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Operational Suitability Report (OSR)

Revision: 1
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Night Vision Goggles
Airplane Single Engine Land & Sea
Airplane Multi Engine Land & Sea
Pilot Type Rated Turbopropeller Airplanes

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RECORD OF REVISIONS

Revision Number	Sections	Date	Chair
0 (Original)	All	06/12/2014	John Vetter
1	1.1, 1.2, 2, 4, 5, 5.1.4, 5.2, 6, 7, 8 Appendix 1,3&5	06/24/2015	John Vetter

Highlights of Change:

Original Document all Sections

Revision 1:

All	Extend applicability to Pilot Type Rated Turbo Propeller airplanes
4	Clarify lack of ODR Tables
5.1.4	Add NVG/Cockpit Ergonomics as Area of Emphasis
7 & App.1	Add Level C currency and update MDR table
8	Address Proving & Validation
App.1	Revise MDR to add Type Rated Turboprop airplanes
App.3	Add Cockpit Ergonomics to training items and update 8900.1 references
App.5	Revise Endorsements

CONTENTS

1. PURPOSE AND APPLICABILITY

1.1 Purpose

This Operational Suitability Report (OSR) specifies training, checking, and currency requirements applicable to flight crewmembers for Night Vision Goggle Operations in the Airplane Category for Single Engine Land, Multi Engine Land Classes and Pilot Type Rated Turbo-Propeller airplanes certificated in other than Transport Category. This report provides guidance to operators for compliance with 14 CFR 61.31 and 14 CFR Part 91 & 135, FAA Principal Inspectors, Part 142 Training Centers, Part 141 Approved Schools and other training providers. No ASES/AMES (seaplane) have certification design approval or operational suitability evaluation.

This NVG Airplane Operational Suitability Report (OSR) addresses training, checking, and currency requirements for pilots in NVG Operations ASEL/AMEL/ASES/AMES/Type Rated Turboprop airplanes. The NVG Flight Standardization Board (FSB) evaluates operating characteristics and techniques to propose training, checking and currency requirements applicable to the NVG Operations in the Airplane . The objectives of this OSR are:

- Identify training, checking and currency requirements.
- Establish Master Common Requirements.
- Establish Master Difference Requirements.
- Provide sample Differences Tables, if applicable
- Review AFM and Checklist procedures for operational suitability.
- Describe acceptable training program and training device characteristics.
- Provide determination of regulatory compliance status

1.2 Applicability

In accordance with existing 14 CFRs, the provisions of this report apply to operations of NVGs in the Airplane Category. This includes non-pilot type rated ASEL/AMEL airplanes and Pilot Type Rated Turbo-Propeller airplanes certificated in other than Transport Category. This report is applicable to all training and checking conducted in applicable airplanes, as well as the currency and experience provisions. The provisions of this OSR are effective until amended, superseded, or withdrawn by subsequent revisions to this report.

The guidelines in this report determine minimum requirements for approval by FAA applicable to: Operations Aviation Safety Inspectors, Principal Operations Inspectors (POIs), Training Center Program Managers (TCPMs), Aircrew Program Managers (APMs), 14 CFR 135 Air Carrier Check Airmen and Instructors, 14 CFR 91K Check Pilots and Instructors, Airline Transport Pilots instructing in air transportation service, Certificated Flight Instructors, Aircrew Program Designees, and Training Center Evaluators.

Determinations made in this report are based on the evaluations of specific Night Vision Imaging System (NVIS) equipped airplane in a given configuration and in accordance with regulations and guidance current at that time. Modifications and upgrades made to the NVISs described herein, or introduction of new NVIS may require amendment of the findings in this report. The NVG FSB reserves responsibility/authority to re-evaluate and modify sections of this report based on new or revised Advisory Circular material or 14 CFR, airplane operating experience, or the testing of new or modified airplane under the provisions of AC 120-53(as amended) and/or the Common Procedures Document for conducting Operational Evaluation Boards, 10 June, 2004.

2. PILOT "TYPE RATING" REQUIREMENTS

This report is applicable to airplanes designated as ASEL/AMEL/ASES/AMES with no designated pilot type rating and Pilot Type Rated Turbo-Propeller airplanes. Pilot Type Rated airplane NVG training, checking and currency may also be addressed in the FSB Report specific to that pilot type rating.

3. MASTER REQUIREMENTS

3.1 Common Requirements (All NVG ASEL/AMEL/ASES/AMES/Pilot Type Rated Turbo-Prop)
Airplane NVG Operation is in accordance with 61.1(b)(14) definition for NVG operation which requires flight occurring 1 hour after sunset to 1 hour before sunrise, flight based on visual surface reference using NVGs, and flight in an airplane approved for that NVG operation. In order to meet this definition NVG Operation is conducted Night VFR or Night VMC when transition has been made to visual navigation from IFR flight.

No ASES/AMES (seaplane) have certification design approval or operational suitability evaluation.

When airplane design approval includes restrictions in the Flight Manual Limitations that prohibit certain flight operations the NVG PIC endorsement per 61.31(k) must include these Limitations. (i.e. Takeoff & Landing prohibited or not authorized, NVG operation below 1,000ft AGL prohibited or not authorized, etc.)

3.2 Master Difference Requirements.
Master Difference Requirements (MDRs) for different Classes of Airplane Category NVIS aircraft are shown in Appendix 1. These provisions apply for differences between airplane classes affecting crew knowledge, skills, or abilities related to flight operation and safety.

NOTES to MDR requirements define acceptable "required means" or "alternate means" of compliance. A footnote requirement must be complied with when applicable.

