



Advisory Circular

Subject: Special Authorization for Night Vision Imaging Systems Operations

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1.0 Introduction

- (1) Subject to paragraph (3), this Advisory Circular (AC) is provided for information and guidance purposes. It describes an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend regulatory requirements, nor does it establish minimum standards. The Global Exemptions, Appendix H-L, permit some deviations from the requirements of the *Canadian Aviation Regulations* (CARs) if an operator meets the conditions described herein.
- (2) Operators are expected to follow the means of compliance described in this AC in all respects, unless the Minister approves an acceptable alternate means of compliance.
- (3) The conditions of the associated Special Authorization (SA) for Night Vision Imaging Systems Operations (NVIS) appear in Appendix A of this AC:
 - (a) For Part VII of the *Canadian Aviation Regulations* (CARs) air operators, the conditions published in Appendix A of this AC constitute part of the air operator certificate (AOC).;
 - (b) For Part 604 of the CARs private operators, the conditions published in Appendix A of this AC constitute part of the private operator registration document (PORD).; and
 - (c) For Part VI of the CARs private operations pilots may elect to train and fly with Night Vision Imaging Systems (NVIS). By doing so the conditions published in Appendix A of this AC constitute part of the pilot licence currency requirements for night Visual Flight Rules (VFR).

1.1 Purpose

- (1) The purpose of this AC is to inform the aviation industry that air operators and private operators may now obtain a Canadian authorization by Special Authorization (SA) for NVIS. This AC will describe equipment capability and pilot qualification requirements to enable Canadian air operators and private operators to plan and execute NVIS operations subject to the applicable requirements of the SA. The final step in the operational approval is the issuance of the SA to the air operator or private operator. The SA will also form a basis upon which a foreign National Aviation Authority (NAA) may authorize, within their jurisdiction, a Canadian air operator or private operator to conduct NVIS operations. It is important to note that authorization to conduct NVIS operations requires an operator continues to meet the requirements herein for the SA or an approved company variant to remain valid.

1.2 Applicability

- (1) The SA is mandatory for Canadian air operators holding an AOC issued under Part VII of the CARs and for private operators holding a PORD issued under subpart 604 of the CARs that wish to benefit from NVIS operations. These will be commonly referred to as “operator” in this AC.
- (2) This document is also applicable to all Transport Canada Civil Aviation (TCCA) inspectors with surveillance duties, and to individuals and organizations that exercise privileges granted to them under an External Ministerial Delegation of Authority. This information is also provided to the aviation industry at large for educational purposes.

1.3 Description of Changes

- (1) This AC supersedes previous versions.
- (2) This AC supersedes Operations Specifications 603, 2006-02-01 Aviators Night Vision Imaging System Operations issued prior to the date of this document.
- (3) Issuance of the SA in this AC means an air operator may no longer conduct unaided night VFR operations unless they also maintain unaided night currency in accordance with CARs and as

approved in their SOP (Standard Operating Procedures) and COM (Company Operations Manual).

- (4) NVIS and pilot currency requirements have changed.
- (5) For the purposes of this AC and SA all references to hours required to qualify or maintain NVIS currency refer to "Air Time".
- (6) Definitions expanded.
- (7) References updated.
- (8) GPS with Terrain Database no longer accepted as an alternative to RADALT requirements.
- (9) Ground and Flight Training requirements described and cross referenced to existing Transport Canada (TC) guidance for pilots who do not hold an Instrument Rating.
- (10) With the issuance of this SA all over water and offshore operations including landing or take-off from aerodromes, boats, ships or platforms at night in areas of black hole effect is limited to VFR Aided NVIS operations or by Instrument Flight Rules (IFR).
- (11) Use of TCCA Accredited NVIS Experts for NVIS Program Validations is discontinued.
- (12) NVIS Competency Flight requirements updated.

These duties are to be performed by NVIS qualified Chief Pilot or Training pilot(s) as approved in the air operator's Company Operations Manual (COM) in accordance with the SA.

- (13) Applicable CARs are referenced in the exemption and the SA contains the applicable conditions for the allowance to operate using NVIS to Basic and Advanced levels.

The SA and or Global Exemptions may be cancelled in writing by the Minister where he/she is of the opinion that it is no longer in the public interest or is likely to adversely affect aviation safety or security.

2.0 References and Requirements

2.1 Reference Documents

- (1) It is intended that the following reference materials (latest edition) be used in conjunction with this document:
 - (a) *Aeronautics Act* (R.S., 1985, C.A-2);
 - (b) Part V, Subpart 21 of the *Canadian Aviation Regulations* (CARs) — Approval Of The Type Design Or A Change To The Type Design Of An Aeronautical Product;
 - (c) Part VI, Subpart IV of the CARs — Private Operator;
 - (d) Part VII, Subpart II of the CARs — Aerial Work Operations;
 - (e) Part VII, Subpart III of the CARs — Air Taxi Operations;
 - (f) Part VII, Subpart IV of the CARs — Commuter Operations;
 - (g) Part VII, Subpart V of the CARs — Airline Operations;
 - (h) Part III, Standard 325 of the *Commercial Air Service Standards* (CASS) — Heliports;
 - (i) Part VII, Standard 723 of the CASS — Aerial Work Operations;
 - (j) Part VII, Standard 724 of the CASS — Commuter Air Taxi Operations;
 - (k) Part VII, Standard 725 of the CASS — Airline Operations;

- (l) Transport Canada Publication — (TP) 312, 5th edition — Aerodrome Standards and Recommended Practices – Land Aerodromes;
- (m) TP 1102 — Flight Training Manual;
- (n) TP 4711 — Operators Certification Manual — Volume V Ops Specs;
- (o) TP 6533 — Approved Check Pilot Manual;
- (p) TP 9982 — Helicopter Flight Training Manual;
- (q) TP 3077 — Flight Test Guide — Private and Commercial Pilot Licence – Helicopter;
- (r) TP 13723 — Flight Test Guide – Private Pilot Licence – Aeroplane;
- (s) TP 13462 — Flight Test Guide – Commercial Pilot Licence – Aeroplane;
- (t) TP14727— Pilot Proficiency Check and Aircraft Type Rating (Aeroplanes);
- (u) TP14728 — Pilot Proficiency Check and Aircraft Type Rating (Helicopter);

- (v) Advisory Circular (AC) 521-004 — Changes to the Type Design of an Aeronautical Product;
- (w) Advisory Circular 700-052 Recording of Flight Time for Skid-Equipped Helicopters;
- (x) Staff Instruction (SI) 513-011 — Certification of Night Vision Imaging Systems;
- (y) CAN Technical Standard Order (CAN-TSO-C164/C164a) 2004-09-30 — Night Vision Goggles;

- (z) AL 2009-02 — Night Vision Goggles (NVGS) and Obstruction Lighting Using Light Emitting Diode (LED) Sources;

- (aa) Federal Aviation Administration (FAA), Order 8900.1 — Flight Standards Information Management System;

- (bb) Radio Technical Commission for Aeronautics (RTCA) DO-295 — Civil Operators' Training Guidelines for Integrated Night Vision Imaging System Equipment, available from www.rtca.org;

- (cc) Aeronautics RTCA DO-268 — Concept of Operations, Night Vision Imaging Systems for Civil Operators, available from www.rtca.org;

- (dd) RTCA DO-275 — Minimum Operational Performance Standards for Integrated Night Vision Imaging Systems Equipment, available from www.rtca.org;

- (ee) RTCA DO-160D — Environmental Conditions and Test Procedures for Airborne Equipment, available for www.rtca.org;

- (ff) RTCA DO-178B — Software Considerations in Airborne Systems and Equipment Certification, available from www.rtca.org;

- (gg) RTCA DO-254 — Design Assurance Guidance for Airborne Electronics Hardware; and

- (hh) Public Works Government of Canada Services — Controlled Goods Program.
<http://ssi-iss.tpsgc-pwgsc.gc.ca/dmc-cgd/index-eng.html>

2.2 Cancelled Documents

- (1) As of the effective date of this document, the following documents are cancelled or replaced:
 - (a) Operations Specifications 603, 2006-02-01 – Aviators Night Vision Imaging System Operations issued prior to the date of this document.
 - (b) Current NVIS exemptions will only be renewed in accordance with this AC and issuance of the SA.

- (2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3 Definitions and Abbreviations

- (1) The following **definitions** are used for the purposes of this document:
- (a) **Advanced NVIS Capability:** Allows for advanced capability as described in Appendix A of the AC 1.0 (20) by specific conditions to benefit from NVIS. This level can be achieved by gaining the appropriate NVIS experience in accordance with Appendix A of this AC.

Alternately it may be granted based on previous NVIS qualifications such as military or police NVIS training. Advanced NVIS Capability means an operator may conduct operations in accordance with Appendix A of this AC.
 - (b) **Ad Hoc Aerodrome:** Any aerodrome not published in the authorities' approved aeronautical publications or in the approved Company Operations Manual (COM). This most typically describes an off aerodrome landing zone such as a confined area or an unprepared runway.
 - (c) **Ad Hoc Route:** Any route not published in the authorities' approved aeronautical charts or in the approved COM. This type of route is typically planned inflight based on pilot experience, knowledge of area and available charts or database of surrounding terrain and obstructions along the planned route.
 - (d) **Basic NVIS Capability:** Allows for use of NVIS equipment during night VFR operations in accordance with the CARs. This level can be assigned to either an individual pilot or a company. If none of the pilots have any previous NVIS experience then the company will be deemed as a Basic NVIS operator. Basic NVIS Capability means that an operator may conduct operations in accordance with Appendix A of this AC.
 - (e) **Black Hole Effect:** means any area where a combination of meteorological conditions and the celestial, lunar or cultural illumination do not provide pilots sufficient external visual cues to see terrain and ground objects and this effect does not provide a discernible horizon sufficient to maintain control of the aircraft by external reference during night Visual Meteorological Conditions (VMC) flight.

