



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
National Policy

NOTICE
N 8000.349

Effective Date:
1/5/07

Cancellation Date:
1/5/08

SUBJ: Night Vision Imaging Systems

1. PURPOSE. This notice provides guidance to principal operations inspectors (POI) 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).

2. DISTRIBUTION. We will distribute this notice to the division level in the Flight Standards Service in Washington headquarters, including the Regulatory Standards Division at the Mike Monroney Aeronautical Center; to the branch level in the regional Flight Standards divisions; and to all Flight Standards District Offices. Inspectors can access this notice through the Flight Standards Information Management System (FSIMS) at <http://fsims.avr.faa.gov>. Operators may find this information on the Federal Aviation Administration's (FAA) Web site at: http://www.faa.gov/library/manuals/examiners_inspectors/8000/.

3. CANCELLATION. HBAT 04-02A, Night Vision Imaging Systems, dated October 2, 2006, is cancelled.

4. BACKGROUND.

a. The Southwest Region's Fort Worth Aircraft Evaluation Group (FTW-AEG) has been working closely with the Rotorcraft Directorate, Aircraft Certification Office, to develop a process for certifying part 135 operators to conduct operations using night vision enhancement devices (NVED). This effort has taken place over the past five years using the Flight Standardization Board (FSB) process.

b. In 1990, FAA stated that night vision enhancement devices (NVEDs) are considered appliances. As appliances, NVEDs require Federal Aviation Administration (FAA) certification and specific approval for using specific procedures outlined in 14 CFR part 21.

c. The use of NVGs in 135 operations may only be authorized with specific FAA approval. The attachment provides guidance for approving the use of NVGs.

5. GUIDANCE. Appendix 1 of this notice contains new handbook guidance on Night Vision Imaging Systems. Appendix 2 of this notice contains the revised Figure 3.2.7.4, Part 135 Checking Modules for Helicopters, and Appendix 3 contains sample Operation Specification paragraph A050.

6. ACTION. POIs will bring the contents of this notice and the attached handbook pages to the attention of their assigned air carriers.

7. DISPOSITION. We will permanently incorporate the information in this notice in FSIMS before this notice expires. Any questions or comments regarding the information provided should be directed to the Air Carrier Operations Branch, AFS-250, at (202) 267-8166.

ORIGINAL SIGNED BY
Roger C. Forshee for
James J. Ballough
Director, Flight Standards Service

APPENDIX 1. ORDER 8400.10, VOLUME 4, CHAPTER 7, SECTION 4, NIGHT VISION IMAGING SYSTEMS

1601. 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).

1603. OVERVIEW.

A. In 1990, the FAA determined that night vision enhancement devices (NVEDs), 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 Federal Aviation Administration (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. NVG is the common term used for night vision imaging systems (NVIS) operations. The limitations and provisions for conducting Helicopter Night Vision Goggle Operations (HNVGO) are described in Operation Specification 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 (MOPS) 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 (e.g., windshield, windows, chin bubbles, etc.)
- Crew station design and components
- Radar altimeter

(2) See Advisory Circular (AC) 27-1B, Certification of Normal Category Rotorcraft, and AC 29-2C, Certification of Transport Category Rotorcraft, for additional information.

C. 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 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. 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 FAA Order 8300.10, Airworthiness Inspector's Handbook, volume 2, chapter 1, section 2, figures 1-3; and FAA Order 8110.46, Major Alterations That Require Supplemental Type Certificates.

E. 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.

1605. 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 (IAW) FAA Order 4040.9, General Manual for Operation of FAA Aircraft. Inspectors who maintain currency in military helicopter NVG operations may credit that experience toward currency requirements IAW Order 4040.9. It is recommended that the POI consult with an NVG National Resource Specialist (NVG 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
- Approving the Rotorcraft Flight Manual 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
- Ensuring competency flights are conducted

C. An NVG NRS may assist the POI in the following areas:

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

1606. 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
- 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 is aircraft make and model specific.

(2) Applicants should review the Rotorcraft Flight Manual (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 Order 8400.10, Air Transportation Operations Inspector's Handbook, volume 3, chapter 3, section 1 for additional information on air transportation flight instructors.