4. ACCEPTABLE "OPERATOR DIFFERENCE REQUIREMENTS" (ODR) TABLES

4.1 ODR Tables. ODR tables are used to show an operator compliance methods. No ODR Tables have been generated for Airplane NVG Operation pilot training and qualification based on NVGs in aviation use having the similar form, fit and function therefore NVG Operation for each Category/Class/Type Rated Turboprop Airplane has the same suitable means of training, checking and currency compliance determined. Initial NVG pilot in command qualification is applicable to each Category/Class/Type Rated Turboprop airplane.

4.2 Operator Preparation of ODR Tables. Operators flying multiple Categories/Classes/Type Rated Turboprop Airplanes in NVG operations have the same NVG training, checking and currency specific for each airplane in accordance with the approved training program therefore ODR Tables are not required.

5. FSB SPECIFICATIONS FOR TRAINING

The provisions of this report are based on a requirement the NVG PIC trainee is already current and qualified in the Category and Class or Type Rated Turboprop airplane for which the NVG training is given.

Training for Seat Dependent Tasks. Although the Category/Class/Type Rated Turboprop airplane may be approved for single pilot operations, in a situation where 2 flight crew operations are conducted, both crewmembers must be NVG qualified. There may be NVG visual and/or NVG scan technique variations from one flight crew seat to another resulting in seat dependent tasks. When this occurs training must be conducted for these variations.

Training Program Hours are not specified by this report. 8900.1, Volume 4, Chapter 7, Section 4, paragraph 4-1128B, addresses minimum program hours and content for FAA Approved NVG Training Programs for rotorcraft. These program hour guidelines also apply to airplane NVG training programs.

5.1 Pilots Initial Airplane NVG Training

5.1.1 Pilots Initial NVG Ground Training, Initial, transition, or upgrade ground training for Airplane NVG Operation is accomplished as specified by 14 CFR 61.31(k)(1) and 91.1101 / 135.345. A suitable training curriculum outline is given in Appendix 3.

5.1.2 Pilots Initial NVG Flight Training. Initial, transition, or upgrade flight training for Airplane NVG Operation is accomplished as specified by 14 CFR 61.31(k)(2) and 91.1103 / 135.347. A suitable training curriculum outline is given in Appendix 3.

5.1.3 NVG Emergency Training.
Airplane NVG Emergency Training must include Goggle Failure Procedures. Typical NVG Failure modes are not abrupt or a complete NVG failure but rather a degradation or bloom. NVG Failure Procedures must consider need to transition to Un-Aided operation in response to degradation, battery failure or a complete loss of NVG. The ability to transition to Un-Aided operation in single pilot operations must consider the type of operation allows safe transition to Un-Aided operation or the NVG operation must be conducted with 2 pilots to allow transfer of control.

Airplane Emergency Procedures are generally unchanged by presence of NVGs

5.1.4 Areas of Emphasis. The following areas of emphasis should be addressed during Airplane NVG ground and flight training:

a) Cockpit ergonomics and field of regard techniques for NVG use
b) Recovery from Inadvertent IMC.
c) 2 pilot operating procedures if needed for type of NVG operation to mitigate workload or NVG Failures transitioning to Un-Aided operation.
d) Landing illusions using NVGs
e) Operating airplanes around Airports and/or Obstructions with LED lighting not visible with authorized NVGs

5.2 NVG Differences Training

5.2.1 General. Unless an initial or transition program is completed for each Category/Class/Type Rated Turboprop airplane, differences training is necessary for each Category/Class/Type Rated Turboprop airplane in NVG operation. For Part 91K or 135 operations the differences training to operate more than one Category/Class/Type Rated Turboprop NVG airplane must comply with 14 CFR 91.1103 or 135.347 and 8900.1. Differences Training Program prerequisites for Airplane NVG Training are a trainee must be current and qualified in the Category/Class/Type Rated Turboprop airplane and NVG Operation from which differences are being sought and already be current and qualified the Category/Class/Type Rated Turboprop airplane to which NVG differences are sought.

5.2.2 Differences Ground Training. Differences ground training is required on the topics applicable to Category/Class/Type Rated Turboprop airplane and are shown in Appendix 3.

5.2.3 Differences Flight Training. Differences flight training is required in the topics and maneuvers applicable to Category/Class/Type Rated Turboprop airplane and are shown in Appendix 3.

5.3 Recurrent Training: Recurrent Training Courses for Part 91K/135 must include appropriate training in accordance with 14 CFR 91.1107 or 135.351 and 8900.1. Satisfactory completion of a proficiency check may be substituted for recurrent flight training as permitted in 14 CFR 135.351(c). Part 91 Operations (except 91K) comply solely with NVG currency requirements of 14 CFR 61.57(f)&(g) and are not subject to NVG Recurrent Training requirements.

6. FSB SPECIFICATIONS FOR CHECKING

Airplane NVG Checking and Evaluation is specified by the14 CFR 61.57(g) to include that all tasks listed in 61.31(k) are completed proficiently.

For Part 91 Airplane Operation (except 91K), NVG Proficiency Checks are administered as designated in 14 CFR 61.57(g). Appropriate topics and maneuvers applicable to Category/Class/Type Rated Turboprop airplane NVG checks are shown in the Proficiency Check profile in Appendix 3.

For Part 91K/135 Airplane Operations, NVG Proficiency Checks must be administered by an authorized check pilot or FAA Aviation Safety Inspector in accordance with Part 91K or 135 Approved Programs.