Black Hole Effect increases the danger of descending below a normal flight path during take-off or landing particularly when the flight path is over water or dark featureless terrain and it can be further intensified if the only visual stimuli are lights located on and/or near the aerodrome.
 - (f) **Celestial Illumination:** means natural lighting from the moon, planets and stars that provides a pilot sufficient visual cues to see terrain, obstacles and a discernible horizon as described herein during VMC flight.
 - (g) **Class B:** A class of NVG that contains an objective filter that prevents light waves measuring below 665 nanometres from entering the image intensifier.
 - (h) **Controlled Goods Program:** means a program managed by Public Services and Procurement Canada and carries out regulatory duties specified under the *Controlled Goods Regulations*.
 - (i) **Controlled Goods:** means in part goods including components and technical data that have military or national security significance, which are controlled domestically by the Government of Canada and defined in the *Defence Production Act*. It also means goods, regardless of where they are manufactured, that are manufactured from technical data originating from the United States (USA) and are controlled by the *International Traffic in Arms Regulations* (ITAR).

- (j) **Cultural Lighting Clusters:** means an area of concentrated lighting around urban centres such as towns and cities where at any time on the surface or in the air during VFR Unaided flight a pilot has sufficient visual cues to see terrain and obstacles and a discernible horizon. Cultural lighting may include light as reflected on an overcast layer of cloud if VMC flight can be maintained below the overcast.
- (k) **Devoid of Cultural Lighting Clusters:** Means any part of the earth's surface where there is insufficient visual cues to see terrain and ground objects and does not provide a discernible horizon and the pilot is unable to maintain VFR Unaided. Such areas constitute IMC (Instrument Meteorological Conditions) requiring either IFR operations or NVIS by SA.
- (l) **Discernible Horizon:** means an identifiable delineation between terrain and the sky with sufficient visual reference to surrounding terrain and obstacles enabling the pilot to maintain coordinated flight by external visual reference.
- (m) **Established aerodrome:** means, for the purposes of the SA, any pre-established area, on land or water, set aside for the operation of aircraft or helicopters that would normally be defined by markers or markings on the surface and would be required to conform to Subparts 1, 2 or 3 of Part III of the CARs. These are generally unlit aerodromes typically used to conduct training or as part of an area of operations as approved in the COM.
- (n) **Established routes:** mean, for the purposes of the SA, any pre-established route set aside for safe flights to or from published or established aerodromes to conduct training or as part of an area of operations as approved in the COM.
- (o) **Event:** A helicopter / tilt-rotor event is considered a take-off to hover, transition to forward flight, cruise, approach, hover and landing to at least one other established aerodrome than the departure aerodrome. A fixed-wing event must consist of takeoff, climb, cruise, descent, approach and landing to at least one other established aerodrome than the departure aerodrome. Training circuits at the same airfield should be avoided.

If a second suitable established aerodrome is not available, training may be conducted at the aerodrome of departure however the aircraft must be flown out of the circuit and conduct a circuit rejoin procedure for each approach / landing sequence.

Helicopters may achieve this by using different landing zones on an airport property acting as established aerodromes to provide suitable diversity of landing sites.
- (p) **EVS:** or Enhanced Vision Systems, means an electronic means to provide a display of the forward external scene topography through the use of imaging sensors, such as forward looking infrared (FLIR), millimeter wave (MMW) radiometry, MMW radar, and/or low-light-level image intensifying. This image can be displayed in the cockpit on dedicated displays as well as any multi-function, primary flight or primary navigational display providing pilots with sufficient visual cues to see water, terrain and obstacles and a discernible horizon.
- (q) **IFR:** means instrument flight rules – these flights are conducted in accordance with an authorization issued by an air traffic control unit that authorizes aircraft to proceed within controlled airspace in accordance with the conditions specified by that unit.
- (r) **IFR Flight:** means a flight conducted in accordance with instrument flights rules – these flights are conducted by reference to onboard flight instruments once beyond the visual departure portion from an aerodrome until a specified point on the approach to an aerodrome in accordance with IFR.
- (s) **IMC:** or “instrument meteorological conditions” – means meteorological conditions less than the minima specified in Division VI of Subpart 2 of Part VI of the CARs for visual meteorological conditions, expressed in terms of visibility and distance from cloud - during IMC a VFR flight cannot be continued. Flight in IMC conditions requires the ability to conduct IFR Flight in coordination with an air traffic control unit.

- (t) **ITAR:** means *International Traffic in Arms Regulations* that is a set of United States Government regulations on the export and import of defense related articles and services. NVG fall under USA ITAR restrictions and Canadian Controlled Goods regulations.
- (u) **Lunar Illumination:** means sunlight reflected from the moon that illuminates terrain and ground objects on the surface of the earth.
- (v) **Night Vision Imaging Systems Radiance:** The amount of energy emitted by a light source that is visible through Night Vision Imaging Systems.
- (w) **NVG:** or “Night Vision Goggles” means a binocular imaging unit which is head mounted with associated power and counter balance fitments, that use image intensifying technology to amplify the available celestial or cultural light sufficiently for images to be seen through binocular NVG eyepieces as a monochromatic image with a minimum 40 degrees field of view providing sufficient visual cues to see terrain and obstacles and a discernible horizon.
- (x) **NVIS:** or “Night Vision Imaging System”, means an imaging system worn or mounted to the aircraft allowing the pilot(s) to maintain control of the aircraft by visual references to terrain and ground objects as well as providing a discernible horizon. NVIS operations are not equipment specific such as Night Vision Goggles (NVG) or Enhanced Vision System (EVS) but rather based on equipment performance.

While NVG and EVS are the most commonly available NVIS, an operator may request to use any existing or future imaging systems such as Combined Vision Guidance Systems (CVGS) or Fused Vision Imaging Systems (FVIS). Such technologies may include a variety of sensors capable of light intensification, thermal imagery, radar imagery, laser imagery, synthetic vision systems (SVS) or any combination thereof.

Any imaging system chosen to conduct NVIS operations must be capable of meeting the requirements as per definitions included herein for VFR Aided and VMC and be accompanied Radio Technical Commission for Aeronautics or Canadian Technical Standard Order documentation.

- (y) **NVIS Proficiency:** Special Authorization for NVIS Operations requires that pilots maintain this qualification on an annual basis. Pilots who fail to maintain currency must complete an NVIS competency flight with a qualified NVIS instructor. Failing to maintain currency means that pilots are restricted to Day VFR and IFR flights. Pilots meeting the 90 day currency requirements throughout the year without lapses as described in the SA are deemed to be NVIS proficient and may forego the annual NVIS competency flight.
- (z) **NVIS Training Pilot:** Experienced NVIS pilots granted authority as described in the SA to conduct NVIS training and NVIS Competency flights of company pilots.
- (aa) **Published Aerodrome:** Any aerodrome published in the *Canada Flight Supplement*, *Water Aerodrome Supplement* or in the approved COM;
- (bb) **RADALT:** Radar Altimeter.
- (cc) **Transparencies:** Window, windscreen, chin bubbles and overhead windows installed on the aircraft that the crew uses to look outside the aircraft.
- (dd) **VFR Aided:** means a flight conducted by Special Authorization with approved NVIS technology where at any time on the surface or in the air a pilot has sufficient visual cues to see water, terrain and ground objects and provides a discernible horizon where these visual cues allow the flight to operate safely in accordance with CARs Part VI and VII requirements for VFR. These flights may be conducted in areas devoid of cultural lighting clusters with the inclusion of extended over-water and offshore flights if also approved.
- (ee) **VFR Unaided:** means VFR flight without the use of NVIS. Night VFR Unaided is limited to areas with adequate celestial illumination and or cultural lighting clusters sufficient at

any time where a pilot has sufficient visual cues to see terrain and ground objects and a discernible horizon where these visual cues allow the flight to operate safely in accordance with CARs Part VI and VII requirements for VFR.

- (ff) **VMC:** means meteorological conditions equal to or greater than the minima specified in CARs Part VI, Division VI, Subpart 2, expressed in terms of visibility and distance from cloud while operating under VFR. At all times during a flight in VMC the pilot must have sufficient visual cues to see terrain, ground objects and a discernible horizon outside of the cockpit to maintain control of and manoeuvre the aircraft.

(2) The following **abbreviations** are used in this document:

- (a) **AC:** Advisory Circular;
- (b) **ACP:** Approved Check Pilot;
- (c) **Aided:** Flight using NVIS technology;
- (d) **ATC:** Air Traffic Services;
- (e) **ATO:** Approved Training Organization;
- (f) **CARs:** Canadian Aviation Regulations;
- (g) **CFS:** Canada Flight Supplement;
- (h) **COM:** Company Operations Manual;
- (i) **CVGS:** Combined Vision Guidance System;
- (j) **DMR:** Designated Mountainous Regions;
- (k) **EVS:** Enhanced Vision System;
- (l) **FAA:** Federal Aviation Administration;
- (m) **FLVC:** Foreign Licence Validation Certificate;
- (n) **FOV:** Field of View;
- (o) **FVIS:** Fused Vision Imaging System;
- (p) **HEMS:** Helicopter Emergency Medical Service;
- (q) **IFR:** Instrument Flight Rules;
- (r) **IIMC:** Inadvertent Instrument Meteorological Conditions;
- (s) **IMC:** Instrument Meteorological Conditions;
- (t) **IPC:** Instrument Proficiency Check;
- (u) **ITAR:** International Traffic in Arms Regulations (see Controlled Goods in Definitions);
- (v) **LED:** Light-Emitting Diode;
- (w) **MEL:** Minimum Equipment List;
- (x) **NAC:** National Aircraft Certification;
- (y) **NVG:** Night Vision Goggles;
- (z) **NVIS:** Night Vision Imaging Systems;
- (aa) **OPS SPEC:** Operational Specification;
- (bb) **PIC:** Pilot in Command;
- (cc) **POI:** Principle Operations Inspector;

(dd)	PPC:	Pilot Proficiency Check;
(ee)	RADALT:	Radio Altimeter, measures height above ground;
(ff)	RECCE:	Reconnaissance;
(gg)	RTCA:	Radio Technical Commission for Aeronautics;
(hh)	SA:	Special Authorization;
(ii)	SAR:	Search and Rescue;
(jj)	SI:	Staff Instruction;
(kk)	SOP:	Standard Operating Procedures;
(ll)	SVS:	Synthetic Vision System;
(mm)	TCCA:	Transport Canada Civil Aviation;
(nn)	TSO:	Technical Standard Order;
(oo)	UNAIDED:	Flight without NVIS technology;
(pp)	VMC:	Visual Meteorological Conditions; and
(qq)	VFR:	Visual Flight Rules.

