AN INTRODUCTION TO NIGHT-VISION IMAGING SYSTEMS (NVIS)

NVIS, also referred to as Night Vision Goggles (NVG), offer a powerful capability to pilots and crews seeking to improve their visibility when flying at night.

An aircrew outfitted with NVIS can study terrain and ground features, identify potential targets and track other aircraft with a level of detail and contrast similar to normal daytime viewing conditions. NVIS also allows a pilot to fly the aircraft lower to the terrain and to perform covert take-offs and landings with greater safety.

NVIS offers similar benefits to soldiers and observers located in ground-based vehicles. NVIS are sensitive to near infra-red (IR) radiation that travels to the earth in the form of moonlight and starlight. This IR radiation is reflected off of the terrain, buildings, trees, vegetation and other objects at different levels depending on the object's degree of reflectivity.

The NVIS amplifies the level of reflected IR radiation several thousand times and then translates the variations in reflectivity into a high-contrast mono-chromatic green image of exceptional clarity and quality.

NVISs are designed to detect low levels of IR radiation being emitted from a distant source. However, conventional lighting systems located in the cockpit and on the wing emit relatively high levels of IR radiation that can easily blind a NVIS-equipped pilot. Therefore, all interior and exterior lighting sources (i.e. instrument lights, warning and master caution lights, cabin floodlights, external position lights, etc.) must be properly modified to the standard of "NVIS-compatible" lighting. Failure to do so will result in adverse conditions affecting the NVIS-aided crewmember known as 'blinding' and 'blooming'. It is important to understand that a NVIS-modified cockpit allows the instrument panels and workstations to be viewed both with the NVIS and with the unaided eye.

Several options are available to the aircraft owner when deciding to upgrade to NVIS compatibility:

1. Addition of NVIS-compatible floodlights to illuminate the instrument panels. All existing lighting sources are disabled when flying in NVIS-mode.

2. Attachment of an external NVIS-compatible lighted bezel to individual or grouped instruments. The bezel sits directly on the instrument(s) to be modified. A switch toggles between NVIS-mode and conventional lighting.

3. Addition of external, protruding post-lights to illuminate individual instruments. A switch toggles between NVIS-mode and conventional lighting.

4. Internal lighting modification of the individual instrument to NVIS-compatibility.

Incandescent bulbs with NVIS-compatible filters and NVIS-compatible LEDs (Light Emitting Diodes) can be used to modify the aircraft to NVIS compatibility. As an option, external lighting sources can also be modified to completely non-visible IR illumination for sensitive covert operations and surveillance.