7. FSB SPECIFICATIONS FOR RECENCY OF EXPERIENCE

Airplane NVG Currency is Category specific to comply with 14 CFR 61.57(f)&(g). This Airplane NVG Currency is unaffected by Part 91K/135 Recurrent Flight Training and must be met or exceeded with Part 91K/135 Currency. 14 CFR 61.57(g) NVG Proficiency Check establishes PIC NVG qualification in lieu of recent operating experience.

Level C or D Airplane NVG Currency is maintained per 14 CFR 61.57(f) or Opspec A051, as applicable, in Category/Class and reestablished in according with 14 CFR §61.57(f) / Opspec A051 or §61.57 (g) / §135.293, as applicable.

8. AIRCRAFT REGULATORY COMPLIANCE CHECKLIST

NVG Observation and/or Proving/Validation Flights. NVG observation flights must be completed by observers equipped with NVGs approved for that airplane and operation.

Current 8900.1 does not address Proving or Validation for Airplane NVG Operations. For currently known kinds of ANVGOs , crew qualification should be adequate determination for operational capability of a certificate holder, therefore ANVGO Proving or Validation are not required at this time.

9. FSB SPECIFICATIONS FOR DEVICES AND SIMULATORS

As of this report there are no Flight Simulation Training Devices approved for Airplane NVG Operation training. Requests for device approval should be made to the POI. The POI may approve these devices for that operator if their characteristics clearly meet the established FAA criteria and have been approved by the National Simulator Program (NSP).

10. APPLICATION OF FSB REPORT

Airplane NVG Operations are subject to the provisions of this report. This report becomes effective when given final approval by the FAA. Training, checking and currency for Airplane NVG Operation prescribed in this report have been determined suitable to comply with applicable regulations and should be followed. All FAA Approved Training Programs must incorporate the latest FAA Approved AFM Procedures, AFM compliant checklist, manufacturer's recommendations for training maneuvers and all provisions of this report.

11. ALTERNATE MEANS OF COMPLIANCE

11.1 Approval Level and Approval Criteria. Alternate means of compliance to the requirements of this report must be approved by the FSB. If alternate means of compliance is sought, operators will be required to establish that the proposed alternate means provides an equivalent level of safety to the provisions of AC 120-53(as amended), and this FSB report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

11.2 Equivalent Safety. Significant restrictions may apply in the event alternate compliance is sought, and the reporting requirements may be increased to ensure equivalent safety. FAA will generally not consider relief through alternate compliance unless sufficient lead-time has been planned by an operator to allow for any necessary testing and evaluation.

11.3 Interim Programs. In the event unforeseen circumstances make it impossible for an operator to comply with MDR provisions, the operator may seek interim program approval rather than a permanent, alternate compliance method. Financial arrangements, scheduling adjustments, and similar justifications are not considered to be "unforeseen circumstances" for the purposes of this provision.

APPENDIX 1

MASTER DIFFERENCE REQUIREMENTS (MDR) TABLE

NVG Airplane Night VFR		FROM AIRPLANE					
		ASEL All Ops	AMEL All Ops	ASES All Ops	AMES All Ops	Turboprop Typed	
TO AIRPLANE	ASEL	A/A/B (1)(2)	D/D/D (1)(2)	Not Approved (2)	Not Approved (2)	D/D/D (1)(2)	
	AMEL	D/D/D (1)(2)	A/A/B (1)(2)	Not Approved (2)	Not Approved (2)	B/B/C (1)(2)	
	ASES	Not Approved (2)	Not Approved (2)	Not Approved (2)	Not Approved (2)	Not Approved (2)	
	AMES	Not Approved (2)	Not Approved (2)	Not Approved (2)	Not Approved (2)	Not Approved (2)	
	Turboprop Typed	D/D/D (1)(2)	B/B/C (1)(2)	Not Approved (2)	Not Approved (2)	A/A/B (1)(2)	

NOTES

(1) For airplanes not approved for NVG Takeoff & Landing Operation or having an NVG Operation altitude restriction less than 1,000 ft AGL reference 61.1(b)(14), (Takeoff & Landing is prohibited or altitude restriction in Flight Manual Limitations), the NVG PIC endorsement per 61.31(k) must include this Limitation.

(2) For airplanes not approved for NVG Operation below 1,000 ft AGL reference 61.1(b)(14), (NVG Operation below 1,000 ft AGL is prohibited in Flight Manual Limitations), the NVG PIC endorsement per 61.31(k) must include this Limitation. ASES/AMES NVG may be authorized and endorsed with this Limitation provided the Takeoff & Landing Prohibited endorsement Limitation is issued concurrent. As of this report no Airplane Category/Class NVG seaplanes have certification design approval or operational suitability evaluation for NVG Operation.

APPENDIX 2

ACCEPTABLE OPERATOR DIFFERENCE REQUIREMENTS (ODR) TABLES

(RESERVED)

APPENDIX 3

AIRPLANE CATEGORY/CLASS INITIAL NVG TRAINING

Applicability: Kind of Operation, Night VFR and/or Night IFR in VMC

Intended function: Normal Operation; Takeoff & Landing, Flight Below 1000 ft AGL and Below 500 ft AGL per 14 CFR §91.119

Initial Pilot qualification: The operational suitability of this training is applicable to add Initial Airplane NVG PIC qualification to PIC already current and qualified in Category/Class.

Program Hours: FAA Order 8900.1, Volume 4, Chapter 7, Section 4, paragraph 4-1128B, addresses minimum program hours and content for FAA Approved NVG Training Programs for rotorcraft. These program hour guidelines also apply to airplane NVG training programs.

