129 through 4-1135.