3.0 Background

- (1) Night Vision Imaging Systems (NVIS) have been in use in Canadian civil aviation for 15 years. Initially used by Helicopter Emergency Medical Service (HEMS) and police helicopters the technology has spread to numerous uses and expanded to fixed-wing operators. The current global trend is for customers to request NVIS capability from air operators when bidding for contracts.
- (2) The use of NVIS is considered a safety enhancement for night Visual Flight Rules (VFR) operations and transitions from an Instrument Flight Rules (IFR) approach to and from a Black Hole Airport. With proper training and procedures NVIS can allow authorized operators to land and take-off from established aerodromes as defined in the Special Authorization (SA) and operate safely at reduced altitudes and lateral separation during night VFR.
- (3) Operators wishing to use current NVIS systems or newer technologies must do so in accordance with the SA or submit an alternate means of compliance for review and approval.

4.0 Night Vision Imaging Systems Technologies

4.1 General

- (1) The reference documents listed herein provide some of the background material for the development and submission of an NVIS program submitted by air operators for approval into their Company Operations Manual (COM).
- (2) The aircraft operator must obtain an operational approval in the form of a SA from Transport Canada Civil Aviation (TCCA) to be eligible for NVIS operations.
- (3) An approved NVIS program consists of the following elements: an acceptable NVIS, compatible interior and exterior aircraft lighting as required, assessment of cockpit transparencies (windshield, windows, chin bubbles etc.) or any other applicable equipment in accordance with Appendix A of the SA, approved Maintenance Manual, Minimum Equipment List (MEL), procedures to maintain Supplement Type Certificate (STC) for NVIS equipment or modifications, COM and Standard Operating Procedures (SOP) amendment detailing ground and flight training

programs as well as currency and Pilot Proficiency Check (PPC) requirements. The program must also include any maintenance procedures specific to the NVIS technology in use.

- (4) For equipment with International Traffic in Arms Regulations (ITAR) or Controlled Goods restrictions such as NVG the operator must also comply with restrictions applicable to the Controlled Goods Program in accordance with Public Services and Procurement Canada (PSPC) - formerly Public Works and Government Services (PWGSC).

4.2 Conditions for Special Authorization

- (1) The operator must have approved NVIS equipment and an approved NVIS program that provides the pilot(s) the ability to conduct **VFR Aided** flight safely in accordance with the definitions of this AC.
- (2) Operators wishing to use an NVIS technology that is not identified in the SA must provide all technical data and references including relevant Radio Technical Commission for Aeronautics (RTCA) Technical Standard Order (TSO) documents to prove that such a system will meet or exceed the requirements for safe **VFR Aided** flight in accordance with the definitions of this AC.
- (3) Appendix A of this AC provides the specific conditions that must be met in order to qualify for NVIS SA. The intent is to transcribe these conditions into the operator's Air Operator Certificate (AOC) or Private Operator Registration Document (PORD) by reference to Appendix A of this AC. Appendix B of this AC contains a compliance checklist intended for operators and inspectors applicable to the specific conditions in Appendix A of this AC. The Minister reserves the right to impose any additional conditions not specifically described in this AC as deemed appropriate to the type, category of aircraft and the type of operation proposed.
- (4) Additional guidance is provided in the documents referenced in section 2.1 above.

5.0 Information Management

- (1) Not applicable.

6.0 Document History

- (1) Advisory Circular (AC) 603-001, Issue 03, RDIMS 11571780 (E), 11664549(F), dated 2016-04-22 — Use of Night Vision Imaging Systems;
- (2) Advisory Circular (AC) 603-001, Issue 02, RDIMS 8122327 (E), 8125071 (F), dated 2013-09-06 — Use of Night Vision Imaging Systems; and
- (3) Advisory Circular (AC) 603-001, Issue 01, RDIMS 4744688 (E), 6836933 (F), dated 2012-02-03 — Use of Night Vision Imaging Systems.
- (4) Formerly basis for Operations Specifications 603, 2006-02-01- Aviators Night Vision Imaging System Operations.

7.0 Contact us

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Suggestions for amendment to this document are invited, and should be addressed to the above e-mail.

Document approved by

Robert Sincennes
Director, Standards
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Appendix A – Specific Requirements to meet Special Authorization Requirements for Night Vision Imaging Systems Operations

AUTHORITY

THE SPECIAL AUTHORIZATION: Special Authorization (SA) Night Vision Imaging Systems Operations is issued pursuant to subparagraphs 604.74(1)(a)(ii), 702.08(g)(xii), 703.08(g)(x), 704.08(g)(xi), and 705.08(g)(xi) of the *Canadian Aviation Regulations* (CARs). The SA is valid for all night VFR operations in VMC including operations as described in 1.0 (13) basic NVIS and 1.0 (14) advanced NVIS of this Appendix.

1. Operator Requirements	
1.0 (1)	<p>Training Program:</p> <p>Approved training programs must consist of both ground and flight training programs for flight crew members and the appropriate maintenance training program for Night Vision Imaging Systems (NVIS) equipment or modifications.</p> <p>The operator must ensure that procedures are established and the flight crews and other personnel are trained and qualified for NVIS operations. The flight crew procedures and training must include normal operations and those associated with NVIS equipment failures and deteriorating weather conditions below night Visual Flight Rules (VFR) weather requirements. The deteriorating weather training module must include Inadvertent Instrument Meteorological Conditions (IIMC) procedures.</p> <p>Operators must also have an approved Controlled Goods program for the use of Night Vision Goggles (NVG).</p>
1.0 (2)	<p>Night Vision Goggle Equipment:</p> <p>Federal Aviation Administration (FAA), through the Radio Technical Commission for Aeronautics (RTCA) consultation process, has developed the Technical Standard Order (TSO) C164 to describe an acceptable standard for NVIS performance and functionality. All applicable TSO should be used as the minimum standard for NVIS. The current minimum acceptable version of NVG are commonly referred to as Generation III.</p> <p>NVG must be maintained, at least once every six calendar months, in accordance with the applicable instructions of continued airworthiness and with RTCA DO-275 / TSO C164/C164a.</p>
1.0 (3)	<p>Ground Training:</p> <p>Ground training must consist of classroom lectures, practical training and written exams with records of initial and recurrent training. Ground training can be accomplished using approved electronic media such as computer-based training or its equivalent. Pilots must be exposed to the impact of various light levels, contrast, weather conditions, environmental factors and impact of various terrain types. To achieve this the use of a terrain board model, that includes actual modeled terrain and lighting board, or a synthetic simulated environment that is a high definition, true physics-based NVIS representation, to simulate light levels and contrast is highly recommended. Alternately training can be done outdoors using a strong spotlight on local terrain features while wearing NVG or during flight training over varied terrain and light conditions. If impact of terrain types is taught during flight training this must be dedicated training for a minimum of 0.5 hours additional flight training. As a minimum, the ground training must cover the following as appropriate to the type of sensor:</p> <p>(a) Illumination and Contrast from celestial, lunar or man-made lights;</p>

	<ul style="list-style-type: none"> (b) Lighting Effects from internal aircraft lighting in direct FOV, <ul style="list-style-type: none"> (i) internal outside direct FOV but pointed at pilot, (ii) internal from behind pilot, (iii) external causing windshield glare (e.g. search light), (iv) external area illumination (e.g. contrast between near field of view vs far field of view with landing light on/off), (v) external flashing (e.g. anti-collision). (c) Shadow Effects; (d) Operating Environments; (e) Misperceptions and Illusions; (f) Effects of Light-Emitting Diode (LED) lights and scan technique; (g) Theory of Operation; (h) NVIS Physiology; (i) NVIS Human Factors; (j) Terrain Interpretation and Environmental Factors; (k) Infrared theory; (l) Infrared image interpretation; (m) Infrared attenuation; (n) EVS limitations; (o) Infrared system operations and settings; (p) Enhanced Vision System (EVS) with NVG synergistic operations; (q) NVIS related Standard Operating Procedures (SOP); (r) NVIS Systems emergency procedures; (s) Pre and post flight procedures; (t) Flight profiles and weather considerations; (u) Pilots who do not hold an Instrument Rating, ground training must cover the material of the “Instrument Flying” chapter in either TP1102 Flight Training Manual or TP9982 Helicopter – Flight Training Manual as appropriate to their licence and document their training; and (v) Land based or underwater egress training must cover possible difficulties of egress with NVG and or any equipment connected to the airframe such as NVG Heads-Up Display including any associated connecting power cable or EVS screen mounted externally to the instrument panel.