NVG Operations: Single Pilot operation with Helmet mounted NVG, For 2 pilot operations both pilots must utilize authorized NVGs for NVG operations.

References: 14 CFR, FAA Order 8900.1, RTCA DO-268, Concepts of Operation, NVIS for Civil Operators, RTCA DO-295, Civil Operators' Training Guidelines for Integrated NVIS Equipment, RTCA DO-275, Minimum Operational Performance Standards for Integrated Night Vision Imaging System Equipment.

NVG Initial Ground Training 61.31(k)(1) Endorsement from Authorized NVG Flight Instructor

1) NVG Flight Operation Requirements
   a) 14 CFR 61.1(b)(13) Night Vision Goggles (appliance)
   b) 14 CFR 61.1(b)(14) Night Vision Goggle Operation
      i) 1 hour after sunset to 1 hour before sunrise
      ii) Visual surface reference using NVGs
      iii) Airplanes approved for such an operation
   c) 14 CFR 61.31(k) Training Required
   d) 14 CFR 61.57 PIC Recent Flight Experience for NVG operation
      i) Paragraph (f) NVG Recent Operating Experience.
         (1) Required experience varies by NVG intended function
         (2) Takeoff & Landing needs to be Category specific to be consistent with rest of 61.57 currency requirements
      ii) Paragraph (g) NVG Proficiency Check
         (1) All task subjects and intended functions per 61.31(k)
         (2) By a qualified pilot per 61.57 or Part 135 (where applicable)
   e) 61.195(k) NVG Authorized Flight Instructor
   f) 91.119 minimum altitudes
   g) 91.205(h) NVG Operation required equipment (7 items)
   h) FAA Order 8900.1, Vol.4, Chp.7, Sec.4, NVIS
      i) Equipment
      ii) procedures & training
      iii) limitations
      iv) operational authorization
2) Applicable STC, AFMS and approved intended functions

3) Aeromedical Subjects (ref. DO-295, 4.1.1.4 & other applicable reference)
   a) Eye Physiology
   b) Types of Vision
   c) Common visual deficiencies, peripheral and blind spots
   d) Limitations of unaided night vision
   e) Factors and lighting affecting dark adaptation
   f) Adaptation and proper night vision viewing techniques
   g) Methods used to protect night vision
   h) Self-imposed stresses that affect night vision
   i) Distance estimation and depth perception cues
   j) Visual illusions
   k) Physiological effects of night vision devices

4) Operating Procedures
   a) PIC NVG Qualification (training, checking, currency)
   b) PIC Logging of NVG Flight Experience (time vs. operations)
   c) PIC Duty & Responsibility
   d) Recording NVIS discrepancies (airplane & NVGs)
   e) Normal Operating Procedures (ref. DO-268, 4.5.1 & other applicable reference)
   f) Preflight (airplane & NVGs)
   g) Maintaining VMC operation
   h) CRM/SRM and Risk Mitigation
   i) Emergency Procedures (inadvertent IMC)

5) NVGs (ref. DO-295, 4.1.1.2 & other applicable reference)
   a) Performance
      i) NVG Classifications and TSO
      ii) Characteristics & Capabilities
      iii) Functional limitations
      iv) NVG assembly (appliance)
      v) NVG Components & Operating sequence
      vi) Operational checks
      vii) NVG mount (helmet mount)
      viii) NVG Power
      ix) NVG failure modes
      x) General care and cleaning

   b) Interpretation of NVG display scene (ref. DO-268, 3.3 & other applicable ref.)
      i) Visual Deficiencies (including LED lighting detection)
      ii) NVG adjustments (optimum function)
      iii) Actual Visual Surface Reference VS light source reference

6) NVG interpretation of terrain (visual surface reference) (ref DO-295, 4.1.1.3)
   a) Light sources (including LED lighting)
   b) Restrictions to visibility
   c) Visual recognition cues
   d) Terrain features

7) NVG Flight Planning

(ref. DO-295, 4.1.1.5 as applicable & DO-268, 4.5 as applicable & other applicable ref.)

a) Authorized NVG Operations
b) Weather
c) Area of Operation
d) Operating Environment & Conditions (ref. DO-268, 4.2 as applicable)
e) Intended operational function (minimum altitude)
f) Risk Management (8083-2, Risk Management Handbook)
    i) Airport Ground Operation
    ii) Takeoff
    iii) Enroute
    iv) Approach & Landing
    v) Contingencies, Emergency & Abnormal

NVG Initial Flight Training 61.31(k)(2) Endorsed from Authorized NVG Flight Instructor

1) Flight Module 1 (NVG Technique & Maneuvering)
   a) Preflight Planning
   b) NVG Preflight
      i) NVG Inspection
      ii) NVG Adjustment & Focus
      iii) NVG Operational Checks
      iv) Airplane NVG Preflight Inspection
      v) Airplane NVG Lighting & Filtration Check
   c) Preflight Procedures
      i) Cockpit Familiarization (NVG mounted, stowed up & positioned for use)
      ii) Cockpit Ergonomics and Field of Regard
      iii) Normal Preflight, Before Start, Engine Start
      iv) Use of airplane lighting
      v) Taxi
      vi) Pre-Takeoff Checks (run-up)
   d) Takeoff & Departure
      i) Rejected Takeoff
      ii) Normal Takeoff
      iii) Crosswind Takeoff
      iv) Unlit Runway Takeoff
      v) Area Departure
   e) Inflight Maneuvers
      i) Light use (Interior & Exterior)
      ii) Steep Turns
      iii) Unusual Attitude Recovery
      iv) Effects of ambient light
      v) Altitude management & use of radar altimeter
      vi) Multiple Transitions aided to unaided to aided
   f) Visual Ground Reference (1000 ft AGL and below)
      i) Terrain & obstruction visual surface reference (LED detection)
      ii) Distinguish obstructions & congested areas
      iii) Altitude management (radar altimeter & visual reference)
      iv) Estimating horizontal distances
      v) Distinguish open water & sparse settled areas
      vi) Distinguish person, vessel, vehicle, structure for below 500 ft AGL
      vii) Area arrival
   g) Emergency Procedures (NVG Failure Procedures)
      i) Airplane Emergencies (Forced Landing)
      ii) Dual Tube NVG Failure
   h) Approach & Landing
      i) Traffic Pattern & Visual approach
      ii) Normal Landing
      iii) Crosswind Landing
      iv) Unlit Runway Landing
   i) Post Flight
      i) Taxi & Shutdown

