

## **Night Vision Goggle Compatible Lighting System**

### **Bell Helicopter Textron Series Rotorcraft**

**Models:** 206A, 206B, 206L, 206L1,  
206L3, 206L4 and 407

**STC No.** SR01383SE

**Serial No.** 45692

## Record of Revisions

\* Letters shall be used in succession, except the letters I, O, Q, S and Z.

| Revision |          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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**\*Note:** Aviation Specialties Unlimited Inc. maintains the List of Effective Pages for the ICA Appendices A – D in Master Drawing List MDL-206004-3. ICA Appendices A – C depict aircraft specific serial number configurations.

## **Chapter 1. Introduction**

This manual contains the necessary information for carrying out ongoing maintenance and inspections on the supplemental lighting and filtration system installed in Bell Helicopter Textron 206A, 206B, 206L, 206L1, 206L3, 206L4 and 407 series helicopters in accordance with Aviation Specialties Unlimited, Inc. (ASU) STC **SR01383SE**.

The supplemental lighting system consists of cockpit and/or cabin lighting, to include OEM filtered lighting, installed LED flood lights, instrument LED lighting, Overhead Panel Ring Filters, and backup utility light(s). Cabin lighting may vary and is dependent on aircraft configuration. (Refer to Appendices for aircraft specific configuration)

The lighting filtration system and instrument / equipment lighting filtration is designed to transform any light emitted from the various cockpit radio, indicator, annunciator and lamp assemblies to being ANVIS compatible.

### **1-1. Applicability**

This manual applies to Bell Helicopter Textron Models 206A, 206B, 206L, 206L1, 206L3, 206L4 and 407 cockpit configurations incorporating ASU NVG Compatible Lighting and Filtration System.

### **1-2. Units of Measurement**

Measurements throughout this manual are shown in metric, followed by the equivalent American Standard unit shown in parentheses as follows or shown in American Standard unit measurement only. Example: 4465mm (175.79 in.)

### **1-3. Manual Revisions**

The content of this manual is subject to updates by revision. Changes from the approved aircraft configuration, listed in the appendices in this manual, may require additional engineering evaluation and FAA acceptance/approval of ICA revisions. Refer to [http://www.asu-nvg.com/Services/Cockpit\\_Modifications/Technical\\_Publications/](http://www.asu-nvg.com/Services/Cockpit_Modifications/Technical_Publications/) for the current ICA revision.

Manual revisions are distributed as one document, with all pages updated to the current revision. Updates made to the revision are documented in the List of Revisions page and a change bar is used to highlight areas updated or added.

ASU shall maintain historical data on the STC installations, specific to aircraft serial numbers that have been modified in IAW this Supplemental Type Certificate. All ICA's associated with this Supplemental Type Certificate shall be aircraft specific as depicted in the attached Appendices A, B, and C. Any ANVIS compatible components replaced or changed from the aircraft configuration depicted within Appendix A, B, or c must likewise be modified with a revision of this Supplemental Type Certificate and/or repaired / replaced in accordance with the instructions contained in the ICA document.

## 1-4. Inspection Schedule

Chapter Two (2) contains inspection information that is essential to the continued airworthiness of this installation.

## 1-5. Precautions

Warnings, cautions and notes are used as necessary for precautionary instruction and have the following meanings:

**Warning:** *Warns that incorrect execution or disregard of instructions may lead to injuries or fatal accidents.*

**Caution:** *Cautions that incorrect execution or disregard of instructions may cause damage to the equipment.*

**Notes:** *Notes that a feature of particular interest or importance is to be emphasized.*

## 1-6. Weight and Balance

The total weight that is added to the aircraft with this installation is less than five pounds. This weight is spread between numerous stations at various locations. As a conservative approach, 5 pounds shall be added to the total weight and balance of the aircraft and shall be shown at the center of gravity for each aircraft incorporating this modification.

Refer to the Equipment List of the basic Flight Manual.

## 1-7. Abbreviations

|       |                                           |
|-------|-------------------------------------------|
| AAIP  | Approved Airworthiness Inspection Program |
| AEG   | Aircraft Evaluation Group                 |
| ANVIS | Aviation Night Vision Imaging System      |
| ASU   | Aviation Specialties Unlimited            |
| CB    | Circuit Breaker                           |
| CAMP  | Computerized Aircraft Maintenance Program |
| FAA   | Federal Aviation Administration           |
| FAR   | Federal Aviation Regulation               |
| IAW   | In Accordance With                        |
| ICA   | Instructions for Continued Airworthiness  |
| LED   | Light Emitting Diode                      |
| L/H   | Left Hand                                 |
| NVG   | Night Vision Goggle                       |
| NVIS  | Night Vision Imaging System               |

OEM     Original Equipment Manufacturer  
R/H     Right Hand  
RFM     Rotorcraft Flight Manual  
STC     Supplemental Type Certificate  
TSO     Technical Standard Order

### **1-8. Night Vision Goggle Specification**

The night vision device (night vision goggle) used in conjunction this Supplemental Type Certificate (SR01383SE) must meet the minimum performance specification of RTCA DO-275 or TSO C164.

## **Chapter 2. Inspection Requirements**

### **2-1. Description**

This chapter contains the inspection requirements for the supplemental lighting and filtration system installed in Bell Helicopter Textron 206A, 206B, 206L, 206L1, 206L3, 206L4 and 407 series helicopters in accordance with Aviation Specialties Unlimited, Inc. STC **SR01383SE**.

No component overhaul is required for this STC.

### **2-2. Inspection Program**

The inspection program consists of an annual visual inspection, at a for condition of the supplemental lighting and filtration system, which requires a single logbook entry.

### **2-3. Daily Inspection**

There is no daily inspection requirement for this installation.

### **2-4. Removal and Replacement of Equipment**

If a unit that has been modified for NVG compatibility is determined to have failed and the maintenance procedures contained within this Chapter do not or cannot correct the defect, return the affected unit to:

**Aviation Specialties Unlimited, Inc.**  
**4632 W Aeronca Street**  
**Boise, Idaho 83705**

Phone: 208-426-8117 Fax: 208-426-8975

#### **NOTES:**

1. If equipment is removed in its entirety from the aircraft and not replaced with an alternate and or different component, a revision to this STC is not required to depict the removed item and will not require a revision to the type design data.
2. If TSO'd equipment is removed/replaced, after modification has been performed I/A/W aircraft specific ICA appendices, placard the equipment using the below as an guide for markings:

|                                                                    |                                                                    |
|--------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>NVIS EXTERNAL MODIFICATION PER<br/>ASU, INC. STC# SR01383SE</b> | <b>NVIS INTERNAL MODIFICATION PER<br/>ASU, INC. STC# SR01383SE</b> |
|--------------------------------------------------------------------|--------------------------------------------------------------------|

## 2-5. Removal and Replacement of NVIS Filters

This section includes additional instructions associated with the removal of filters, anti-reflective NVIS filter identification, associated RTV curing requirements for filters requiring RTV sealant, and entries for replacement parts where previously approved parts have been superseded.

### Removal of NVIS filters:

This procedure applies to the removal of NVIS filters that are installed using RTV edge sealant, UV/5 minute epoxy, and/or filters which have been installed under the legend. Procedures, as listed, should be used in conjunction with the aircraft specific ICA Appendix C for the NVIS Filtration Installation using the appropriate part called out.

To begin, determine the type of installation in which the NVIS filter has been installed by examining the Modification Specification assigned to the equipment, as listed on the Equipment Table, if applicable **OR** the installation notes applied to the NVIS filter, as listed on Appendix C.