<p>1.0 (4)</p>	<p>NVIS Flight Training:</p> <p>The aim of NVIS flight training is to “train to proficiency”. At a minimum, this training should consist of at least 4.5 hours spread over at least 3 separate flights to establish basic competency. If a TCCA approved flight simulator, with an NVIS compatible visual system, capable of correctly stimulating the NVIS environment is available, a minimum of 3 separate flights of at least 1-hour duration to a maximum of 3 hours training may be used towards basic NVIS competency.</p> <p>Note: In accordance with 1.0 (3) Ground Training, if a terrain board is not available and the impact of terrain types are taught during flight training this must be dedicated training for a minimum of 0.5 hours thus increasing the minimum flight training to 5.0 hours.</p> <p>The remaining 1.5 hours must be flown in the aircraft. Previously demonstrated NVIS experience, such as recent military NVG experience within the last 2 years, may be considered an acceptable alternative. Pilots with previous experience must demonstrate the required level of competency in accordance with currency requirements and familiarity with Company Operations Manual (COM) and SOP. Private pilots must demonstrate NVIS competency during any desired type rating if the aircraft is so equipped. Upon completion of training the candidate’s NVIS competency should be assessed in a manner similar to the pilot proficiency flight for Part VII of the <i>Canadian Aviation Regulations</i> (CARs) operators with the candidates training file annotated accordingly or in accordance with section 401.42 of the CARs for private operators. NVIS flight training should include the following items:</p> <ul style="list-style-type: none"> (a) Pre-flight weather / environmental assessment to consider effects on imaging system; (b) Review of route / terrain / obstructions and hazards; (c) Pre-flight fitting, testing and adjustment; (d) Rehearsal of company NVIS SOP; (e) Adjustments of NVIS during pre-taxi (focus, brightness, contrast for operators not using Hoffman 20-20 system); (f) Proper scan during all phases of ground and air operations with NVIS; (g) Lighting effect from the environment and any internal cockpit or cabin lights; (h) Effect of LED lights on aerodrome and obstruction lighting; (i) Line / route / mission indoctrination as appropriate; (j) En-route procedures; (k) Weather / terrain assessment / abort assessment throughout the flight; <p>Note: If impact of terrain was not covered with a terrain board in ground training then it must be covered during an additional 0.5 hours of flight training. See note above.</p> <ul style="list-style-type: none"> (l) Aircraft normal procedures including scanning techniques and cockpit drills while using NVIS; (m) Aircraft emergency procedures and NVIS failure procedures; (n) Post flight removal, safe storage and maintenance considerations; and (o) Instrument Flight Training: In addition to the above those pilots who do not hold an Instrument Rating must also conduct the relevant flight training to achieve basic instrument flying skills as described in the “Instrument Flying” exercises listed in either TP3077 Flight Test Guide Private and Commercial Helicopter Licence as appropriate to their licence or TP13723 Flight Test Guide – Private Pilot Licence – Aeroplane or TP13462 Flight Test Guide Commercial Pilot Licence Aeroplane as
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	<p>appropriate to their licence. This training forms part of the Basic NVIS Capability and must be documented. As part of a Basic NVIS Competency Flight the pilot must demonstrate proficiency of the instrument flying exercises as well as the ability to navigate out of the IMC conditions and or towards a suitable aerodrome.</p> <p>Note: These instrument flying skills must be demonstrated annually to maintain a valid NVIS competency.</p>
<p>1.0 (5)</p>	<p>Flight Crew Requirements:</p> <p>NVIS Basic Capability:</p> <p>Pilots who achieve the following criteria may request or be selected for Basic NVIS training:</p> <ul style="list-style-type: none"> (a) Recommended by chief pilot for Part VII of the CARs operators or Flight Instructor for private pilots; (b) Hold a minimum of 300 hours air time in appropriate aircraft category; (c) Hold a minimum of 20 hours night unaided air time; <p>Note: 1: 20 hours unaided night air time is not applicable to pilots with previous NVIS training and qualifications.</p> <p>Note: 2: 20 hours unaided night air time is not applicable to student pilots who proceed directly to NVIS qualification during pilot training however these pilots cannot act as Pilot in Command (PIC) during NVIS flights until they meet the 300 hours in the appropriate category requirement.</p> <ul style="list-style-type: none"> (d) Hold a valid Pilots Licence; (e) One of the following: <ul style="list-style-type: none"> (i) Hold a valid and current Instrument Rating for aircraft category; (ii) Hold a Night Rating and have completed at least 10 hours of dedicated dual instrument training of which: <p>Note: An unaided night rating is not required for student pilots who proceed directly to NVIS qualification during pilot training however the 10 hours of dedicated dual instrument training must be met as well as sub-para (c) Note 2 above.</p> (f) Not more than 3 hours NVIS flight training may be in a synthetic flight trainer; (g) A minimum of 1.5 hours air time must be completed in the aircraft in the 3 months immediately before commencing NVIS training or during the NVIS course, to a degree which ensures competency in the following Instrument Meteorological Conditions (IMC) training requirements; (h) Manually performing the following manoeuvres solely by reference to the instruments: <ul style="list-style-type: none"> (i) recovery from unusual attitudes (not required for airships); (ii) coordinated turns of at least 180 degrees heading reversal; (iii) straight and level flight; (iv) climbing and descending; (v) climbing turns to a pre-determined altitude at a constant speed; (vi) descending turns to a pre-determined altitude at a constant speed; (vii) in the case of helicopters, autorotative flight with power recovery; (viii) orientation and identification of possible suitable forced landing areas; (w) assessment of obscured terrain by manipulation of landing / searchlight or

	<p>resolution of sensor;</p> <ul style="list-style-type: none"> (i) Correctly manipulating the radio navigation aid or aids for which endorsement is desired and demonstrate competency in: (j) Interception and maintenance of a designated track to and from a station for Commercial pilots and to and from a waypoint along a safe route for Private pilots; and (ii) IMC orientation problems with unusual attitude recovery training. Enough time must be spent to ensure proficiency in recovery to Visual Meteorological Conditions flight after inadvertent IMC penetration. <p>Once qualified these pilots may act as Pilot in Command (PIC) during night VFR flights to Basic NVIS Capability levels.</p>
<p>1.0 (6)</p>	<p>Flight Crew Requirements:</p> <p>NVIS Advanced Capability:</p> <p>Advanced NVIS Capability operations require COM approval.</p> <p>PIC who have achieved the above plus the following may conduct the approved operations in accordance with their COM and SOP:</p> <ul style="list-style-type: none"> (a) Have completed the Basic NVIS Course; and (b) Hold a minimum of 50 events on NVIS in various lighting conditions. (c) Complete an NVIS competency flight by an approved NVIS Training pilot to act as PIC for advanced NVIS operations. (d) Maintain NVIS currency as described in the SA. <p>Note: Pilots / Operators must document NVIS events to ensure proper credit of experience.</p>
<p>1.0 (7)</p>	<p>Minimum Crew Requirements for NVIS Operations:</p> <p>Pilot workload may increase during NVIS Operations. This is due to a number of factors such as:</p> <ul style="list-style-type: none"> (a) Increased fatigue due to additional weight of head worn NVIS; (b) Increased vigilance required while scanning aircraft instruments looking under the goggles or scanning the sensor image such as an EVS as well as increased external scan for LED lit obstructions or aircraft; (c) Reduced field of view. With head worn NVIS this requires additional head movement to maintain situational awareness; and <p>Minimum crew while engaged in NVIS operations:</p> <ul style="list-style-type: none"> (a) For operations where the aircraft is equipped with a steerable searchlight controlled from the pilot's flight controls, one pilot; (b) For aircraft equipped with non-steerable searchlights, two-crew with NVIS qualifications, one of which may be a trained observer (e.g. operations such as Police Air Unit or Natural Resources); and (c) For all other operations, 2 pilots. <p>Note: Additional restrictions may be imposed in accordance with Appendix B of this AC.</p>