2) Flight Module 2 (NVG Takeoff & Landing)
   a) Preflight Planning
   b) NVG Preflight
      i) NVG Inspection
      ii) NVG Adjustment & Focus
      iii) NVG Operational Checks
      iv) Airplane NVG Preflight Inspection
      v) Airplane NVG Lighting & Filtration Check
   c) Preflight Procedures
      i) Normal Preflight, Before Start, Engine Start (NVG mounted)
      ii) Use of airplane lighting
      iii) Taxi
      iv) Pre-Takeoff Checks (run-up)
   d) Takeoff & Departure
      i) Use of airplane lighting
      ii) Rejected Takeoff
      iii) Normal Takeoff
      iv) Powerplant Failure on Takeoff
      v) Crosswind Takeoff
      vi) Short Field Takeoff
      vii) Soft Field Takeoff (if applicable to intended NVG operation)
      viii) Lit Runway Takeoff (minimal & maximum runway lighting)
      ix) Unlit Runway Takeoff
   e) Navigation
      i) NVG Techniques
      ii) Cockpit Ergonomics and Field of Regard techniques
      iii) Terrain & obstruction visual surface reference (LED detection)
      iv) Effects of Ambient Light
      v) Departure & Arrival
      vi) Traffic Pattern
   f) Approach & Landing
      i) Use of airplane lighting
      ii) Visual Approach References (geometric perspective cues)
      iii) Landing with Powerplant Failure, if applicable
      iv) Balked Landing
      v) Crosswind Landing
      vi) Short Field Landing
      vii) Soft Field Landing (if applicable to intended NVG operation)
      viii) Lit Runway Landing (minimal & maximum runway lighting)
      ix) Unlit Runway Landing
   g) Emergency Procedures
      i) Single & Dual tube NVG failure (various modes of flight)
      ii) Inadvertent IMC recovery
   h) Post Flight
      i) Taxi
      ii) Shutdown

3) Flight Module 3 (Inadvertent IMC, IFR transition to VMC, remaining items & Proficiency)
   a) Preflight Planning
   b) NVG Preflight
      i) NVG Inspection
      ii) NVG Adjustment & Focus
      iii) NVG Operational Checks
      iv) Airplane NVG Preflight Inspection
      v) Airplane NVG Lighting & Filtration Check
   c) Preflight Procedures
      i) Normal Preflight, Before Start, Engine Start (NVG mounted)
      ii) Taxi
      iii) Pre-Takeoff Checks (run-up)
   d) Takeoff & Departure
      i) VMC Takeoff (NVG surface reference transitioning to instrument flight)
      ii) Normal or Crosswind Takeoff
      iii) Various available runway lighting conditions
   e) Instrument Procedures
      i) Circling Approach (visual maneuvering to landing)
      ii) IAP to Breakout to visual navigation
      iii) Determine & maintain IAP visibility minimums
      iv) Cruise Clearance to VFR (transition from instrument flight to aided flight)
   f) Landing
      i) Runway Approach Lighting systems use
      ii) Landing from Circling Approach
      iii) Use of airplane lighting
      iv) Normal or Crosswind Landing
   g) Emergency Procedures
      i) Inadvertent IMC recovery
      ii) Maintaining VMC minimums
   h) Post Flight
      i) Taxi
      ii) Shutdown

NVG Proficiency Check 61.57(g) (ref.: 8900.1, Vol.3, Chp.19, Sec.7, Para. 3-1280, Table 3-70)
Entire Proficiency Check is completed using Normal NVG Procedures.

1) Oral Examination of all 61.31(k) Ground and Flight Topics
2) Preflight Planning
3) NVG Preflight
   a) NVG Inspection
   b) NVG Adjustment & Focus
   c) NVG Operational Checks
   d) Airplane NVG Preflight Inspection
   e) Airplane NVG Lighting & Filtration Check
4) Preflight Procedures
   a) Normal Preflight, Before Start, Engine Start (NVG mounted)
   b) Use of airplane lighting
   c) Taxi
   d) Pre-Takeoff Checks (run-up)
5) Takeoff & Departure
   a) Lit Runway Takeoff
   b) Unlit Runway Takeoff
   c) VMC Takeoff (NVG surface reference transitioning to instrument flight)
   d) Short or Soft Field Takeoff
   e) Powerplant Failure on Takeoff
6) Inflight Maneuvers
   a) Steep Turns
   b) Unusual Attitude Recovery
   c) Terrain & obstruction visual surface reference (LED detection)
   d) Effects of Ambient Light
   e) Altitude management (radar altimeter use & visual reference)
   f) Transition aided to unaided
7) Instrument Procedures (if NVG operation includes Night IFR in VMC)
   a) Circling Approach (visual maneuvering to landing)
   b) IAP or Cruise Clearance to VFR operation (instrument flight to aided flight)
8) Landings
   a) Landing from Circling Approach (visual maneuvering to landing)
   b) Use of airplane lighting
   c) Landing with Powerplant Failure, if applicable
   d) Lit Runway Landing
   e) Unlit Runway Landing
   f) Short or Soft Field Landing
9) Emergency Procedures
   a) Airplane System Malfunction
   b) NVG Failure
   c) Maintaining VMC visibility
   d) Inadvertent IMC recovery
10) Post Flight
   a) Taxi
   b) Shutdown