### NVIS Filters Installed with RTV:

#### Recommended Tools:

1. Wood or Plastic Toothpicks
2. Masking Tape
3. Alcohol

#### Cautions:

1. NVIS Filters are fragile. Do not apply excessive prying force.
2. When removing the NVIS filter, place the NVIS filter on a soft surface to prevent scratching/marring.
3. Be careful to not damage O.E.M. lenses or bezels.

#### Procedure:

Use a non-marring tool to remove the edge sealant adhesive, gently inserting the tool at perimeter of filter and following circumference of the filter. Use masking tape adhered to the filter to create a handle. Remove the filter.

#### Note:

NVIS filters may be re-used, if it is determined that the NVIS filter is in serviceable condition. Scratches, cracks, or breaks are not permitted. Clean any NVIS filters with alcohol before re-installation.

NVIS Filters Installed with UV/5-Minute Epoxy:

**Recommended Tools:**

1. Razor blade

**Cautions:**

1. Filters are fragile. Do not apply excessive prying force.
2. Be careful to not damage O.E.M. lenses or bezels.

**Procedure:**

1. Carefully remove the filter using a razor blade to separate the filter from the display face.

**Note:**

NVIS filters that have been installed with UV adhesive or 5 minute epoxy and have been removed are considered un-serviceable and may NOT be re-used.

NVIS Filters Installed Under Legend:

**Recommended Tools:**

1. Toothpicks
2. Isopropyl Alcohol

**Cautions:**

1. Filters are fragile. Do not apply excessive prying force.
2. When removing the NVIS filter, place the NVIS filter on a soft surface to prevent scratching/marring.
3. Be careful to not damage O.E.M. lenses or bezels.
4. When reassembling equipment, ensure that buttons/switches are reinstalled correctly.

**Procedure:**

1. Gain access to the internal side of the OEM lens. Do not disassemble equipment further than necessary.
1. **Tip:** *It can be helpful to take a photograph of the unit for later reference. If the unit has removable buttons, it may be helpful to secure the buttons prior to disassembly.*
2. Remove the small bead of black RTV sealant which has been applied to the outer edges, if present.
3. Remove the NVIS filter.
4. Reassemble equipment in reverse order of disassembly.

**Note:**

NVIS filters may be re-used, if it is determined that the NVIS filter is in serviceable condition. Scratches, cracks, or breaks are not permitted. Clean filters with alcohol before re-installation.

### Anti-Reflective NVIS Filter Identification:

Glass and polymeric filters may have an anti-reflective coating. If present, this type of NVIS filter is installed with the anti-reflective coating facing the pilot. It is important to install the NVIS filter correctly. This procedure provides the necessary instructions to identify if this anti-reflective coating is present on the filter and if present, establish the direction in which the NVIS filter must be installed.

### Recommended Tools:

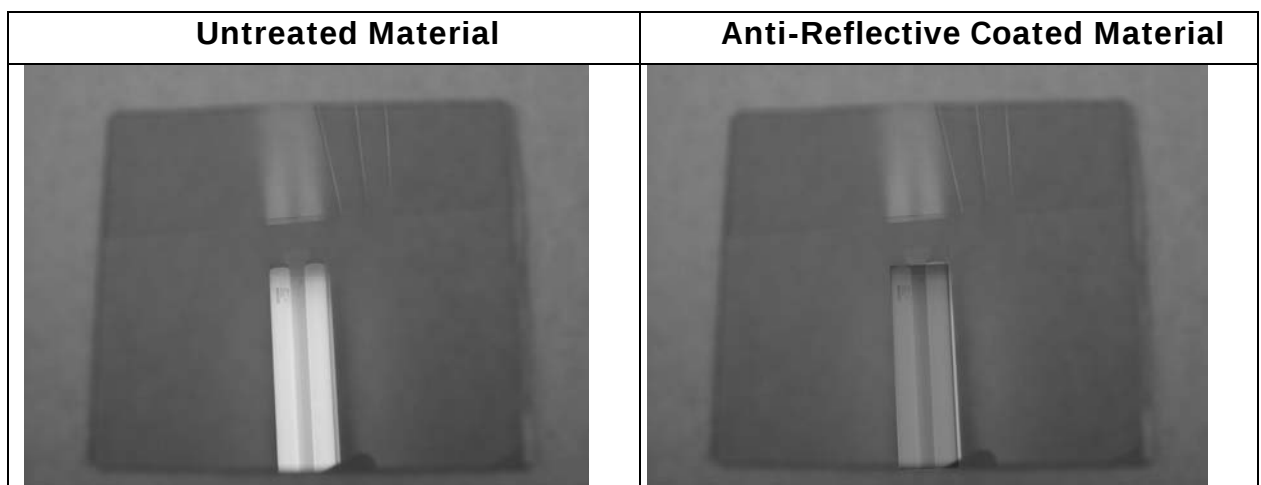
1. Dry Erase Marking Pen
2. Lint free cloth

### Procedure:

1. Place the filter material on a lint free cloth.
2. Examine the filter, using an overhead light source, such as a fluorescent light.
  - a. Look for the overhead light reflection on the NVIS Filter.
  - b. Examine tint of the light's reflection, flipping the filter from side-to-side to identify the side that produces the darker reflection.
3. If both sides have the same reflection, the filter can be installed using either side facing pilot.
4. If a darker side is present, mark that side with the marking pen, as needed, to help differentiate the anti-reflective sides.
5. Refer to the aircraft specific ICA appendix for installation instructions. As a reminder, installation for filters with anti-reflective coating must be with the darker side towards the pilot.

Below is an example to illustrate. For a color illustration, go to:

<http://www.asu-nvg.com/TechPubs>



### **Replacement Procedures for Superseded Parts:**

ASU maintains Parts Manufacture Authority in direct support of ASU's STC installations. Periodically, parts are retired and replaced with new alternate parts. Parts are marked with a supersede statement to help maintenance support staff in identifying authorized replacement parts. When a replacement part is used, as an alternative to the original part used on the installation, a logbook entry should be generated which includes a part number replacement entry. An example is as follows:

*"Installed filter P/N 500-45255-003, which supersedes P/N 577-1126 in accordance with ICA-206004-3, Rev \_\_\_\_ dated \_\_\_\_\_ and associated aircraft specific ICA appendices."*

### **RTV Curing Requirements Update:**

Note 1, as previously approved on ICA Appendix C - NVIS Filtration Installation, listed the RTV cure time at various time requirements (i.e. 24 hours or similar). The following paragraph supersedes the cure time requirements, as previously approved/accepted.

*"Due to temperature, humidity, and other environmental factors, RTV cure times will vary. It is at the installer's discretion to determine appropriate cure times. RTV cure time must be at an appropriate cure time to ensure that the filter is suitably affixed to the unit modified and is adequately secure for the intended use."*

### **Incompatible Light Leak Check:**

Perform an incompatible light leak check on equipment as modified in accordance with this STC.

Items required, in preparation for the light leak check are as follows:

1. Aircraft specific ICA Appendix C, NVIS Filtration Installation.
2. Power source suitable to energize applicable aircraft systems.
3. Night vision goggles. See aircraft specific RFMS for a list of approve systems. Review manufacturer operations instructions, as needed, for ensure familiarization with the powering on and system use.
4. Dark environment. This can be accomplished in a darkened hangar, at night-time on a ramp facing away from any cultural light sources, or blacked-out aircraft cockpit/cabin, as applicable.

**Note:** For equipment that will not be immediately installed in the aircraft, it is permissible to evaluate light leaks by powering-on the equipment in an adequately darkened room.