(5) While NVGs provide great benefits for night operations, they have specific performance limitations which 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 field of view 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. Since there is only one color, the image is said to be "monochromatic." 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 be exacerbated in NVG operations, with a resulting negative effect on crewmember performance. Included in these factors is 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 which 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 Figure 3.2.7.4, Part 135 Checking Modules for Helicopters, using the performance standards provided in the Commercial Pilot Practical Test Standards (Rotorcraft-Helicopter), and supplemented by guidance in FAA Order 8700.1, General Aviation Operations Inspector's Handbook, 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 Order 8400.10, volume 3, chapter 15. Additional manual guidance is contained in Order 8400.10, volume 4, chapter 5. A revision to an operator's GOM will be required for NVG authorization. NVG operational control issues and responsibilities shall 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 Order 8400.10, vol. 4, ch. 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)
- Pre-flight 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
- 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 Order 8400.10, volume 4, chapter 4. 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 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 Order 8400.10, vol. 4, ch. 4 or at 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 which include NVG operations:

FIGURE 4.7.4.1. NVG FLIGHT TRAINING HOURS

Helicopter	Kind of Operations	Category of Flight Training				
		Initial new hire	Initial Equipment*	Transition*	Upgrade*	Recurrent*
	IFR and VFR/NVG	PIC – 14	PIC – 12	PIC – 4	SIC to PIC	PIC – 5
		SIC – 14	SIC – 12	SIC – 4	5	SIC – 5
	VFR/NVG	PIC – 8	PIC – 7	PIC – 4	SIC to PIC	PIC – 3
		SIC – 8	SIC – 7	SIC – 4	3	SIC – 3
	<i>Minimum NVG Flight Training Hours</i>	5	2	1	1	1

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

1. Order 8400.10, volume 3, chapter 2, section 6, paragraph 471 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 3.2.6.2 and 3.2.6.3 found in Order 8400.10, volume 3, chapter 2, section 6, as appropriate. If NVG qualification is desired, these training programs shall be augmented by no less than five hours of ground and five hours of flight training on NVG operations.

These five hours of flight training may be integrated with aircraft specific training, but in no case shall 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 figure above.

4. For Air Transportation Flight Instructor and Check Airman Training, see Order 8400.10, volume 3, chapter 3, section 3.

(c) Guidelines for the development of NVG training programs are contained in Order 8400.10, vol. 3, ch. 2. 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 Order 8400.10, vol. 4, ch. 5, are included in an operator's training program for flight crew 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 Order 8400.10, vol. 3, ch. 2 for the types of training categories that operators must use in training curriculums 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)
- Risk management tool for each phase of flight (see FAA Handbook 8083 21, Rotocraft Flying Handbook, Chapter 14; Aeronautical Decision Making)

2. Modules within the operator-specific segment include:

- Authorized Operations
- Forms and Records

- Responsibilities of the Duty Position
- Applicable regulations and OpSpecs
- GOM

3. Modules within the aircraft ground training segment include:

- Lighting systems
- Caution/Warning systems
- 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. However, if differences exist, those differences should be noted in the basic description package. Appendix 2, Figure 3.2.7.4, outlines the minimum maneuvers to be covered on a part 135 checking module. 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 Order 8400.10, volume 3, chapter 2, section 1, paragraph 327 (b)(4).

(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 which 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). Egress routes selected during high and low reconnaissance may be used by 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.

(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, section 135.323 (a) (2) and Order 8400.10, volume 3, chapter 3, section 1, paragraph 667.

(2) Company flight instructors and check airmen must meet the requirements of part 135, sections 135.337 through 135.340 and Order 8400.10, vol. 3, ch. 3, sect. 1, paragraph 663. A training vendor cannot conduct any flight training unless the vendor meets the requirements of section 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.

(3) FAA policy allows a training vendor to conduct flight training to an operator's initial cadre personnel as authorized in Order 8400.10, volume 3, chapter 3, section 2, paragraph 696. The initial cadre personnel will then provide flight training to other company pilots. The POI will verify that the operator complies with the provisions in paragraph 696. The number of pilots in the initial cadre should be adequate for the operator to establish a core pilot contingent and as many flight instructors and check airmen as required to support continued training and checking of the NVG pilot community within the company. In smaller operations, or in the introduction of NVGs to a small number of aircraft types/bases within a larger operation, the initial cadre may consist of all pilots who will be initially assigned to NVG operations.

(4) The POI should observe all ground and flight training curriculums 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.

(5) 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. Operations Specifications. Once the certificate holder has revised the applicable sections of its general operations manual, 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 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 time 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, at a minimum, include 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 Figure 3.2.7.4 of this chapter.

(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. These instructions for continued airworthiness are developed by the NVG manufacturer and the STC applicant, and will be referenced in the OpSpec D093.

1607. – 1682. RESERVED.