AIRPLANE ADDITIONAL CLASS NVG DIFFERENCES TRAINING

Applicability: Kind of Operation, Night VFR and/or Night IFR in VMC

Intended function: Normal Operation; Takeoff & Landing, Flight Below 1000 ft AGL and Below 500 ft AGL per 14 CFR 91.119

Additional Class Pilot qualification: The operational suitability of this training is applicable to add a Class to existing Airplane Category NVG PIC qualification when the PIC is already current and qualified in the new Airplane Class.

Program Hours FAA Order 8900.1, Volume 4, Chapter 7, Section 4, paragraph 4-1128B, addresses minimum program hours and content for FAA Approved Training Programs for rotorcraft. These program hour guidelines also apply to airplane NVG training programs.

NVG Operations: Single Pilot operation with Helmet mounted NVG, For 2 pilot operations both pilots must utilize authorized NVGs for NVG operations.

References: 14 CFR, FAA Order 8900.1, RTCA DO-268, Concepts of Operation, NVIS for Civil Operators, RTCA DO-295, Civil Operators' Training Guidelines for Integrated NVIS Equipment, RTCA DO-275, Minimum Operational Performance Standards for Integrated Night Vision Imaging System Equipment.

Add Airplane Class NVG Ground Training 61.31(k)(1) Endorsement from Authorized NVG Flight Instructor

1) NVG Flight Operation Requirements
   a) 91.119 minimum altitudes
   b) 91.205(h) NVG Operation required equipment (7 items)
   c) FAA Order 8900.1, Vol.4, Chp.7, Sec.4, NVIS
      i) Equipment
      ii) procedures & training
      iii) limitations
      iv) operational authorization
2) Applicable STC, AFMS and approved intended functions
3) Operating Procedures
   a) Normal Operating Procedures (ref. DO-268, 4.5.1 & other applicable reference)
   b) Preflight (airplane & NVGs)
4) NVG Flight Planning

(ref. DO-295, 4.1.1.5 as applicable & DO-268, 4.5 as applicable & other applicable ref.)

   a) Authorized NVG Operations
   b) Weather
   c) Area of Operation
   d) Operating Environment & Conditions (ref. DO-268, 4.2 as applicable)
   e) Intended operational function (minimum altitude)
   f) Risk Management (8083-2, Risk Management Handbook)
      i) Airport Ground Operation
      ii) Takeoff
      iii) Enroute
      iv) Approach & Landing
5) Contingencies, Emergency & Abnormal

Add Airplane Class NVG Flight Training 61.31(k)(2) Endorsed from Authorized NVG Flight Instructor

1) Flight Module (NVG Takeoff & Landing)
   i) Preflight Planning
   j) NVG Preflight
      i) NVG Inspection
      ii) NVG Adjustment & Focus
      iii) NVG Operational Checks
      iv) Airplane NVG Preflight Inspection
      v) Airplane NVG Lighting & Filtration Check
   k) Preflight Procedures
      i) Cockpit Ergonomics and Field of Regard techniques
      ii) Normal Preflight, Before Start, Engine Start (NVG mounted)
      iii) Use of airplane lighting
      iv) Taxi
      v) Pre-Takeoff Checks (run-up)
   l) Takeoff & Departure
      i) Use of airplane lighting
      ii) Rejected Takeoff
      iii) Normal Takeoff
      iv) Powerplant Failure on Takeoff
      v) Crosswind Takeoff
      vi) Short Field Takeoff
      vii) Soft Field Takeoff (if applicable to intended NVG operation)
      viii) Lit Runway Takeoff (minimal & maximum runway lighting)
      ix) Unlit Runway Takeoff
   m) Navigation
      i) NVG Techniques
      ii) Terrain & obstruction visual surface reference (LED detection)
      iii) Effects of Ambient Light
      iv) Departure & Arrival
      v) Traffic Pattern
   n) Approach & Landing
      i) Use of airplane lighting
      ii) Visual Approach References (geometric perspective cues)
      iii) Landing with Powerplant Failure, if applicable
      iv) Balked Landing
      v) Crosswind Landing
      vi) Short Field Landing
      vii) Soft Field Landing (if applicable to intended NVG operation)
      viii) Lit Runway Landing (minimal & maximum runway lighting)
      ix) Unlit Runway Landing
   o) Emergency Procedures
      i) Single & Dual tube NVG failure (various modes of flight)
      ii) Inadvertent IMC recovery
   p) Post Flight
      i) Taxi
      ii) Shutdown

NVG DIFFERENCES TRAINING TO ADD AIRPLANE CATEGORY / CLASS TO ROTORCRAFT CATEGORY / CLASS

Applicability: Kind of Operation, Night VFR and/or Night IFR in VMC

Intended function: Normal Operation; Takeoff & Landing, Flight Below 1000 ft AGL and Below 500 ft AGL per 14 CFR 91.119

Adding Airplane Category to Rotorcraft Pilot qualification: The operational suitability of this training is applicable to add Airplane Category/Class NVG PIC to existing current and qualified Rotorcraft/Helicopter NVG PIC when the PIC is already current and qualified in Airplane Category/Class.