To perform the incompatible light leak check, follow the below procedure:

1. Position aircraft or modified equipment in a dark environment, as described above.
2. Power-on the equipment, ensuring that all modified equipment is illuminated.
3. Use night vision goggles to inspect all modified equipment for light leakage. Light leakage is defined as an excessive bright spot, bloom or halo on or around the filtered light source.
4. As needed, correct any incompatible light leak using aircraft specific ICA Appendix C, NVIS Filtration Installation and applicable procedures.

## **2-6. Annual Inspection and 100 Hour Inspections**

Inspections shall be accomplished at each 100 hours time in service and each 12 months, at a minimum. The Annual Inspection consists of a complete inspection of the supplemental lighting and filtration system as outlined in the annual inspection form, as listed in Figure 2.1. The 100 Hour Inspection is an abbreviated interim inspection with specific focus on the condition of the filters/lighting, as listed in Figure 2.2.

**NOTE:** *This inspection may be incorporated into an AAIP or CAMP inspection program at operator discretion of interval, but must be performed a minimum of each 12 calendar months/annually.*

At the discretion of the operator and as-needed, sections of this inspection may be utilized at decreased time intervals to ensure the aircraft maintains an airworthy state. It is important to note that if a decreased time interval is elected, where only portions of the inspection has been completed, the operator must still comply with the 12 month interval. If decreased time intervals are elected and the inspection follows all the Annual Inspection criteria as listed, this inspection can/will take the place of the annual inspection.

Factors to consider for decreased time interval inspections include operation in a high humidity and/or high corrosion areas, etc.

## Figure 2.1: Annual Inspection

N \_\_\_\_\_ Serial Number \_\_\_\_\_ Aircraft Hours \_\_\_\_\_ Total Time \_\_\_\_\_

1. Initial each item after accomplishing the inspection.
2. Record all findings and attach a copy to this inspection form.
3. After correction of all findings, make a maintenance record entry.

| <b>Pre Inspection – Accomplish The Following</b>                                                                                                                                                                                                                                                                                                                                                                                     |  | <b>Initial</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------|
| 1. Inspect aircraft for conformity to the approved STC configuration.                                                                                                                                                                                                                                                                                                                                                                |  |                |
| 2. Inspect aircraft windscreen and applicable transparencies for defects that may affect the performance of the NVGs. Utilize the applicable OEM Maintenance Manual for airworthiness limits associated with this inspection.                                                                                                                                                                                                        |  |                |
| <b>Maintenance Practices – Accomplish The Following</b>                                                                                                                                                                                                                                                                                                                                                                              |  | <b>Initial</b> |
| 1. Open doors 1, 2, and 3 and remove access panels 4, 5, 6, and 7. (Reference Paragraph 3-2)                                                                                                                                                                                                                                                                                                                                         |  |                |
| 2. Clean lights using a clean, lint-free cloth and isopropyl alcohol (if necessary). (reference Paragraph 5-5)                                                                                                                                                                                                                                                                                                                       |  |                |
| <b>Inspection – Accomplish The Following</b>                                                                                                                                                                                                                                                                                                                                                                                         |  | <b>Initial</b> |
| 1. Placards                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                |
| a. Placards that control the operation of equipment during NVG operations should be inspected for condition and legibility. Placards that are illegible and/or damaged must be replaced.                                                                                                                                                                                                                                             |  |                |
| 2. Instrument Panel Flood Lights (Refer to Paragraph 5-6, Figures 5.1 & 5.2)                                                                                                                                                                                                                                                                                                                                                         |  |                |
| a. Inspect floodlights for cleanliness, cracks and cracking around mount holes. Flood lights with cracks must be replaced.                                                                                                                                                                                                                                                                                                           |  |                |
| b. Inspect instrument panel cover around mount areas for signs of loose hardware and cracking. Tighten hardware as necessary. Cracks may be repaired per OEM specification IAW manufacturer instructions.                                                                                                                                                                                                                            |  |                |
| c. Inspect rheostat and wiring for chafing, fraying and condition of electrical connectors. Chafing on wire casing up to fifty percent (50%) of the original thickness is acceptable. Wires with more than fifty percent (50%) chafing on wire casing must be replaced. Bare or frayed wires are unacceptable and must be repaired or replaced.                                                                                      |  |                |
| 3. Radio, Indicator, Annunciator and Lamp Assembly Filtration (Refer to Paragraph 5-6, Figure 5.3)                                                                                                                                                                                                                                                                                                                                   |  |                |
| a. Inspect filters for cleanliness, crazing, condensation and cracking. Any filters with crazing, condensation, or cracking that allows incompatible light leakage or degraded visual acuity of display must be replaced. If condensation can be cleaned after removing the filter, and the condensation is not a defect in the filter itself, the filter may be reinstalled. See Appendix C for equipment that requires filtration. |  |                |
| 4. Overhead Panel Flood Lighting (Refer to Paragraph 5-4, Figures 5.4 and 5.5)                                                                                                                                                                                                                                                                                                                                                       |  |                |
| a. Inspect LED light for cleanliness, scratches and cracking around mount holes. Flood lights with cracks must be replaced.                                                                                                                                                                                                                                                                                                          |  |                |
| b. Inspect center post around mount area for signs of loose hardware and cracking. Tighten hardware as necessary. Cracks may be repaired per OEM specification IAW manufacturer instructions.                                                                                                                                                                                                                                        |  |                |
| 5. Backup Utility Light (Refer to Paragraph 5-9, Figure 5.6)                                                                                                                                                                                                                                                                                                                                                                         |  |                |
| a. Inspect utility light for cleanliness, cracks in lens, and cracking around mount holes. Cracked lenses must be replaced. Mounting hole cracks and utility lights with cracks must be replaced.                                                                                                                                                                                                                                    |  |                |
| b. Inspect aircraft fuselage around mount area for signs of loose hardware and cracking. Tighten hardware as necessary. Cracks in fuselage may be repaired per OEM specification IAW manufacturer instructions.                                                                                                                                                                                                                      |  |                |

|                                                                                                                                                                                                                                                                                                                                                                                                                     |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| c. Inspect wiring for chafing, fraying and condition of electrical connectors. Chafing on wire casing up to fifty percent (50%) of the original thickness is acceptable. Wires with more than fifty percent (50%) chafing on wire casing must be replaced. Bare or frayed wires are unacceptable and must be repaired or replaced.                                                                                  |                |
| 6. Cabin Overhead Lighting (Refer to Appendix B and C, to determine applicability)                                                                                                                                                                                                                                                                                                                                  |                |
| a. Inspect overhead light(s) for cleanliness, scratches and cracking around mount holes. Light(s) with cracks must be replaced.                                                                                                                                                                                                                                                                                     |                |
| b. Inspect light wiring for chafing and fraying. Chafing on wire casing up fifty percent (50%) of the original thickness is acceptable. Wires with more than fifty percent (50%) chafing on wire casing must be replaced. Bare or frayed wires are unacceptable and must be repaired or replaced.                                                                                                                   |                |
| c. Inspect interior panels around mount area for cracking. Cracks up to one-half inch (0.5 in.) are acceptable. Panels with cracks longer than one-half inch (0.5 in.) must be repaired per OEM specification IAW manufacturer instructions.                                                                                                                                                                        |                |
| d. As applicable per Appendix C inspect filters for cleanliness, crazing, condensation, and cracking. Any filters with crazing, condensation, or cracking that allows incompatible light leakage or degraded visual acuity of display must be replaced. If condensation can be cleaned after removing the filter, and the condensation does not cause a defect in the filter itself, the filter may be reinstalled. |                |
| 7. Optional Chin Bubble Carpet Installation. (Refer to Appendix D)                                                                                                                                                                                                                                                                                                                                                  |                |
| a. Inspect Carpet assembly for damage. Fraying, Tears and Holes: Any Damage over two inches in length or diameter, the Chin Bubble Carpet must be replaced.                                                                                                                                                                                                                                                         |                |
| b. Inspect Velcro Hook for security of installation and wear. Worn Velcro Hook that no longer holds Chin Bubble Carpet in place must be replaced.                                                                                                                                                                                                                                                                   |                |
| 8. External Lighting (Refer to Appendix B, to determine applicability)                                                                                                                                                                                                                                                                                                                                              |                |
| a. Inspect LED Position Light Assemblies. <ul style="list-style-type: none"> <li>i. The LED external lights are designed with multiple LED's. If any LED fails, the unit must be replaced.</li> <li>ii. Inspect the lens, replace if the lens has excessive scratching or discoloration. If the lens is cracked in any amount replace the lens and or light assembly.</li> </ul>                                    |                |
| <b>Post Inspection – Accomplish The Following</b>                                                                                                                                                                                                                                                                                                                                                                   | <b>Initial</b> |
| 1. Install access panels and close doors opened up for the inspection.                                                                                                                                                                                                                                                                                                                                              |                |
| 2. Perform operational check of inspected systems to verify correct function and operation.                                                                                                                                                                                                                                                                                                                         |                |
| 3. Inspection of all panels, radio and enunciator lights for proper illumination and balance. Inspect rheostat controls for full range and illumination levels.                                                                                                                                                                                                                                                     |                |
| 4. Conduct a light leakage check using Paragraph 2-5, Section "Incompatible Light Leak Check."                                                                                                                                                                                                                                                                                                                      |                |
| 5. Complete and sign rotorcraft's maintenance record entry.                                                                                                                                                                                                                                                                                                                                                         |                |