APPENDIX 2. ORDER 8400.10, VOLUME 3, CHAPTER 2, SECTION 7**FIGURE 3.2.7.4.
PART 135 CHECKING MODULES FOR
HELICOPTERS**

EVENTS	VFR COMP.	IFR COMP.	INST. PROF.	NVED/ NVG	NOTES
WRITTEN OR ORAL TEST					
Section 135.297			P		
Section 135.293	B	B		B	
GROUND OPERATIONS					
Preflight Inspection	B	B	P	B	#
Start Procedures	B	B	P	B	#
Taxiing and Ground Hover	B	B	P	B	#
Pretakeoff checks	B	B	P	B	#
TAKEOFF AND DEPARTURES					
Normal	B	B	P	B	12
Instrument		P	P		1
With powerplant failure	B	B	P	B	ME Only, 12
Rapid Deceleration	P	P	P	B	2, 12
Area departure			P **		
IN-FLIGHT MANEUVERS					
Steep turns			P **		
Settling with power	B	B	P		
Unusual Attitude Recovery	B	B	P	B	4
INSTRUMENT PROCEDURES					
Area arrival			P **		
Holding			P **		
Normal ILS approach		B	P		3,5
Engine-out ILS		P	P		5, ME Only
Coupled approach		P	P		3, 5
Nonprecision approach		B	P		7
Second nonprecision approach			P		7
Missed approach from an ILS			P		
Second missed approach			P		
Circling approach			P		9

**FIGURE 3.2.7.4.
PART 135 CHECKING MODULES
HELICOPTERS—(cont'd)**

EVENTS	VFR COMP.	IFR COMP.	INST. PROF.	NVED/ NVG	NOTES
LANDINGS AND APPROACHES TO LANDINGS					
Normal	B	B	P	B	8, 12
Landing from an ILS			P		
Landing with engine-out	B	B	P	B	ME Only, 12
Circling approach			P		9
SEA & SKI OPERATIONS (If applicable)					
Normal TO & Landing	B	B	P	B	12
NONNORMAL AND EMERGENCY PROCEDURES					
System Malfunction	B	B	P	B *	#
Recovery from Inadvertent IMC	B	B	B	B	4
Maneuver by Partial Panel	B	B	P		6
Instrument Approach	B	B	P		
Power failure and Autorotation to a power recovery	B	B	P	B	SE Only
Hovering Autorotations	B	B	P	B	SE Only, 12
Tail Rotor Failure	B	B	P		Oral Only
Dynamic Rollover	B	B	P		Oral Only
Low Rotor RPM	B	B	P		Oral Only
Anti-Torque System Failure	B	B	P		Oral Only
Confined Area/Pinnacle Operations	P		P	B	10, 12
Slope Operations	P		P	B	12

NOTES TO FIGURE 3.2.7.4:

Both PIC and SIC may be evaluated performing their assigned duties in these events simultaneously when the check pilot is not seated at the controls.

* This will include a simulated NVG failure with appropriate recovery procedures.

** May be waived at the discretion of the POI and the check airman when the check is not conducted in conjunction with initial new-hire or initial equipment training.

*** This maneuver is only required if the certificate holder is operating under 14 CFR part 121. This maneuver may be waived at the discretion of the POI and check airman when the check is not conducted in conjunction with initial new-hire or initial equipment training. Initial NVED/NVG training does not require this maneuver to be demonstrated or performed.

1 See Order 8400.10, volume 5, chapter 2, section 5, paragraph 151 B.

2 See Order 8400.10, vol. 5, ch. 2, sect. 5, par 151 D.

3 The applicant must demonstrate the ability to use all installed equipment including autopilots and flight directors. In multiengine helicopters, an engine out ILS may be substituted for the normal ILS at the option of the inspector or check airman administering the check.

4 POIs shall ensure applicants accomplish this event in an aircraft the operator uses in revenue operations (or in an appropriately equipped simulator or training device.) The event should reflect a realistic course of action the pilot might take to escape from an inadvertent encounter with IMC conditions. POIs should approve methods appropriate to the aircraft, equipment, and facilities available. Training and checking must provide emphasis on avoidance of inadvertent IFR, including the discipline and decision making required to divert, make a precautionary landing, or make an emergency transition to IFR, as appropriate to the circumstances. This event must include attitude instrument flying, recovery from unusual attitudes, navigation, ATC communications, and at least one instrument approach. If the aircraft is appropriately equipped and the check is conducted at a location where an ILS is operational, an ILS approach should be demonstrated. If unable to conduct an ILS approach, if the aircraft is equipped with an IFR approach capable GPS receiver, and the operator maintains their GPS to IFR standards, including a current IFR database, and the check conducted where a GPS approach is available, a GPS approach should be demonstrated. If neither an ILS nor GPS procedures can be performed, another instrument approach must be performed. Partial panel operations should be considered if attitude and gyroscopic heading information are available from single sources. For NVG/NVED checks, the recovery from unusual attitudes must be performed while using NVGs. Once the aircraft has returned to normal flight, the pilot may discontinue NVG use to complete the inadvertent IMC recovery operation. If the NVG/NVED check is the qualification segment for a special qualification curriculum (the pilot is already qualified to serve in the duty position in the type of aircraft), the pilot need only demonstrate the unusual attitude recovery on the NVG/NVED check.