Program Hours: FAA Order 8900.1, Volume 4, Chapter 7, Section 4, paragraph 4-1128B, addresses minimum program hours and content for FAA Approved Training Programs for rotorcraft. These program hour guidelines also apply to airplane NVG training programs.

NVG Operations: Single Pilot operation with Helmet mounted NVG, For 2 pilot operations both pilots must utilize authorized NVGs for NVG operations.

References: 14 CFR, FAA Order 8900.1, RTCA DO-268, Concepts of Operation, NVIS for Civil Operators, RTCA DO-295, Civil Operators' Training Guidelines for Integrated NVIS Equipment, RTCA DO-275, Minimum Operational Performance Standards for Integrated Night Vision Imaging System Equipment.

Add Airplane Category NVG Ground Training 61.31(k)(1) Endorsement from Authorized NVG Flight Instructor

1) NVG Flight Operation Requirements
   a) 14 CFR 61.31(k) Training Required
   b) 14 CFR 61.57 PIC Recent Flight Experience for NVG operation
      i) Paragraph (f) NVG Recent Operating Experience.
         (1) Required experience varies by NVG intended function
         (2) Takeoff & Landing needs to be Category specific to be consistent with rest of 61.57 currency requirements
      ii) Paragraph (g) NVG Proficiency Check
         (1) All task subjects and intended functions per 61.31(k)
         (2) By a qualified pilot per 61.57 or Part 135 (where applicable)
   c) 61.195(k) NVG Authorized Flight Instructor
   d) 91.119 minimum altitudes
   e) 91.205(h) NVG Operation required equipment (7 items)
   f) FAA Order 8900.1, Vol.4, Chp.7, Sec.4, NVIS
      i) Equipment
      ii) procedures & training
      iii) limitations
      iv) operational authorization
2) Applicable STC, AFMS and approved intended functions

3) Operating Procedures
   a) PIC NVG Qualification (training, checking, currency)
   b) Normal Operating Procedures (ref. DO-268, 4.5.1 & other applicable reference)
   c) Preflight (airplane & NVGs)
   d) Maintaining VMC operation
   e) CRM/SRM and Risk Mitigation
   f) Emergency Procedures (inadvertent IMC)

4) NVG Flight Planning

(ref. DO-295, 4.1.1.5 as applicable & DO-268, 4.5 as applicable & other applicable ref.)

   a) Authorized NVG Operations
   b) Weather
   c) Area of Operation
   d) Operating Environment & Conditions (ref. DO-268, 4.2 as applicable)
   e) Intended operational function (minimum altitude)
   f) Risk Management (8083-2, Risk Management Handbook)
      i) Airport Ground Operation
      ii) Takeoff
      iii) Enroute
      iv) Approach & Landing
      v) Contingencies, Emergency & Abnormal

Add Airplane Category NVG Flight Training 61.31(k)(2) Endorsed from Authorized NVG Flight Instructor

1) Flight Module 1 (NVG Technique & Maneuvering)
   a) Preflight Planning
   b) NVG Preflight
      i) NVG Inspection
      ii) NVG Adjustment & Focus
      iii) NVG Operational Checks
      iv) Airplane NVG Preflight Inspection
      v) Airplane NVG Lighting & Filtration Check
   c) Preflight Procedures
      i) Cockpit Familiarization (NVG mounted, stowed up & positioned for use)
      ii) Cockpit Ergonomics and Field of Regard techniques
      iii) Normal Preflight, Before Start, Engine Start
      iv) Use of airplane lighting
      v) Taxi
      vi) Pre-Takeoff Checks (run-up)
   d) Takeoff & Departure
      i) Rejected Takeoff
      ii) Normal Takeoff
      iii) Crosswind Takeoff
      iv) Unlit Runway Takeoff
      v) Area Departure
   e) Inflight Maneuvers
      i) Light use (Interior & Exterior)
      ii) Steep Turns
      iii) Unusual Attitude Recovery
      iv) Effects of ambient light
      v) Altitude management & use of radar altimeter
      vi) Multiple Transitions aided to unaided to aided
   f) Visual Ground Reference (1000 ft AGL and below)
      i) Terrain & obstruction visual surface reference (LED detection)
      ii) Distinguish obstructions & congested areas
      iii) Altitude management (radar altimeter & visual reference)
      iv) Estimating horizontal distances
      v) Distinguish open water & sparse settled areas
      vi) Distinguish person, vessel, vehicle, structure for below 500 ft AGL
      vii) Area arrival
   g) Emergency Procedures (NVG Failure Procedures)
      i) Airplane Emergencies (Forced Landing)
      ii) Dual Tube NVG Failure
   h) Approach & Landing
      i) Traffic Pattern & Visual approach
      ii) Normal Landing
      iii) Crosswind Landing
      iv) Unlit Runway Landing
   i) Post Flight
      i) Taxi & Shutdown