Mechanic Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Cert #: \_\_\_\_\_

Inspector Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Cert #: \_\_\_\_\_

## Figure 2.2: 100 Hour Inspection

N \_\_\_\_\_ Serial Number \_\_\_\_\_ Aircraft Hours \_\_\_\_\_ Total Time \_\_\_\_\_

1. Initial each item after accomplishing the inspection.
2. Record all findings and attach a copy to this inspection form.
3. After correction of all findings, make a maintenance record entry.

| <b>Pre Inspection – Accomplish The Following</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |  | <b>Initial</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------|
| 1. Inspect aircraft windscreen and applicable transparencies for defects that may affect the performance of the NVGs. Utilize the applicable OEM Maintenance Manual for airworthiness limits associated with this inspection.                                                                                                                                                                                                                                      |  |                |
| <b>Inspection – Accomplish The Following</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |  | <b>Initial</b> |
| 1. Placards                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                |
| a. Placards that control the operation of equipment during NVG operations should be inspected for condition and legibility. Placards that are illegible and/or damaged must be replaced.                                                                                                                                                                                                                                                                           |  |                |
| 2. Instrument Panel Flood Lights (Refer to Paragraph 5-6, Figure 5.1 or 5.2)                                                                                                                                                                                                                                                                                                                                                                                       |  |                |
| a. Inspect floodlights for cleanliness, cracks and cracking around mount holes. Flood lights with cracks must be replaced.                                                                                                                                                                                                                                                                                                                                         |  |                |
| 3. Radio, Indicator, Annunciator and Lamp Assembly Filtration (Refer to Paragraph 6, Figure 5.3)                                                                                                                                                                                                                                                                                                                                                                   |  |                |
| a. Inspect filters for cleanliness, crazing, condensation and cracking. Any filters with crazing, condensation, or cracking that allows incompatible light leakage or degraded visual acuity of display must be replaced. If condensation can be cleaned after removing the filter, and the condensation is not a defect in the filter itself, the filter may be reinstalled. See Appendix C for equipment that requires filtration.                               |  |                |
| 4. Overhead Panel Flood Lighting (Refer to Paragraph 5-8, Figures 5.4 and 5.5)                                                                                                                                                                                                                                                                                                                                                                                     |  |                |
| a. Inspect LED light for cleanliness, scratches and cracking around mount holes. Flood lights with cracks must be replaced.                                                                                                                                                                                                                                                                                                                                        |  |                |
| 5. Backup Utility Light (Refer to Paragraph 5-9, Figure 5.6)                                                                                                                                                                                                                                                                                                                                                                                                       |  |                |
| a. Inspect utility light for cleanliness, cracks in lens, and cracking around mount holes. Cracked lenses must be replaced. Utility lights with cracks must be replaced.                                                                                                                                                                                                                                                                                           |  |                |
| 2. Cabin Overhead Lighting (Refer to Appendix B and C, to determine applicability)                                                                                                                                                                                                                                                                                                                                                                                 |  |                |
| a. Inspect overhead light(s) for cleanliness, scratches and cracking around mount holes. Light(s) with cracks must be replaced.                                                                                                                                                                                                                                                                                                                                    |  |                |
| b. As applicable per Appendix C: Inspect filters for cleanliness, crazing, condensation and cracking. Any filters with crazing, condensation, or cracking that allows incompatible light leakage or degraded visual acuity of display must be replaced. If condensation can be cleaned after removing the filter, and the condensation is not a defect in the filter itself, the filter may be reinstalled. See Appendix C for equipment that requires filtration. |  |                |
| 3. External Lighting (Refer to Appendix B, to determine applicability)                                                                                                                                                                                                                                                                                                                                                                                             |  |                |
| a. Inspect LED Position Light Assemblies.                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                |
| i. The LED external lights are designed with multiple LED's. If any LED fails, the unit must be replaced.                                                                                                                                                                                                                                                                                                                                                          |  |                |
| ii. Inspect the lens, replace if the lens has excessive scratching or discoloration. If the lens is cracked in any amount replace the lens and or light assembly.                                                                                                                                                                                                                                                                                                  |  |                |

## Instructions for Continued Airworthiness

ICA-206004-4  
Revision C, 08/08/11

| Post Inspection – Accomplish The Following                                                                                                                          | Initial |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1. Perform operational check of inspected systems to verify correct function and operation.                                                                         |         |
| 2. Inspect all panel lighting, radio, and annunciator lights for proper illumination and balance. Inspect rheostat controls for full range and illumination levels. |         |
| 3. Complete and sign rotorcraft's maintenance record entry.                                                                                                         |         |

Mechanic Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Cert #: \_\_\_\_\_

Inspector Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Cert #: \_\_\_\_\_

## **2-7. Special Inspections**

### **Hard Landing, Rotor Strike, or Lighting Strike**

In the event of a hard landing, rotor strike or lighting strike, all of the equipment installed in accordance with this Supplemental Type Certificate shall be inspected for physical damage and operation as outlined in the Annual Inspection.

### **Crazing Condensation of NVIS Filtration**

Inspect filters for cleanliness, crazing, and condensation on condition. Any filters with crazing or condensation that allow incompatible light leakage or degraded visual acuity of display must be replaced. If condensation can be cleaned after removing the filter and the condensation is not a defect in the filter itself, the filter may be reinstalled. See Appendix C for installation.