5 See Order 8400.10, vol. 5, ch. 2, sect. 5, paragraph 155 A.

6 Helicopters not having standby instrumentation.

7 See Order 8400.10, vol. 5, ch. 2, sect. 5, paragraph 155 B. Any two nonprecision approaches authorized by the OpSpecs may be accomplished at the discretion of the inspector or check airman conducting the check.

8 See Order 8400.10, vol. 5, ch. 2, sect. 5, paragraph 157.

9 SICs need not be evaluated in circling approaches when the operator's procedures restrict SICs from conducting this event in revenue service.

10 Flight maneuver shall be evaluated in aircraft with trained observer/crewmember wearing NVEDs if required by the STC. The evaluator will observe CRM between the pilot and the observer/crewmember.

11 The accomplishment of the NVG check does not meet the requirements of a section 135.293 "A" & "B" check, unless all requirements for VFR and IFR (competency check), if required, are completed.

12 For NVED/NVG checks, these maneuvers are not required if the NVG RFM Supplement does not authorize takeoffs and landings or operations below 100 feet AGL using NVGs.

APPENDIX 3. SAMPLE OPERATION SPECIFICATION A050, HELICOPTER NIGHT VISION GOGGLE OPERATIONS (HNVGO)

a. Helicopter Night Vision Goggle Operations (HNVGO) - General. The certificate holder is authorized to conduct HNVGO in accordance with 14 CFR Part 135 and the limitations and provisions of this operations specification.

(1) The certificate holder may not use any person, nor may any person serve as a crewmember in passenger-carrying HNVGO under the provision of 14 CFR Part 135 unless that crewmember has satisfactorily completed the appropriate initial or recurrent phase of the certificate holder's approved training program for HNVGO since the beginning of the 12th calendar month before that service.

(2) The certificate holder may not use any person, nor may any person serve as a pilot-in-command of a helicopter during passenger-carrying HNVGO unless, within the preceding 90 days, that person has logged three HNVGO wherein they were the sole manipulator of the flight controls during the period beginning one hour after sunset and ending one hour before sunrise (as published in the Air Almanac) in the same category and class, and, if a type rating is required, type of aircraft. In addition this person must have accomplished one aircraft NVG Visual Inspection and Operational Check within the preceding 90 days.

(a) For currency of experience and HNVGO consists of the accomplishment of all of the following maneuvers and procedures:

- Before Takeoff --NVG Check.
- Arrival--At Objective Area Initial Reconnaissance.
- Takeoff (if authorized by the NVG Rotorcraft Flight Manual).
- Landing (if authorized by the NVG Rotorcraft Flight Manual).
- Departure--Transitioning From Unaided to Aided (if aided takeoff is not authorized by the NVG Rotorcraft Flight Manual).
- Transitioning From Aided to Unaided.

(b) The above maneuvers will be in accordance with those stated in the certificate holder's FAA-approved HNVGO training program.

(3) The certificate holder is authorized to use no lower than the Visual Flight Rules (VFR) weather minimums in the table below when operating in Class G Airspace for the conditions specified when conducting HNVGO:

Table 1 – Weather Minimums When Operating in Class G Airspace

Non-Mountainous		Mountainous (see 14 CFR 95)	
Local	Cross Country	Local	Cross Country
Ceiling-visibility			
500-2	1000-3	500-3	1000-3

(4) For the purposes of this operations specification, HNVGO local flying area for each base of operations is the same as the local flying areas described in operations specification A021, unless otherwise described below:

(a) Description of the HNVGO Local Flying Area.

<If the same as A021, insert: <See A021">

(b) Any flight outside the local flying area is a cross-country operation.

b. Additional Checking Requirements. The authorized night vision devices shall not be used to conduct HNVGO under the provisions of 14 CFR Part 135 unless the equipment is maintained in accordance with the provisions of operations specification D093 and the following:

(1) Prior to conducting HNVGO, each crewmember will complete any required checks on the night vision device to be used in accordance with Table 2:

Table 2 – Required Checks for Night Vision Device Users

Required Check	Document	Reference

(2) Any night vision device that does not pass any required check is prohibited from use in HNVGO.