<p>1.0 (8)</p>	<p>Company NVIS Training Pilot Qualifications and Competency Requirements:</p> <p>(1) A flight instructor or training pilot may conduct pilot or additional personnel training or competency for NVIS Operations if that person meets the requirements for Advanced NVIS Qualification as appropriate and:</p> <ul style="list-style-type: none"> (a) Is qualified to act as a pilot in command in NVIS operations. (b) Is designated by the Company as a Training pilot to provide NVIS training. (c) Holds the appropriate pilot and flight instructor certificate with the applicable type rating for ab-initio training of student pilots. (d) Has logged at least 1500 hours total time with a minimum of 500 hours in the appropriate category and no less than 50 hours of NVIS flight conducted under Part VI or VII of the CARs operations. <p>Note: The 50 hours under Part VI or VII operations of the CARs may be reduced or waived for two pilot operations.</p> <ul style="list-style-type: none"> (e) Has logged at least 50 NVIS events as the sole manipulator of the controls with a minimum of 10 NVIS hours as the sole manipulator of the controls in the appropriate category of aircraft used for the training. This must be as flying pilot in a crew aircraft. <p>Note: For aircraft that are type-certificated for single-pilot operations the pilot conducting the NVIS Competency Flight need not hold a type rating under the following restrictions:</p> <ul style="list-style-type: none"> (f) The PIC must have a minimum of 10 hours on type and the PIC and NVIS Training pilot will do a full NVIS training mission profile in day VFR within 30 days prior to conducting the NVIS competency flight at night. This is also applicable if the NVIS training pilot holds the type rating but has not flown that type within 150 days. (g) Anytime the NVIS Training pilot conducting an NVIS Competency flight is not familiar with the training area, a full NVIS training mission profile must be flown in day VFR within 30 days prior to conducting the NVIS competency flight at night. (h) Conduct an annual competency flight in accordance with Appendix G of this AC with a qualified NVIS Training Pilot. <p>Note: Company NVIS Training Pilot qualifications may be granted equivalency based on previous NVIS experience and credentials such as those gained from military experience. Previous NVIS experience within the last 2 years may waive some of the requirements at the Minister's discretion.</p>
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<p>1.0 (9)</p>	<p>Currency:</p> <p>(1) NVIS flying is recognized as a skill that degrades with time and lack of currency. Company training programs must indicate minimum currency requirements to conduct NVIS operations. The interval to retain NVIS currency is 90 days. During this time, the pilot must have conducted 3 NVIS events, as defined in section 2.3 Definitions and Abbreviations, item (1)(o). If this is not accomplished, the pilot has an additional month to achieve this level of currency but cannot fly with passengers or essential crew until this is accomplished.</p> <p>(2) If these currency requirements are not met within 120 days, the pilot must conduct a NVIS competency flight with an approved company NVIS training pilot. If currency lapses beyond the 120 days then a pilot may regain currency by conducting a ground briefing and training flight in a NVIS modified aircraft or a TCCA approved NVIS simulator or aircraft with a qualified NVIS training pilot to include aerodrome maneuvering and at least two complete events and a review of IIMC procedures prior to conducting passenger-carrying operations.</p> <p>(3) EVS is generally integrated into a composite internal / instrument / external scan process, the inclusion of EVS as an additional aide to night VFR operations must become routine. Qualified pilot should log at a minimum 3 night EVS aided evolutions every 90 days. If this is not accomplished, the pilot has an additional moth to achieve this level of currency but cannot fly with passengers or essential crew until this is accomplished. If these currency requirements are not met within 120 days, the pilot must conduct a NVIS competency flight with an approved company NVIS training pilot. If currency lapses beyond the 120 days then a pilot may regain currency by conducting a ground briefing and training flight in a NVIS modified aircraft or a TCCA approved NVIS simulator or aircraft with a qualified NVIS training pilot to include aerodrome maneuvering and at least two complete events and a review of IIMC procedures prior to conducting passenger-carrying operations.</p> <p>(4) NVIS currency is mandatory for all pilots to conduct operations in accordance with this AC and forms part of their PPC requirements. .</p> <p>(5) Other than flights conducted in accordance with section 602.40 of the CARs, pilots using NVIS should have completed a day sequence of approach, landing, maneuvering and take-off from an aerodrome within 90 days prior to NVIS operations to an unfamiliar established aerodrome.</p>
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<p>1.0 (10)</p>	<p>NVIS Program Validity and Pilot NVIS Competency Flight Periods:</p> <p>(1) The validity period for individual pilots and for companies will be as follows:</p> <p>(a) Pilot NVIS Competency Flight:</p> <p>(i) Newly trained Company NVIS Training Pilots and or Chief Pilots will undergo NVIS Competency Flight upon completion of training. Newly qualified NVIS pilots will undergo an annual Competency Flight after their first year of NVIS operations. This flight will include the same items as required for pilots whose currency lapsed for greater than 90 days including the ground training. For company pilots the annual NVIS Competency Flights may be conducted by company NVIS Training Pilots.</p> <p>(ii) Pilots with one or more years of NVIS experience who thereafter meet the 90 day currency requirements throughout the year without lapses as described in the SA are deemed to be NVIS proficient and may forego the annual NVIS competency flight.</p> <p>(2) For Company NVIS Training Pilots and or Chief Pilots the annual NVIS Competency Flights should be conducted by NVIS Training pilot other than the pilot who conducted their recurrent training. If this is not feasible then the Competency flights must be approved and or monitored by the company POI. (or appropriately NVIS qualified Transport Canada (TC) inspector)</p> <p>(a) Commercial Operators NVIS Program:</p> <p>(i) A company without any previous NVIS experience must undergo an NVIS Program Validation by TC prior to commencing NVIS operations. Subsequent to this initial validation the company NVIS program must be reviewed as part of scheduled surveillance activities but not later than 18 months after the initial validation. From this point Inspectors may follow the validity procedures in the AC (Appendix B) be included in all future surveillance activities.</p> <p>(ii) For operators with existing NVIS programs prior to the date of this document Inspectors may follow the validity procedures in the AC (Appendix B) be included in all future surveillance activities.</p>
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<p>1.0 (11)</p>	<p>Company Operations Manual and Standard Operations Procedures Amendments</p> <p>(1) Company Operations Manuals (COM) are to be amended to include the contents of the Appendix A of this AC. Recommended section titles include but are not limited to:</p> <ul style="list-style-type: none"> (a) Pilot/crew NVIS currency requirements; (b) Proficiency check requirements; (c) NVIS Competency Flight requirements; (d) Pilot/crew training requirements; (e) Initial and recurrent flight training; (f) Company training pilot requirements; (g) Record keeping requirements to include NVIS events; (h) NVIS altitudes; (i) Company approved routes in mountainous areas; (j) Company weather restrictions; (k) NVIS Risk Matrix and Dispatch authority procedures; (l) Set up, inspection or testing of NVIS equipment or displays; (m) Set up of external lighting and use of suitable external references and scan for NVIS taxiing and line up; (n) Crew responsibilities for taxiing, hovering, take-off, approach and landing; (o) Normal and emergency procedures for NVIS equipment failure including IIMC procedures, transfer of control procedure; (p) Proper scan techniques including lookout for Light-Emitting Diode (LED) lighting; (q) Cockpit and cabin light discipline including portable devices / Electronic Flight Bag (EFB); (r) Procedures for Ad Hoc routes and landing sites to include overflight and low recce prior to landing; <p>(2) Maintenance Control Manuals are to reflect the appropriate Supplement Type Certificate (STC) requirements and corresponding maintenance schedules.</p>
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<p>1.0 (12)</p>	<p>NVIS Program Validation and Competency Flight Requirement:</p> <ul style="list-style-type: none"> (1) Program Validation is to be conducted on all new NVIS programs by TC and an NVIS Competency Flight must be done for newly assigned NVIS Chief Pilot and or NVIS Training Captain. (2) Current NVIS programs and NVIS Competency Flights are to be evaluated in accordance with the schedule described in paragraph 1.0 (17) above. (3) NVIS Program Validation and NVIS Competency Flights are to be conducted by NVIS qualified POI or the POI and a TC NVIS qualified pilot. The Competency Flights are conducted for NVIS Training pilots and Chief Pilots. Once these pilots are approved by TC they may continue to train and evaluate the remainder of company pilots as described in the SA. <p>Note: Since NVIS is a qualification where pilots demonstrate competency the Validation and Competency flights may be flown with the POI monitoring and the TC NVIS pilot conducting the flight from a pilot or jump seat. In the case of NVG the operator is responsible to provide a set of goggles with mount and battery pack or complete helmet with NVIS set up for each additional crew involved in the Validation and / or Competency flights.</p>
<p>1.0 (13)</p>	<p>Basic NVIS Capability Operations; means an operator may conduct the following;</p> <p>CAR 602.40: The operator may take off or land from unlit established aerodromes included their COM or unlit aerodromes that are published in the CFS. If published in the Canada Flight Supplement (CFS) the operator must seek prior permission from the aerodrome operator unless it is an emergency.</p> <p>CAR 703.27, 703.34 and 723.34:</p> <p>CAR 704.23(a), 704.29, 724.29(1)(b) aeroplane and helicopter;</p> <p>CAR 705.37, 735.37:</p> <p>For VFR Flight Obstacle Clearance and Routes in Uncontrolled Airspace the operator may operate on company night VFR established routes as approved in their COM at altitudes and horizontal distances from track in accordance with CAR requirements.</p> <p>CAR 702.18(3) and 703.88(3): PIC instrument rating requirement may be substituted with prescribed basic instrument flight training in accordance with the SA and Appendix H-L (Global NVIS Exemptions):</p> <ul style="list-style-type: none"> (a) PIC minimum of 500 hours in the same category of aircraft in a 2 pilot crew where both pilots hold a Commercial Licence. (b) Aircraft is to be operated with 2 NVIS qualified pilots as crew. (c) The aircraft must be IFR equipped for two pilot operations and maintained in accordance with the MEL. (d) NVIS qualifications, currency and proficiency must be maintained as described in Appendix A of this AC. <p>Note: Pilots who conduct NVIS operations must maintain either an annual IFR PPC, an annual IPC or conduct an instrument competency flight as described in section 1.0 (4) of this Appendix.</p>