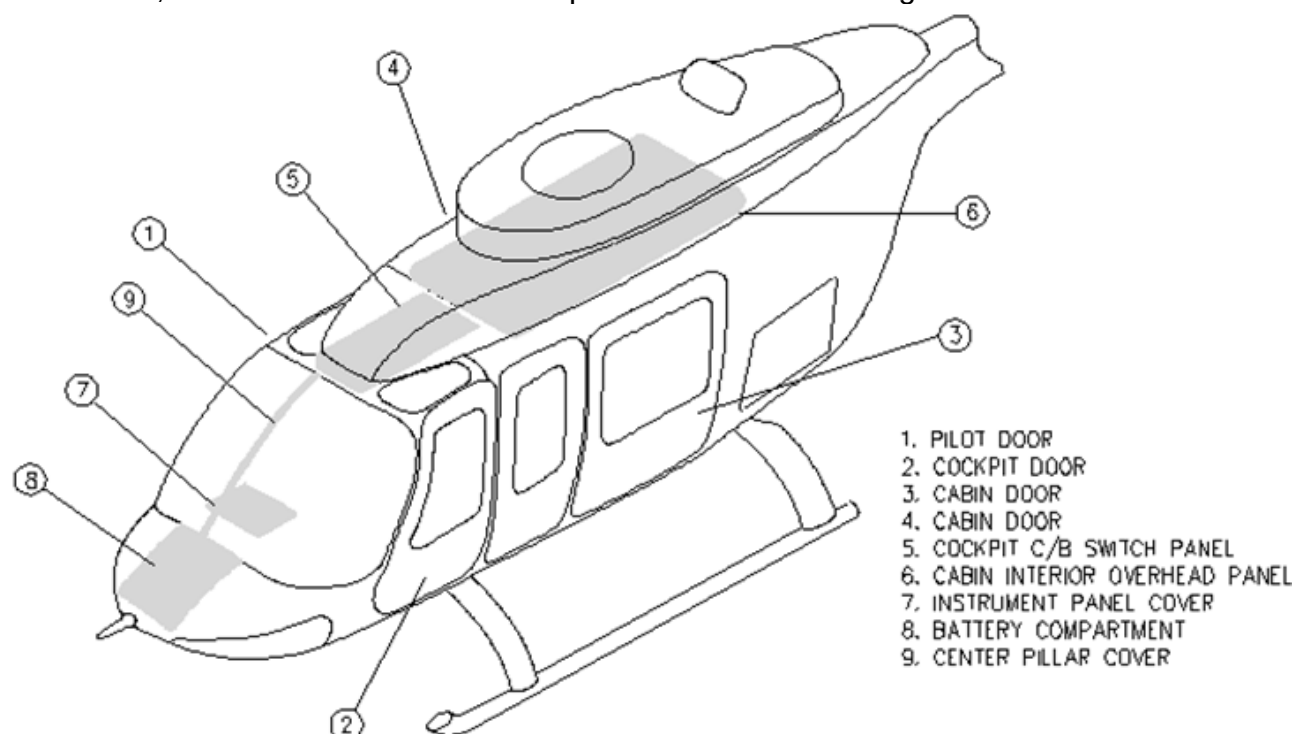
## Chapter 3. Dimensions and Access

### 3-1 Description

This chapter contains the locations of interior and exterior panels that must be removed in order to gain access to the components of the NVG Compatible lighting system.

### 3-2 Location of Access Panels

Access for inspection and maintenance operations is possible through the various doors and panels provided on the standard Bell Helicopter Textron 206A, 206B, 206L, 206L1, 206L3, 206L4 and 407 series helicopters as illustrated in Figure 3.1.



| Ref. # | Type                    | Fastener Type                   | Access to                                                    |
|--------|-------------------------|---------------------------------|--------------------------------------------------------------|
| 1-2    | Cockpit doors           | Handle                          | NVG cockpit lighting & lighting filters                      |
| 3-4    | Cabin doors             | Handle                          | NVG cabin lighting & lighting filters                        |
| 5      | Cockpit overhead panels | Dzus Cam lock & Common Hardware | Supplemental lighting<br>Circuit breakers, wiring & switches |
| 6      | Cabin overhead panel    | Cam lock & Common Hardware      | NVG cabin lighting and wiring                                |
| 7      | Instrument panel cover  | Screws                          | Instrument panel LED light wiring                            |
| 8      | Battery access panel    | Dzus Cam Lock                   | Instrument panel LED light and compass wiring                |
| 9      | Center Pillar cover     | Screws                          | Instrument panel LED light and compass wiring                |

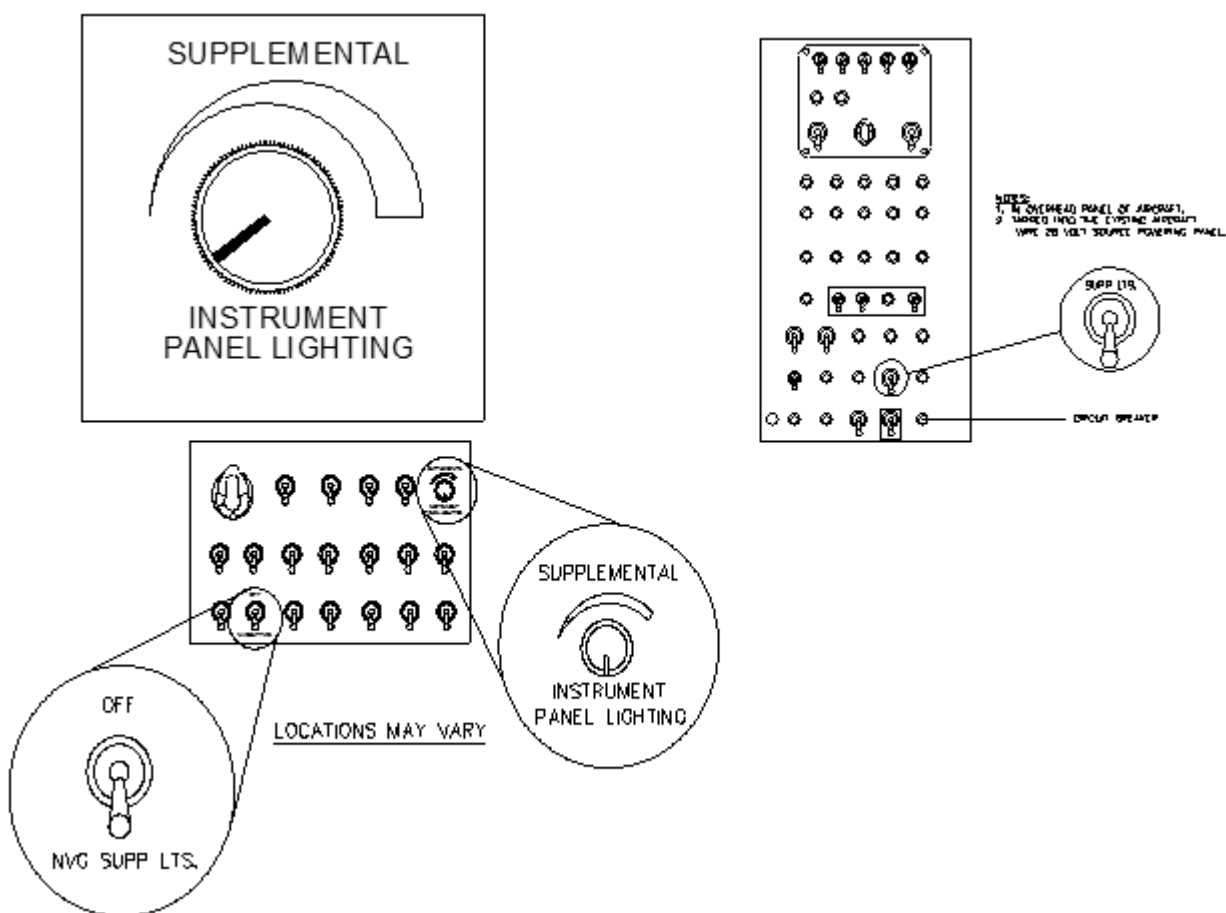
**Figure 3.1: Aircraft Doors, Cabin Doors and Overhead Panels**

## Chapter 4: Placards and Markings

### 4-1 Placards

The supplemental lighting system is designed to provide cockpit and/or cabin lighting that is NVG compatible and is based on aircraft specific configuration.