2) Flight Module 2 (NVG Takeoff & Landing)
   q) Preflight Planning
   r) NVG Preflight
      i) NVG Inspection
      ii) NVG Adjustment & Focus
      iii) NVG Operational Checks
      iv) Airplane NVG Preflight Inspection
      v) Airplane NVG Lighting & Filtration Check
   s) Preflight Procedures
      i) Normal Preflight, Before Start, Engine Start (NVG mounted)
      ii) Use of airplane lighting
      iii) Taxi
      iv) Pre-Takeoff Checks (run-up)
   t) Takeoff & Departure
      i) Use of airplanet lighting
      ii) Rejected Takeoff
      iii) Normal Takeoff
      iv) Powerplant Failure on Takeoff
      v) Crosswind Takeoff
      vi) Short Field Takeoff
      vii) Soft Field Takeoff (if applicable to intended NVG operation)
      viii) Lit Runway Takeoff (minimal & maximum runway lighting)
      ix) Unlit Runway Takeoff
   u) Navigation
      i) NVG Techniques
      ii) Cockpit Ergonomics and Field of Regard techniques
      iii) Terrain & obstruction visual surface reference (LED detection)
      iv) Effects of Ambient Light
      v) Departure & Arrival
      vi) Traffic Pattern
   v) Approach & Landing
      i) Use of airplane lighting
      ii) Visual Approach References (geometric perspective cues)
      iii) Landing with Powerplant Failure, if applicable
      iv) Balked Landing
      v) Crosswind Landing
      vi) Short Field Landing
      vii) Soft Field Landing (if applicable to intended NVG operation)
      viii) Lit Runway Landing (minimal & maximum runway lighting)
      ix) Unlit Runway Landing
   w) Emergency Procedures
      i) Single & Dual tube NVG failure (various modes of flight)
      ii) Inadvertent IMC recovery
   x) Post Flight
      i) Taxi
      ii) Shutdown

3) Flight Module 3 (Inadvertent IMC, Night IFR transition to VMC, remaining items & Proficiency)
   i) Preflight Planning
   j) NVG Preflight
      i) NVG Inspection
      ii) NVG Adjustment & Focus
      iii) NVG Operational Checks
      iv) Airplane NVG Preflight Inspection
      v) Airplane NVG Lighting & Filtration Check
   k) Preflight Procedures
      i) Normal Preflight, Before Start, Engine Start (NVG mounted)
      ii) Taxi
      iii) Pre-Takeoff Checks (run-up)
   l) Takeoff & Departure
      i) VMC Takeoff (NVG surface reference transitioning to instrument flight)
      ii) Normal or Crosswind Takeoff
      iii) Various available runway lighting conditions
   m) Instrument Procedures
      i) Circling Approach (visual maneuvering to landing)
      ii) IAP to Breakout to visual navigation
      iii) Determine & maintain IAP visibility minimums
      iv) Cruise Clearance to VFR (transition from instrument flight to aided flight)
   n) Landing
      i) Runway Approach Lighting systems use
      ii) Landing from Circling Approach
      iii) Use of airplane lighting
      iv) Normal or Crosswind Landing
   o) Emergency Procedures
      i) Inadvertent IMC recovery
      ii) Maintaining VMC minimums
   p) Post Flight
      i) Taxi
      ii) Shutdown

APPENDIX 4

AIRCRAFT COMPLIANCE CHECKLIST

(RESERVED)

APPENDIX 5

NVG ASEL/AMEL/ASES/AMES ENDORSEMENTS

1. I certify that Joe Pilot, ATP 1234567, has completed the Night Vision Goggle Ground and Flight Training requirements of 14 CFR Section 61.31(k) and has demonstrated proficiency in the use of Night Vision Goggles for Flight Operations as Pilot-in-Command for [Category/Class].

[Date]
Name, [NumberCFI] and CFI Expiration date

1. I certify that Joe Pilot, ATP 1234567, has completed the Night Vision Goggle Ground and Flight Training requirements of 14 CFR Section 61.31(k) and has demonstrated proficiency in the use of Night Vision Goggles for Flight Operations as Pilot-in-Command for [Category/Class] excluding [Takeoff and Landing, Flight below 1000 ft AGL, etc]

[Date]
Name, [NumberCFI] and CFI Expiration date

Only one endorsement given for 61.31(k) because neither Ground or Flight endorsement given separately can attest to "proficiency in the use of NVGs for Flight Operations as PIC". Endorsement must be Category/Class specific.

When NVIS has Flight Manual limitations prohibiting certain kinds of operations then the NVG PIC endorsement needs to reflect those limitations.

2. I certify that Joe Pilot, ATP 1234567, meets the Night Vision Goggle Proficiency Check requirements of 14 CFR Section 61.57(g) and has demonstrated proficiency in the use of Night Vision Goggles for Flight Operations as Pilot-in-Command for [Category].

[Date]
Name, Number

61.57 NVG currency is Category specific only, not class. Category currency applies to 61.57(f) & (g) equally.

3. I certify that Joe Pilot, CFI 1234567, meets the Night Vision Goggle Instructor requirements of 14 CFR Section 61.195(k) and is authorized to perform the NVG PIC qualification and recent flight experience requirements under Section 61.31(k) and Section 61.57(f) and (g) for [Category/Class].

[Date]
Name, Number and authority

NVG Instructor Authorization is only given by FAA Inspector or Person Authorized by FAA. A person other than an FAA Inspector cannot be authorized by a logbook endorsement to give instructor authorizations, it must be by a program which has authority to authorize an FAA regulatory authority, such as Designees, 135 Check Airmen, 142 TCE, 141 Chief/Check Inst. These FAA Programs are means by which FAA maintains oversight of the authorized function. NVG Instructor Authorization is given only when the instructor has an unrestricted NVG PIC endorsement and is qualified for the Category/Class being endorsed. While 61.195(k)(5) requires experience in Category/Class/Type for the purpose of NVG Instructor experience to conduct training, the endorsement authority, and therefore NVG Instructor endorsement, is for Category/Class only.