<p>1.0 (14)</p>	<p>Advanced NVIS Capability Operations; means an operator may conduct the following:</p> <p>CAR 602.40: The operator may take off or land at unlit established or ad hoc aerodromes.</p> <p>CAR 722.18(4) and (5): These Class B/C/D External Load flights may be conducted as per day VFR.</p> <p>CAR 602.25, 702.19 / 722.19(a): Entering or leaving a helicopter in flight may be conducted as per day VFR.</p> <p>CAR 703.27, 703.34, 723.34;</p> <p>CAR 704.23(a), 704.29, 724.29(1)(b) aeroplane and helicopter;</p> <p>CAR 705.37, 725.37:</p> <p>For VFR Flight Obstacle Clearance and Routes in Uncontrolled Airspace the operator may fly on company established routes and ad hoc routes with the following limitations:</p> <ul style="list-style-type: none"> • Lateral spacing: Routes should be planned to retain the minimum 3 miles from obstacles however it is understood that terrain, obstructions and weather may not permit this therefore NVIS operators may apply reduced horizontal distance as low as 500 feet from the route to be flown. • Altitude: Routes should be planned to retain the required minimum of 1000 feet above highest obstacle along the route however it is understood that aircraft limitations or weather may not permit this there NVIS operators may allow for undulating topography with occasional variations in altitude above ground between 1000 and 500 feet. <p>Note: Without this allowance an aircraft flying from CYYC Calgary AB to CYGE Golden BC would need to be flown at an estimated altitude of 14,000 feet. Night VFR using NVIS means that the flight can safely be conducted along the VFR mountain route following the valleys instead of overflying the mountains</p> <p>CAR 702.18(3), 722.07(2)(b)(i)(A)(II) and 703.88(3), 723.07(2)(b)(i)(A)(II) aeroplane and helicopter: PIC instrument rating requirement may be substituted in accordance with Basic NVIS Capability described in the SA and in accordance with the following conditions:</p> <ol style="list-style-type: none"> (a) The aircraft must be IFR equipped and maintained in accordance with the MEL. (b) Aircraft may be operated single-pilot to established or published aerodromes. (c) Helicopter PIC may fly single-pilot with an NVIS qualified crew to ad hoc aerodromes. (d) NVIS qualification and currency must be maintained as described in Appendix A of the SA. <p>Note: Pilots who conduct NVIS operations must maintain either an annual IFR PPC, an annual IPC or conduct an instrument competency flight as described in in section 1.0 (4) of this Appendix.</p> <p>Note: Advanced NVIS Capability may be granted based on previous NVIS qualifications such as military or police NVIS training. Operators graduating from a Basic to an Advanced NVIS Capability will normally do so via an approved COM amendment and or the appropriate annotation in the SA for NVIS Operations.</p>
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2. Aircraft Requirements	
2.0 (1)	<p>Maintenance Control Manual Amendments</p> <ul style="list-style-type: none"> (1) Maintenance Control Manuals and “limitations” section of the applicable Aircraft Flight Manual or AFM Supplement are to reflect the appropriate STC requirements and any corresponding maintenance actions. (2) Maintenance procedures must be developed to ensure that NVG Lighting STC are verified after any maintenance or modification is conducted which may affect the components, airframe or lighting included in the NVIS STC. (3) Maintenance training must include NVIS STC requirements, MEL considerations, acquisition, removal, replacement of any cockpit items that may affect the STC. (4) Aircraft inspection sheets and logbook to be amended to include NVIS requirements or limitations.
2.0 (2)	<p>Enhanced Vision Systems</p> <ul style="list-style-type: none"> (1) While there are no existing TSO specifications for EVS, TCCA considers AC 20-167A as an acceptable means, but not the only means, to install and obtain airworthiness approval for enhanced vision system. EVS is a peripheral technology and can significantly augment the pilot’s situational awareness for VFR operations. EVS performance should, at a minimum, include the following: <ul style="list-style-type: none"> (a) DO-160D (or higher) qualification for the EVS imaging component(s); (b) Field of View (FOV) – 30 degrees lateral is the minimum primary FOV acceptable for aviation operations. Higher FOV up to 55 degrees lateral provide significantly higher levels of overall situational awareness, anything higher than 55 degrees would present optical distortion (fish eye lens) and be an unsuitable characteristic; (c) Resolution - 320 x 240 resolution; (d) Refresh rate – 30Hz is the minimum standard to be acceptable for aviation flight operations. 30Hz is half real-time imagery, a system with a 60Hz refresh rate would be highly recommended and react much more favourably to attitude / flight path changes of an aircraft; (e) Integral window or front frame heating of EVS camera/sensor housing; (f) Auto camera/sensor stow position on tilt control switch for landing / take-off. Systems with tilt / pan control must have a position indicator on the display / screen which clearly shows to the pilot where his optical sensor is aimed; (g) Installations must be performed under provisions of a Supplement Type Certificate or Serialized Supplement Type Certificate; and (h) EVS installations on NVG equipped aircraft must ensure that display and annunciated switches are modified according to provisions described in Aircraft Certification Policy Letter 29 and RTCA DO 275 to ensure overall NVIS compatibility within the cockpit.
2.0 (3)	<p>Aircraft Lighting</p> <ul style="list-style-type: none"> (1) Aircraft lighting, both interior and exterior must be modified and maintained for NVIS use in order to avoid degradation of NVIS performance. Operators are to determine if this is considered a major modification for their aircraft and have each installation

	<p>approved. The safety issue is to prevent unacceptable levels of near infrared and red visible light emissions created by unmodified aircraft lighting. These emissions will decrease the performance of the NVIS appliance to the point where it will be difficult or impossible to observe and discern external visual cues while using the goggles. Acceptable aircraft lighting is described in RCTA document DO 275, Minimum Operational Performance Standards for Integrated Night Vision Imaging Systems Equipment. Guidance for the certification of NVG compatible aircraft is provided in Staff Instruction (SI) 513-011.</p>
<p>2.0 (4)</p>	<p>Additional Aircraft Equipment</p> <p>(1) In addition to the requirement for an NVIS compatible lighting system, aircraft that are to be used for any NVIS operation must have the following serviceable equipment:</p> <ul style="list-style-type: none"> (a) Equipped in accordance with section 605.16 of the CARs plus an Attitude Indicator and a Vertical Speed Indicator. Rotorcraft, vectored thrust, airships must also have a searchlight, steerable from the flight controls for each crew member, if night operations are to be conducted anywhere other than night certified aerodrome. This light need not be NVIS compatible. (b) A non-steerable floodlight capable of illuminating the manoeuvring area is acceptable for operations to a published aerodrome; (c) A Radio Altimeter (RADALT) which for NVIS operations must be easily viewable under the NVG. (d) Exterior lighting such as position and anti-collision lights must be modified to minimize the effect they have on the performance of the NVIS.
<p>3. Airspace or Aerodrome Requirements</p>	
<p>3.0 (1)</p>	<p>Airspace: There are no specific airspace requirements for NVIS operations however due to the limitations of some NVIS's ability to see LED lights, pilots should advise Air Traffic Services (ATS) or other aircraft at uncontrolled aerodromes if they suspect difficulties seeing the LED aircraft lights.</p>
<p>3.0 (2)</p>	<p>Unlit Published Aerodromes: Prior to operating with NVIS at an unlit registered or certified aerodrome, operators must confirm the aerodrome's level of service meets all the applicable requirements pertaining to night operations set out in Part III of the CARs. The level of service information permitting after hours NVIS operations must be published in the <i>Canadian Flight Supplement</i> under aerodrome information or in NOTAM(s).</p> <p>Due to the limitations of some NVIS's ability to see LED lights, pilots should advise ATS or other aircraft at uncontrolled aerodromes if they suspect difficulties seeing LED aerodrome lights using NVIS.</p>

Appendix B –Night Vision Imaging Systems Program Validation Checklist

This checklist is intended as a guide. The Minister may imposed additional specific conditions based on aircraft category or type of flight operations to be conducted.		
Item: Details	Date	Remarks/ Follow Up
1.0 Operator Requirements Prior to Validation		
Operator informs Transport Canada (TC) of intent to conduct NVIS operations <ul style="list-style-type: none"> Submits request for Special Authorization for NVIS Operations 		
<ul style="list-style-type: none"> Date expected to be operational 		
<ul style="list-style-type: none"> Type and number of NVIS equipment (e.g.: 6 x NVG) 		
<ul style="list-style-type: none"> Type and number of aircraft to be NVIS equipped 		
<ul style="list-style-type: none"> Technical information for any new NVIS technology. Note: the Minister may request a Risk Assessment if the technology has not been used in commercial aviation prior to their application. 		
<ul style="list-style-type: none"> Type of operations / area of operations 		
<ul style="list-style-type: none"> Number of pilots to be trained and summary of any previous NVIS qualifications with dates 		
<ul style="list-style-type: none"> Submit NVIS Training Plan that meets requirements described in Appendix A of the SA including instrument training for pilots who do not hold an Instrument Rating. 		
<ul style="list-style-type: none"> Name of training provider and location of training plus type of aircraft used for training if it is to be conducted other than at an operator's home base on their own aircraft. 		
<ul style="list-style-type: none"> List of aerodromes and routes to be approved for COM as Established Aerodromes and Established Routes as defined in the SA. This is to include a company database of obstructions that may not be published in aviation charts or publications. Such obstruction database is to be available for pilots during flight planning and it must be reviewed annually as a minimum. 		
<ul style="list-style-type: none"> Advised land owners or aerodrome operators of planned NVIS operations. This may impact an aerodrome's Level of Service as published in CFS. 		
<ul style="list-style-type: none"> Submit COM amendment and NVIS SOP for approval 		

<ul style="list-style-type: none"> Schedule NVIS Program Validation and Pilot Competency Flights 		
1.0.1 Operator Requirements for NVIS Validation		
<p>Onsite NVIS Program Validation</p> <ul style="list-style-type: none"> Draft COM and SOP approved 		
<ul style="list-style-type: none"> Conduct In-Briefing with Chief Pilot, NVIS Training pilot(s), SMS Manager and Maintenance representative(s): <ul style="list-style-type: none"> Review Agenda / schedule for Validation Review NVIS equipment installed Review aerodromes / routes for flights Conduct familiarization with hangar and aircraft 		
<ul style="list-style-type: none"> Briefing Chief Pilot and NVIS Training Pilot(s) <ul style="list-style-type: none"> Review of NVIS training records Review of pilot licence / medical Review any updates of COM/SOP since application Brief and conduct day flight to familiarize everyone with aerodromes, routes and ensure no hidden obstructions or terrain that may impede safe conduct of NVIS Competency Flights Pilot(s) will flight plan NVIS flight IAW with Appendix A of the SA Pilot(s) demonstrate pre-flight care, set-up and focus of NVIS equipment Pilot(s) will demonstrate proper Controlled Goods procedures NVIS flight flown as briefed in accordance with Appendix G or company approved form Conclusion of NVIS Competency Flight must include proper storage and safety of NVIS Controlled Goods Debrief flight and complete Appendix G 		
<ul style="list-style-type: none"> Conduct out-briefing with Chief Pilot, Training pilot(s), SMS and Maintenance representatives: <ul style="list-style-type: none"> Debrief flight ops, dispatch Debrief NVIS set up and equipment Debrief any relevant SMS issues Debrief any maintenance Review findings related to SOPs and discuss possible amendments or recommended changes to suit operational environment Set up expected dates for completion of SOP updates Grant Special Authorization for Basic or Advanced NVIS operations or expected approval date if discrepancies must be addressed prior to commencing operational revenue flights 		