Placards are installed on the NVG light control switch/rheostat panel located on the cockpit center console, the pilot cut-off switch, and circuit breakers located in the cabin overhead switch/circuit breaker panel. Refer to aircraft specific appendices for applicable placard requirements. Figure 4.1 below provides a few examples.



**Figure 4.1: Placards & Markings**

(Typical – See ICA Appendices for aircraft specific placarding and component locations)

## **Chapter 5. Lighting and Filtration**

### **5-1 Description**

The NVG Compatible Lighting System installation consists of the following:

- The instrument panel post lighting system.
- NVIS compatible lighting for the magnetic compass or separate direct lighting assembly.
- Backup utility light.
- Cabin lighting system
- LED position light assemblies, if installed.

The Lighting Filtration System installation consists of the following:

- Radio, indicator, annunciator, and lamp assembly lighting filters for cockpit and/or cabin areas, as applicable to aircraft configuration.

(Refer to Appendix B and C for aircraft specific configuration)

### **5-2 Maintenance Support Equipment**

The support equipment (special tools and test equipment) referenced in this chapter are listed in Table 5.1 below.

**Table 5.1: List of Support Equipment**

| <b>No.</b> | <b>Nomenclature</b>           | <b>Part Number</b>                                                                                                                                           |
|------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Digital or Analog Multi-meter | Commercially available.<br><u>Minimum requirements:</u> Meter must be able to check for continuity and have DVC measuring capabilities from 0 VDC to 28 VDC. |

### **5-3 Consumable Materials**

The consumable materials required to support the STC installation and on-going maintenance are listed on ICA Appendix C, Materials List table.

### **5-4 Access Provisions**

See Paragraph 3-2 for location of the access panels and doors that are required to be removed/installed or opened/closed during the maintenance operations contained in this chapter.

## 5-5 Cleaning of Lighting Equipment

The cockpit and cabin lighting should be cleaned as necessary and during maintenance inspections. The general cleaning procedure for the lighting equipment is as follows:

1. Remove moisture, dust and dirt with a clean, lint-free cloth.

**Warning:** *Contact cleaner may be flammable and toxic, use only in ventilated areas and away from heat sources. Avoid contact with skin. Vapor can be harmful for personnel.*

2. Remove grease, fungus and ground-in dirt from equipment and mounts using a lint-free cloth moistened with isopropyl alcohol, Appendix C, Note #1.
3. A suitable vacuum may be utilized to vacuum Chin Bubble Carpets.

**Warning:** *Do not wash or shampoo chin bubble carpets, as this may affect the flammability coating.*

## 5-6 Lighting and Filtration Systems

### (A) Instrument Panel LED Lighting

The instrument panel lighting system (Figures 5.1 and 5.2) consists of: LED light assemblies, a rheostat(s)/ON-OFF switch, a circuit protection device, and the related wiring harness. The system is powered by the 28 VDC buss. For specific details of your aircraft see Appendix A for wiring and Appendix B for lighting.

#### 1. Lighting Controls

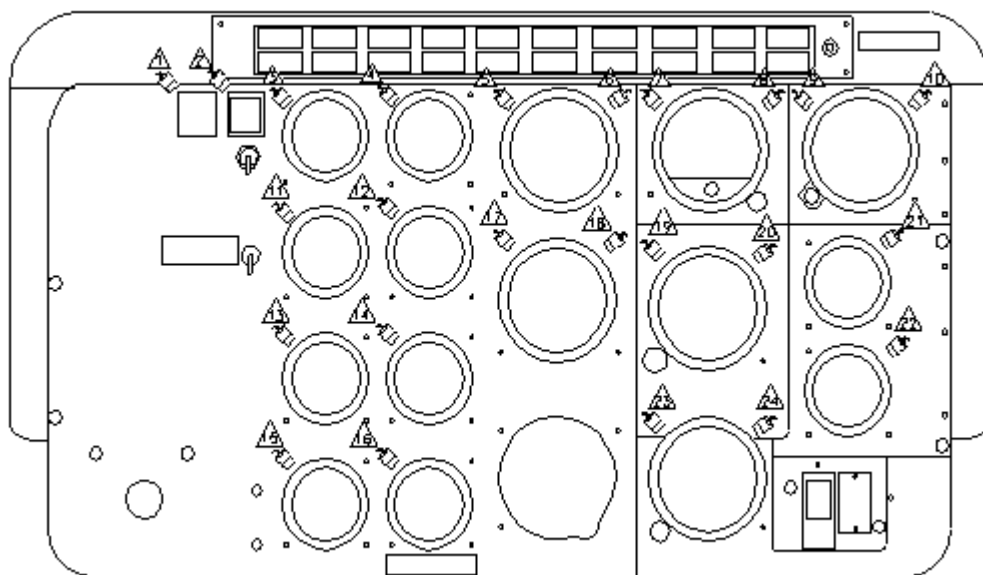
The instrument panel lighting system controls (Figures 5.1 and 5.2) provide the following functions:

- a. Instrument panel rheostat/ON-OFF switch allows the intensity of the instrument panel NVG lighting to be varied for various lighting conditions and turned ON and OFF.

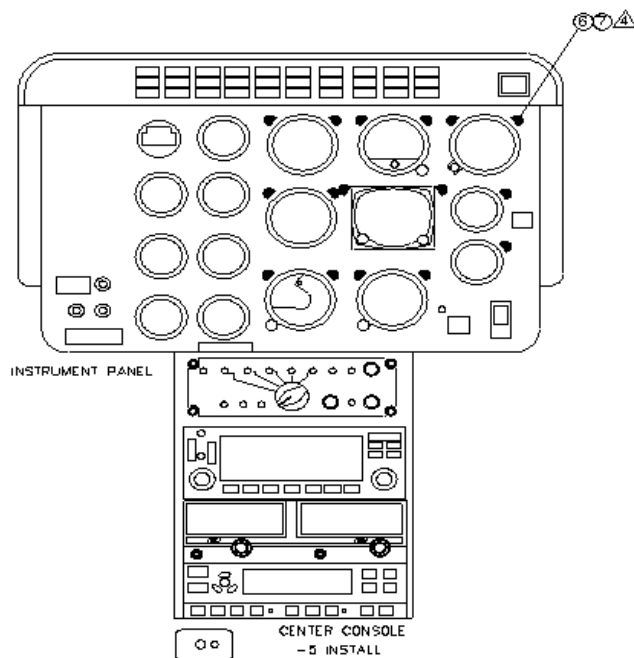
#### 2. System Operation

- a. Connect electrical power to the helicopter.
- b. Ensure the NVG supplemental lighting system is enabled.
- c. Rotate rheostat clockwise from OFF position to increase light intensity to suit current lighting conditions and counterclockwise to decrease intensity.
- d. Rotate rheostat to OFF position and disconnect electrical power from the helicopter.

3. LED Post Light Removal/Installation
  - a. Ensure electrical power is OFF.
  - b. Disconnect electrical wiring from instrument panel LED lights.
  - c. Remove mount hardware and remove light from mounting location.
  - d. Install new LED light using supplied mount hardware.
  - e. Connect electrical wiring.
4. Instrument Panel Rheostat/ON-OFF Removal/Installation
  - a. Ensure electrical power is OFF.
  - b. Remove rheostat control knob.
  - c. Remove mount nut, withdraw rheostat and disconnect wiring.
  - d. Connect wiring. Position rheostat and install mount nut and washer.
  - e. Install rheostat control knob.
5. Circuit Breaker Removal/Installation
  - a. Disconnect aircraft battery and external power.
  - b. Remove overhead panel mount hardware and lower to gain access (refer to Paragraph 3-2, Figure 3.1)
  - c. Remove mount nut, back out circuit breaker, and disconnect wiring.
  - d. Connect wiring, position circuit breaker, and install mount nut and washer.
  - e. Position overhead panel and install mount hardware.
  - f. Reconnect aircraft battery.



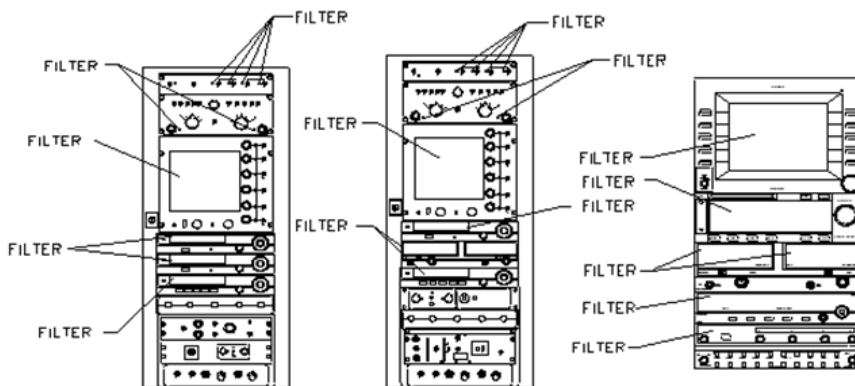
**Figure 5.1: Instrument Panel LED Lighting System Installation 206**  
(Typical – See ICA Appendix B for aircraft specific equipment and component location)



**Figure 5.2: Instrument Panel LED Lighting System Installation – 407**  
(Typical – See ICA Appendix B for aircraft specific equipment and component location)

**(B) Lighting Filtration System**

The lighting filtration system (Figure 5.3) is designed to transform any light emitted from the various cockpit radio, indicator, annunciator, and lamp assemblies to being NVG compatible. See Appendix A, B, or C for aircraft specific configuration, parts, procedures, and installation instructions. Ensure the aircraft matches the configuration of Appendix B, and Appendix C, as depicted and listed in the Equipment and Parts tables.



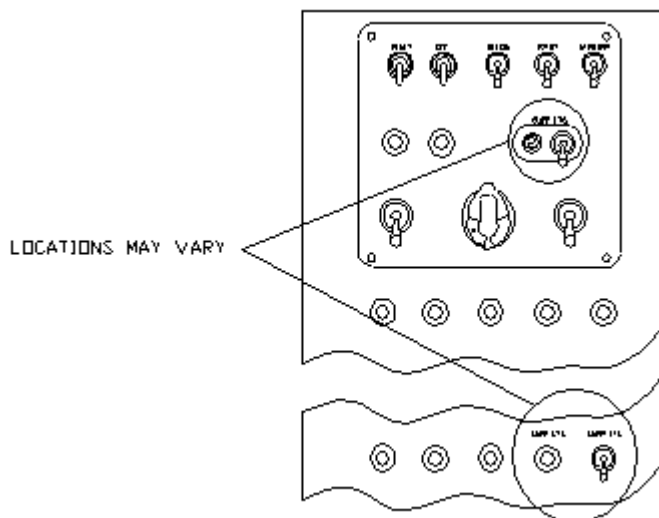
**Figure 5.3: Panel Filtration System Installation (206 and 407)**  
(Typical – See ICA Appendix C for aircraft specific equipment and component location)

## 5-7 Replacement of NVIS Compatible Components

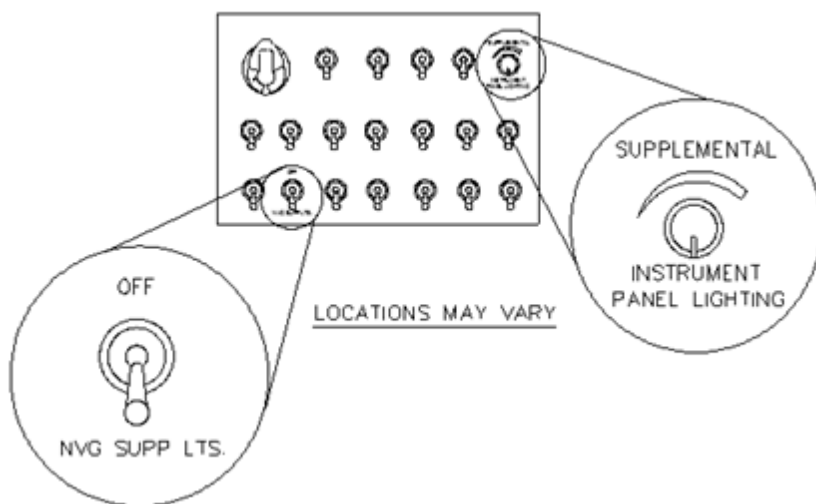
ANVIS lighting and NVG compatibility are considered major changes and require an engineering evaluation to assess the effect of the change on NVG compatibility. Any radios, indicators, annunciators, instruments, etc. ordered as replacements for those that have been modified to be NVG compatible must likewise be modified for NVG compatibility in accordance with current FAA approved regulations, prior to being installed in the aircraft. Any NVG compatible components installed in conjunction with this STC must be replaced/repared IAW ICA-206004-4. See Appendix A, B, or C for aircraft specific configuration parts, procedures and installation instructions.

## 5-8 Overhead Switch /CB Panel Lighting

The overhead switch/CB panel lighting system (Figures 5.4 and 5.5) consists of the OEM edge lit panel modified by the installation of ANVIS compatible ring filters installed / replacing the original non compatible ring filters. For specific details of your aircraft see Appendix A for wiring, Appendix B for lighting, and Appendix C for filtration.



**Figure 5.4: Overhead Switch/CB Panel Lighting Controls 206**  
(Typical – See ICA Appendix B for aircraft specific equipment and component location)



**Figure 5.5: Overhead Switch/CB Panel Lighting Controls 407**

(Typical – See ICA Appendix B for aircraft specific equipment and component location)

1. Overhead Lighting Controls

The overhead panel lighting system controls provide the following functions:

- a. Enable switch to provide power to the ANVIS compatible supplemental lighting system.
- b. Rotate the control knob until the desired light intensity is obtained.

2. System Operation

- a. Connect electrical power to the helicopter.
- b. Ensure the NVG circuit breaker is closed.
- c. Enable Supplemental Lighting switch to provide power to the system.
- d. Rotate the control knob until the desired light intensity obtained.
- e. Disconnect electrical power from the helicopter.