1.0.2 Operator Requirements Post NVIS Validation		
Unsatisfactory Validation: <ul style="list-style-type: none"> • Address findings with COM and SOPs • Conduct additional pilot training for any Unsatisfactory NVIS Competency Flight • Schedule follow up Validation to address the above • Refrain from operational revenue NVIS flights until approved by TC 		
Satisfactory Validation: <ul style="list-style-type: none"> • Address recommended changes to COM and SOP • Continue with pilot training program if more pilots to be trained prior to operations • Plan for NVIS Program Validation follow up within 12 to 18 months or in accordance with surveillance schedule 		
2.0 Aircraft Requirements		
NVIS STC and Maintenance Program <ul style="list-style-type: none"> • Aircraft cockpit and external lighting modified in accordance with an approved STC 		
<ul style="list-style-type: none"> • Schedule certification of STC by TC National Aircraft Certification. Note: This may require 60 to 90 day notice to NAC 		
<ul style="list-style-type: none"> • Maintenance program is compatible with the operator's organization. Operator is able to implement and supervise the program 		
<ul style="list-style-type: none"> • Maintenance personnel are familiar with the operator's approved program including individual responsibilities 		
<ul style="list-style-type: none"> • Organization is able to identify available internal and external resources to ensure program effectiveness 		
<ul style="list-style-type: none"> • Procedure to ensure continued airworthiness relative to NVIS operations 		
<ul style="list-style-type: none"> • Procedure to revise and update the maintenance program 		
<ul style="list-style-type: none"> • Method to identify, record or designate personnel assigned responsibility in managing program, delivering the program, maintaining the program, or performing quality assurance for the program 		
<ul style="list-style-type: none"> • Systems required for NVIS and configuration status for each aircraft is verified 		

<ul style="list-style-type: none"> • Aircraft meet the criteria specified by the applicable aircraft manufacturer or avionics manufacturer for associated systems and equipment 		
<ul style="list-style-type: none"> • Modifications, additions, and changes made to 		
<ul style="list-style-type: none"> • qualify aircraft systems for NVIS operations if other than specified in the AFM, TC or STC are identified • Additional maintenance requirements and log entries necessary to change NVIS status are identified 		
<ul style="list-style-type: none"> • Aircraft defect reporting procedures that are unique to NVIS program identified 		
<ul style="list-style-type: none"> • Procedures which identify, monitor and report NVIS system and component discrepancies for the purpose of quality control and analysis 		
<ul style="list-style-type: none"> • Procedures which define, monitor and report chronic and repetitive discrepancies 		
<ul style="list-style-type: none"> • Procedures which ensure aircraft remain out of Night Flight until successful corrective action has been verified for chronic and repetitive discrepancies (IAW STC requirements) 		
<ul style="list-style-type: none"> • Procedures which ensure the aircraft system status is placarded properly and clearly documented in the aircraft log book, in coordination with maintenance control engineering, flight operations, and dispatch or equivalent 		
<ul style="list-style-type: none"> • Procedures to ensure the downgrade of aircraft NVIS capability status when maintenance has been performed by persons other than those trained, qualified, or authorized to use or approved procedures related to NVIS operations 		
<ul style="list-style-type: none"> • Procedures for systems ground and flight checks following periodic maintenance 		

3.0 Aerodrome Requirements		
<p>Established or Published Aerodromes</p> <ul style="list-style-type: none"> • Site meets requirements defined in the SA • Site has been approved in COM • Site provides safe take-off and landing IAW Flight Manual and SOPs • Land owner or operator has been advised 		
<p>Non Published or Ad Hoc Aerodromes</p> <ul style="list-style-type: none"> • Pilot(s) meet requirements for Advanced NVIS in accordance with conditions set out in the SA • PIC assumes responsibility for safe landing and take-off IAW Flight Manual, SOP and conditions of the SA 		

Appendix C — Approved Training Sites - Basic Night Vision Imaging Systems Capability

- (1) Single-pilot operators or two-pilot operators without any previous NVIS experience wishing to operate from established aerodromes will be required to submit their training site(s) for approval prior to NVIS operations. Operators may submit one or several locations.
- (2) Suitable training locations include but are not limited to large unlit areas, unlit unpaved aerodromes or lit aerodromes with pilot activated lighting. In all cases the operator must first seek approval of the land owner or aerodrome operator as applicable.
- (3) Sites which are not published in the *Canada Flight Supplement* (CFS) are to be assessed for safe approach and departure paths and confined areas for helicopters should provide a minimum of one rotor diameter from the helicopter in all directions and be as level as possible.
- (4) Fixed wing operators selecting a remote or unpaved runway as their established aerodrome(s) will need to calculate adequate runway distances during pre-flight planning taking into consideration weather, runway surface conditions and their aircraft weights.

Note 1: All pilots must fly into and out of the proposed training site(s) within 30 days prior to conducting NVIS training. All normal procedures are to be followed including mandatory radio calls and use of position and anti-collision lighting. Routes to and from these training locations are to meet regulatory requirements for night VFR.

Note 2: Those restricted to a basic NVIS capability may only train at these approved locations until they meet the requirements set out for advanced NVIS capability. An operator may request a review of this limitation if they hire pilots with advanced NVIS background and experience by submitting documentation that they have met the requirements for advanced NVIS capability.

Appendix D — Company Night Vision Imaging Systems Training Pilots

- (1) A flight instructor with an ATO, Chief Pilot, Training pilot or company ACP may conduct pilot or additional personnel training, testing or checking for NVIS Competency if that person meets the requirements described in Appendix A of the SA and:
- (a) Is qualified to act as a pilot in command in NVIS operations.
 - (b) Is designated by the Company as an Instructor to provide NVIS training.
 - (c) Is designated by the Company as a Check Pilot to conduct NVIS testing and checking.
 - (d) For ATO the pilot holds the appropriate flight instructor certificate with the applicable type rating for ab-initio training of student pilots.
 - (e) Has logged at least 1500 hours total time with a minimum of 500 hours in the appropriate category and no less than 50 hours of NVIS flight conducted under Part VI or VII operations of the CARs.

Note: The 50 hours under Part VI or VII operations of the CARs may be reduced or waived for two pilot operations.

- (f) Has logged at least 50 NVIS events as the sole manipulator of the controls with a minimum of 10 NVIS hours as the sole manipulator of the controls in the appropriate category of aircraft used for the training. This may be as flying pilot in a crew aircraft.

Note: For aircraft that are type-certificated for single-pilot operations the pilot conducting the NVIS Competency Flight need not hold a type rating under the following restrictions:

- (g) The PIC must have a minimum of 10 hours on type and the PIC and NVIS Training pilot or TC NVIS pilot will do a full NVIS training mission profile in day VFR prior to conducting NVIS training at night. This is also applicable if the NVIS Training pilot or TC NVIS pilot has not flown that type within 150 days.
- (h) Conduct an annual competency flight in accordance with Appendix F of SA with a TC Approved NVIS qualified Training Pilot.

Note: NVIS Flight Instructor or Training Pilot qualifications may be granted equivalency based on previous NVIS experience and credentials such as gained from military experience. Based on experience some of the requirements may be waived at the Minister's discretion.

Appendix E —Night Vision Imaging Systems Risk Assessment and Dispatch Authority Procedures Matrix

The risk assessment matrix follows. It should be copied double sided with the matrix on the front and the instruction on the reverse side.

Block 1. Weather: Select the appropriate value for the worst weather reported along the planned route and Area of Operation (AO) from departure time + 4hrs. Enter the value in total of block 1.

Block 2. Illumination Level: Select the appropriate value for the worst forecast illumination condition during the planned mission. Enter the value in total of block 2.

Block 3. Moon Angle: Select the appropriate value derived from the proposed take off time and the forecast moon rise/set times; given that earth rotation shows a relative change of the moon's position by 15° per hour. Enter the calculated worst case value as the total in the total of block 3.

Block 4. Crew Experience: This section compares the crew members total time (expressed in hours) and their time in the AO. Select the appropriate value that applies from the matrix and enter the value for the appropriate position. Add the total value for each crew member and enter in the total of block 4. Note: Numbers inside parentheses refer to non-pilot crew members.

Block 5. NVG Experience: This section compares the NVG experience of each crew member expressed in hours, to their most recent NVG experience expressed in days. Enter the value for each crew member, add and insert in the total of block 5.

Block 6. Additional Factors: Select the appropriate considerations for each box and enter the sum in total of block 6.

Block 7. Crew Rest/Health: This block compares the hours of rest to the quality of rest of each crew member. Hours of rest are defined as the time that elapsed from when the crew member was released from duty to the time they reported for duty. Once the value is determined, each crew member must add additional risk values if the majority of the mission is conducted during the second or last third of the duty day and/or an extension was granted in the last 24 hour. Each crew member must decide if they feel rested enough to safely accomplish the mission. It is their duty to inform the Pilot in Command (PIC) if they do not feel they have had adequate rest regardless of the totals derived from this matrix. Enter the subtotals for each crew member in the appropriate box and then calculate the sum total for the aircrew and place this value in the total of block 7.

Block 8. Types of Operations: Select the appropriate value for the mission to be performed. Should multiple values apply, select and calculate the sum of the worst case scenario. **Single-pilot** operations must add at least one other factor for the sum.

Dispatch Approval: Determine the sum total of each individual block to establish the Risk Assessment Value (RAV) for the planned mission. Compare the RAV to the matrix to determine if LOW, MED or HIGH risk is associated with the mission. Seek the appropriate approval authority in accordance with company structure.