3. Rheostat/ON-OFF Switch Removal/Installation

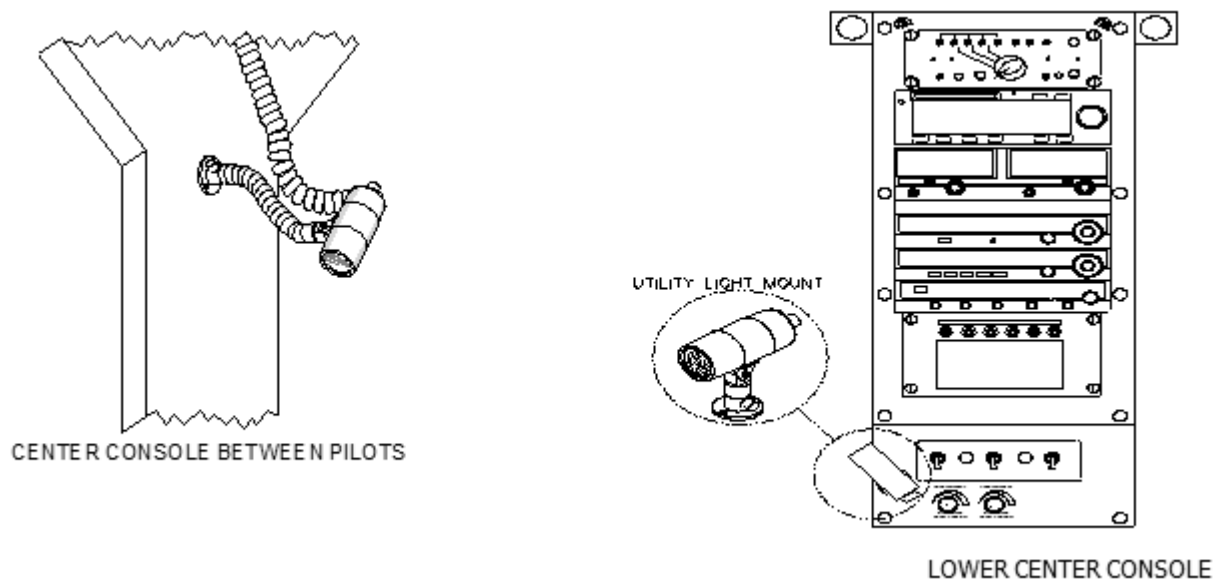
- a. Ensure electrical power is OFF.
- b. Remove mount nut, back out rheostat/switch and disconnect wiring.
- c. Connect wiring; position rheostat/switch and install mount nut and washer.
- d. Position overhead panel and install mount hardware.

**4. Ring filter Removal/Installation**

- a. Remove mount hardware and remove edge lit panel from overhead console.
- b. Remove edge lit panel backing / light plate (removal of Phillips head screws)
- c. Remove edge lit panel ring filters out of panel housing.
- d. Replace / reinstall filters.
- e. Install edge lit panel backing / light plate (reinstall Phillips head screws)
- f. Reinstall edge lit panel and mounting hardware onto overhead console.

**5-9 Backup Utility Light System**

The backup utility light system (Figure 5.6) consists of the utility light, which is tied into the existing factory circuit breaker and related wiring harness. The system is powered by the emergency buss through the CKPT LT circuit breaker. Additionally the Utility light may be installed on center console between the headrests of the pilot seats.



**Figure 5.6: Backup Utility Light System Installation**

(Typical – See ICA Appendix B for aircraft specific equipment and component locations)

1. System Operation

- a. Connect electrical power to the helicopter.
- b. Ensure the CKPT LT circuit breaker is closed.
- c. Rotate rheostat on back of utility light clockwise from stop to increase light intensity and counterclockwise to decrease intensity.
- d. Rotate rheostat to OFF position and disconnect electrical power from the helicopter.

2. Utility Light Removal/Installation

- a. Ensure electrical power is OFF
- b. Disconnect electrical wiring from utility light.
- c. Remove mount hardware and remove light from mount.
- d. Position utility light on mount and install using supplied hardware.
- e. Connect electrical wiring.

**5-10 Cabin Lighting System**

The cabin lighting system consists of LED light assemblies and/or ANVIS compatible filter assemblies installed onto existing lighting. The cabin lighting system is controlled by the OEM cabin lighting controls.

1. Lighting Controls

The cabin lighting controls provide the following functions:

- a. Switch/rheostat allows the cabin NVG lighting to be turned on and the intensity of the lights to be varied for various lighting conditions as applicable.

2. Cabin Light Panel Operation

- a. Connect electrical power to helicopter.
- b. Ensure the Cabin Light circuit breaker is closed.
- c. Rotate control knob or place switch in mode desired until desired intensity is obtained.
- d. Disconnect electrical power from helicopter.

3. Cabin Lighting Removal/Installation

- a. Ensure electrical power is OFF.
- b. Remove cabin overhead and side panels (Refer to Paragraph 3-2, Figure 3.1)
- c. Disconnect electrical wiring, remove mount hardware, and remove light.
- d. Position light, install mount hardware, and connect electrical wiring.
- e. Install interior panel.

4. Pilot Cut-Off Switch/Circuit Breaker Removal/Installation

- a. Disconnect aircraft battery and external power.
- b. Remove overhead panel mount hardware and lower to gain access. (Refer to Paragraph 3-2, Figure 3.1)
- c. Remove mount nut, back out circuit breaker and disconnect wiring.

- d. Connect wiring; position circuit breaker and install mount nut and washer.
- e. Position overhead panel and install mount hardware.
- f. Reconnect aircraft battery.

**Note:** *Cabin lighting configurations vary from aircraft to aircraft and are depicted in the appendices of this manual. See Appendix A for wiring, Appendix B for lighting and Appendix C for filtration applicable to aircraft specific configuration.*

## **Chapter 6. Optional Equipment**

Optional equipment consists of items listed in the applicable ICA appendices and notated with an “optional” emphasis, or listed in Section 10 of the appropriate Flight Manual Supplement.

Typical Optional Equipment may consist of, but is not limited to, Chin Bubble Carpets. Refer to Annual Inspection and appropriate appendices for applicable inspection criteria and installation data.

## Chapter 7. Troubleshooting

### Instrument Panel LED Lighting System

| <i>System inoperative:</i>                  |                                                                    |                                                                                     |
|---------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Probable Cause                              | Isolation Procedure                                                | Remedy                                                                              |
| Defective circuit breaker/ rheostat/wiring. | Check circuit breaker/power switch rheostat/wiring for continuity. | Repair/replace circuit breaker/ power switch/rheostat/wiring<br>- See Appendix "A". |
| Defective light panel(s).                   | Check light panel(s).                                              | Replace light panel(s)<br>- See Appendix "B".                                       |

### Overhead Switch/CB Panel Lighting

| <i>System inoperative:</i>                |                                                           |                                                                        |
|-------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------|
| Probable Cause                            | Isolation Procedure                                       | Remedy                                                                 |
| Defective circuit breaker/ switch/wiring. | Check circuit breaker/power switch/wiring for continuity. | Repair/replace circuit breaker/ power switch/wiring -See Appendix "A". |
| Defective light.                          | Check light.                                              | Replace light - See Appendix "B".                                      |

### Backup Utility Light

| <i>System inoperative:</i>                |                                                           |                                                                         |
|-------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------|
| Probable Cause                            | Isolation Procedure                                       | Remedy                                                                  |
| Defective circuit breaker/ switch/wiring. | Check circuit breaker/power switch/wiring for continuity. | Repair/replace circuit breaker/ power switch/wiring - See Appendix "A". |
| Defective floodlight.                     | Check floodlight.                                         | Replace floodlight - See Appendix "B".                                  |

### Cabin Lighting

| <i>System inoperative:</i>                  |                                                           |                                                                             |
|---------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------|
| Probable Cause                              | Isolation Procedure                                       | Remedy                                                                      |
| Defective circuit breaker/ rheostat/wiring. | Check circuit breaker/power switch/wiring for continuity. | Repair or replace circuit breaker/power switch/wiring<br>-See Appendix "A". |
| Defective light panel(s).                   | Check light panel(s).                                     | Replace light panel(s)<br>-See Appendix "B".                                |

### Lighting Filtration System

| <i>Incompatible light leakage through and/or around filters:</i> |                                      |                                                      |
|------------------------------------------------------------------|--------------------------------------|------------------------------------------------------|
| Probable Cause                                                   | Isolation Procedure                  | Remedy                                               |
| Crazed, cracked or damaged light filter(s).                      | Check light filter(s) for condition. | Replace faulty light filter(s)<br>-See Appendix "C". |

## **Chapter 8.      Airworthiness Limitations Information**

The Airworthiness Limitations Section is FAA approved and specifies maintenance required under 14 CFR §§ 43.16 and 91.403 unless an alternative program has been FAA approved.

No airworthiness limitations apply to this installation.