Inspections: These must be completed prior to each flight. If any of these inspection are marked U/S (unserviceable), the mission will be determined to be HIGH risk regardless of RAV.

1. Weather	Total:			
Ceiling/Visibility	≥ 2000/5	> 1500/4	>1000/3	
Unaided	2	4	6	
Aided	1	2	3	

2. Illumination Level					Total:		
100%-80%	79%-60%	59%-40%	39%-23%	< 23%			
3	2	1	3	4			

3. Moon Angle		Total:		
> 30° = 0		< 30° = 3		

4. Crew Experience				Total:		
PIC:		CP:		Crew:		
Time in AO	>5000 (500)	<5000 (500)	<3000 (250)	(100)		
< 25	3	4	5	6		
< 100	2	3	4	5		
> 100	1	2	3	4		

5. NVG Experience		Total:			
operators Special Authorization for Night Vision	operators Imaging Systems Operations	operators Imaging Systems Operations			
Total NVG Time					
Last NVG Flight	< 50	< 100	< 200	> 200	
≤ 15 Days	3	2	1	0	
≤ 30 Days	4	3	2	1	
≤ 60 Days	5	4	3	2	
6. Additional Factors	6	5	4	Total: 3	
Training	2	Winds > 30 Kts.		3	
Sand/Dust/Snow	3	Temp < 0°C or > 40°C		3	
Rain	3	OGE Power > 10% Reserve		4	

7. Crew Rest/Health		Total:			<input type="text"/>
PIC:	CP:	Crew:			
Quality of Rest	Hours of Rest				
	> 24	≥ 10	8 – 10	< 8	
Home	0	1	3	4	
Dispatched	0	2	4	5	
Extension in Second Third of the Duty Day				+ 2	
Extension in Last Third of the Duty Day				+ 4	
Extension in last 24 hours				+ 4	
8. Types of Operations		Total:		<input type="text"/>	
Task/Mission		Unaided	Aided		
Single Pilot		10	6		
Low Contrast		8	5		
Mountain Operations		8	5		
Confined Area Operations		8	5		
Aerial Work		6	4		
Medical Evacuation		5	3		
surveillance / Patrol		4	3		

Total Crew	LOW	MED	HIGH
1	≤ 25	26 – 40	≥ 41
2	≤ 35	36 – 50	≥ 51
3	≤ 45	46 – 60	≥ 61
Dispatch Approval	PIC	Section i/c	Chief Pilot

Inspections	S or U/S
Aircraft Interior/Exterior Lighting	
180 Day Inspection	
Operational Check	
Battery Condition	

PIC Signature

Date

Med / High Dispatch Authority (if Required)

Date

Appendix F — NVIS Training Flight - Trip Card

License #	Candidate Name:		Operator:
Instructor / Training Pilot:	Total NVIS time:	Date Flown:	Aircraft type and Registration / Simulator ID#
NVIS Training Trip # and Sequences:→			
Basic Tasks	Level*	Comments (number of sequence as denoted on left of form)	
1. Pre-Flt Preparation			
2. NVIS Risk Matrix – Dispatch Authority			
3. Crew Mission Briefing			
4. Pre-Flt/Start/System Checks (RadAlt)			
5. Hovering Flight (H)			
6. Taxiing			
7. Take-Off			
8. Climb/Cruise Flight			
9. IF Procedures (if relevant)			
10. IIMC Procedures			
11. Landing site / surface assessment			
12. Approach/Landing			
13. Use of Landing / Searchlight			
14. Off level Operations ¹ (H)			
15. Ad Hoc Aerodrome Operations			
16. Confined Area Operations (H)		Recommendations	
17. NVIS Failures			
NVG Specific Tasks	Level		
18. Goggle/De-Goggle Procedures			
19. NVG Focus Procedure			
20. NVG Scan techniques		Overall Trip Assessment	
21. Operations from unlit aerodrome			
22. NVG handling and storage (ITAR)		<input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Satisfactory with Briefing	
EVS Specific Tasks	Level	Signatures	
23. EVS zoom and gain settings		NVIS Training Pilot: (print name / signature / Lic #)	
24.			
Combined / Fused Vision Systems Tasks	Level		
25.			
Miscellaneous Tasks	Level	Candidate: (print name / signature / Lic #)	
26. Half Rotor Judgment (H)			

27. Wing Clearance (A)		
28. Company specific Procedures		
29.		
Emergencies / Malfunctions	Level	
30.		
31.		
32.		

¹ Off-Level operations as deemed relevant to the type of operations

(H) denotes helicopter only / (A) denotes airplane only

*LEVEL achieved marked as follows: **U/S** for Unsatisfactory -- **S** for Satisfactory -- **S/B** Satisfactory with Briefing

Note: Unsatisfactory items must be debriefed to **Satisfactory with Briefing** level and require comment. Any remaining **Unsatisfactory** item will result in an **Unsatisfactory Overall** rating and a recommendation for additional training and **Competency Flight** to resolve shortcomings.

Appendix G — NVIS Competency Flight - Trip Card

License #	Candidate Name:		Operator:		
Instructor / Training Pilot:	Total NVIS time:	Date Flown:	Aircraft type and Registration / Simulator ID#		
Basic Tasks	Level*	Comments (number of sequence as denoted on left of form)			
1. Pre-Flt Preparation					
2. NVIS Risk Matrix – Dispatch Authority					
3. Crew Mission Briefing					
4. Pre-Flt/Start/System Checks (RadAlt)					
5. Hovering Flight (H)					
6. Taxiing					
7. Take-Off					
8. Climb/Cruise Flight					
9. IF Procedures (if relevant)					
10. IIMC Procedures					
11. Landing site / surface assessment					
12. Approach/Landing					
13. Use of Landing / Searchlight					
14. Off level Operations ¹ (H)					
15. Ad Hoc Aerodrome Operations					
16. Confined Area Operations (H)				Recommendations	
17. NVIS Failures					
NVG Specific Tasks	Level				
18. Goggle/De-Goggle Procedures					
19. NVG Focus Procedure					
20. NVG Scan techniques		Overall Trip Assessment			
21. Operations from unlit aerodrome					
22. NVG handling and storage (ITAR)		<input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Satisfactory with Briefing			
EVS Specific Tasks	Level	Signatures			
23. EVS zoom and gain settings		NVIS Training Pilot: (print name / signature / Lic #)			
24.					
Combined / Fused Vision Systems Tasks	Level	Candidate: (print name / signature / Lic #)			
25.					
Miscellaneous Tasks	Level				
26. Half Rotor Judgment (H)					
27. Wing Clearance (A)					
28. Company specific Procedures					

30.		
Emergencies / Malfunctions	Level	Chief Pilot: (print name / signature / Lic #)
31.		
32.		
33.		

¹ Off-Level operations as deemed relevant to the type of operations

(H) denotes helicopter only / (A) denotes airplane only

*LEVEL achieved may be denoted as following: **U/S** for Unsatisfactory -- **S** for Satisfactory -- **S/B** Satisfactory with Briefing

Note: Unsatisfactory items must be debriefed to **Satisfactory with Briefing** level and require comment. Any remaining **Unsatisfactory** item will result in an **Unsatisfactory Overall** rating and a recommendation for additional training and **Competency Flight** to resolve shortcomings.

Appendix H –Exemption from section 602.25 and subsection 602.40(1) of the CARs - NCR 008-2019

NCR-008-2019 is a Global Exemption for Night Vision Imaging Systems Operations from section 602.25 and subsection 602.40(1) of the CARs. The exemption is available to provide operators with advanced operations capabilities using NVIS to take-off and land at unlit aerodromes.

Appendix I -- Exemption from section 702.19 of the CARs and subclause 722.07(2)(B)(i)(A)(II) of the Commercial Air Services Standards (CASS). NCR 025-2019

NCR-025-2019 is a Global Exemption for Night Vision Imaging Systems Operations from section 702.19 of the CARs and subclause 722.07(2)(b)(i)(A)(II) of the CASS. The exemption is available to provide operators with advanced operations capabilities using NVIS to allow the PIC to supplement the instrument rating requirement and to permit pilots to conduct entering or leaving an aircraft in flight operations as per day VFR.

Appendix J -- Exemption from paragraph 703.27(a), section 703.34 and subsection 703.88(3) of the CARs and subclause 723.07(2)(b)(i)(A)(II) of the CASS Aeroplane and Helicopter and section 723.34 of the CASS - NCR 026-2019

NCR-026-2019 is a Global Exemption for Night Vision Imaging Systems Operations from paragraph 703.27(a), section 703.34 and subsection 703.88(3) of the CARs and subclause 723.07(2)(b)(i)(A)(II) of the CASS- Aeroplane and Helicopter and section 723.34 of the CASS . The exemption is available to provide operators with advanced operations capabilities using NVIS to allow the PIC to supplement the instrument rating requirement and to permit lower horizontal distance and altitudes for night VFR routes.

Appendix K -- Exemption from paragraph 704.23(a), section 704.29 of the CARs and paragraph 724.29(1)(b) of the CASS Aeroplane and Helicopter - NCR 027-2019

NCR-027-2019 is a Global Exemption for Night Vision Imaging Systems Operations from paragraph 704.23(a), section 704.29 of the CARs and paragraph 724.29(1)(b) of the CASS-Aeroplane and Helicopter. The exemption is available to provide operators with advanced operations capabilities using NVIS to permit lower horizontal distance and altitudes for night VFR routes.

**Appendix L -- Exemption from section 705.37 of the CARs and paragraph 725.37(1)(b) of the CASS
- NCR 028-2019**

NCR-028-2019 is a Global Exemption for Night Vision Imaging Systems Operations from section 705.37 of the CARs and paragraph 725.37(1)(b) of the CASS. The exemption is available to provide operators with advanced operations capabilities using NVIS to permit lower horizontal distance and altitudes for night VFR routes.