

URGENT

TB 1-1500-346-20

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

UPDATED INFORMATION ON NIGHT VISION GOGGLES

Headquarters, Department of the Army, Washington, D. C.
29 May 1998

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. **Priority Classification.** Routine.
2. **Task/Inspection Suspense Date.** N/A.
3. **Reporting Compliance Suspense Date.** N/A.
4. **Summary of the Problem.**

a. The purpose of this TB is to provide consolidated and updated information on aviation NVG messages. It is not intended to replace any publication.

NOTE

This TB does not address NVGs used for ground operations.

- b. The updated information in this TB is organized as follows.

NOMENCLATURE	SUBJECT
8a	NVG Maintenance Training
8b	GM-6 Goggles
8c	Commercial NVGs
8d	AN/AVS-6 ANVIS)
8e	Heads-Up Display
8f	Battery and Power Pack Assy (Battery Pack)

*This TB supersedes TB I-1500-346-20, dated 2 May 1997 and USAAMCOM Message 0120502 Apr 98 (Gen-98-ASAM-01)

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NOMENCLATURE	SUBJECT
8g	Test Sets
8h	Modification Work Orders (MWO)
8i	Lighting
8j	Laser Pointers
8k	IR Band Pass Filters
8l	Physical Security
8m	Miscellaneous Information
8n	Expired Technical Bulletins

c. This TB and following messages/TBs are current and shall be complied with until expired:

(1) CDR USAAVNC Message 0323302 Jan 91, subject - Night Vision Goggle Scanning and Crew Coordination Errors. This message expires when information is included in the next revision of TC1 -204, dtd Dec 88.

(2) CDR ATCOM Message 0521302 Nov 92, subject Correction Of Obvious Errors in DA PAM 738-751, 15 Jun 92, Users Manual For The Army Maintenance Management System. This message will expire with the update to DA PAM 738-751.

(3) TB 1-1500-350-30,26 Feb 96, subject - Use of Dual Visor on SPH-4B Aviator's Helmet and Related Information. This TB is effective until rescinded or superseded.

(4) TB 1-1500-348-30, subject - Aviation Night Vision Goggle Maintenance Documentation, dtd 29 Dec 95. This TB is effective until rescinded or superseded. This information will be included in next update of DA PAM 738-751.

(5) CDR USAAVNC Message 1915372 Feb 97, subject - Aviator's Night Vision Imaging System (ANVIS) Maintenance Qualification Training Guidance.

5. **End Items.** This TB covers AN/AVS-6, AN/AVS-7, and GM-6, as well as necessary support equipment.

6. **Assembly Components to be Inspected.** N/A.

7. **Parts to be Inspected.** N/A.

8. **NVG Procedures/Information.**

a. NVG Maintenance Training - New Equipment Training (NET) for the AN/AVS-6 ANVIS has been completed. Maintenance training procedures for AN/AVS-6 shall be accomplished IAW CDR USAAVNC message 1915372 Feb 97 para 4c(5). Due to the rapid restructuring of the army, qualified personnel (who have training documented from approved sources) retain their qualification to repair/service/maintain AN/AVS-6 ANVIS regardless of MOS revisions. The commander must still designate that individual as the ANVIS maintainer IAW AR 750-1.

b. GM-6 NVGs - GM-6 Night Vision Goggles are no longer authorized for aviation use. GM-6 Night Vision Goggles should be turned in IAW supply procedures. Contact your local CECOM avionics LAR, or Mr. Steve Borman, para 16d for assistance.

c. Commercial NVGs - Commercial NVGs (including procured GSA catalogued goggles and spare parts) are not authorized for aviation use, except for test and evaluation as requested by PM NV/RSTA. These nonstandard NVGs and parts have not been adequately tested for military use (electromagnetic interference, etc).

d. AN/AVS-6 (ANVIS) -

NOTE

Prior to flying with ANVIS, ensure a proper fit of the HGU-56/P helmet. If the crew-member cannot adjust the ANVIS goggles close enough to his/her eyes, a qualified ALSE Technician (Q2) may need to heat treat the thermo-plastic liner (TPL) to provide a proper fit.

(1) The following versions of the AN/AVS-6 ANVIS are the only systems authorized for aviation use:

AN/AVS-6(V) 1 NSN 5855-01-138-4749

AN/AVS-6(V) 2 NSN 5855-01-138-4748

AN/AVS-6(V) 1A NSN 5855-01-439-1745

(2) Image Intensifier Tubes - Rebuilt/refurbished image intensifier tubes are not authorized for use. Units shall not purchase or use rebuilt image intensifier tubes from the US Marine Corps Repair Facility at Barstow, Ca, or any other source. Any questions or concerns, contact Mr. Glen Nowak, para 16a.

(3) Newly fielded ANVIS that fail either the service upon receipt of material inspection or fail prior to the expiration of the warranty must be reported on a Product Quality Deficiency Report (PQDR), SF 368. The PQDR must be processed through the local CECOM avionics LAR and transmitted to CDR, CECOM. This will ensure the unit submitting the PQDR will receive credit for that NVG.

(4) Modification of AN/AVS-602 (NSN 5855-01-138-4748) version by replacement of the pivot and adjustment shelf (PAS), is not authorized. Contact Glen Nowak, para 16a for assistance.

(5) Installation of the Light Interference Filter (LIF), NSN 5855-01-379-1410, on AN/AVS-6 is mandatory IAW procedures contained in para 2-12, and figure 2-24 of TM 11-5855-263-10 (the correct LIF is depicted as the new LIF in this figure). AN/AVS-6 without this modification will not be used. Unit maintainers shall document the installation of the new LIF on DA Form 2408-15, Historical Record. POC is Glen Nowak, para 16a.

(6) AN/AVS-G(V)1 and AN/AVS-G(V)2 systems that are currently being manufactured under contracts DAAB07-93-C-K005 and DAAB07-93-C-K006 (omnibus III) have enhancements which include a new 25 mm eyepiece, dual Interpupillary Distance (IPD) adjustments, increased fore/aft adjustment range, increased tilt and improved tube performance. These (DAAB07-93-C-K005 and DAAB07-93-C-K006) systems can be mixed in the same cockpit with older version ANVIS or ANVIS which have been upgraded with any of these enhancements,

(7) The army is fielding omnibus IV ANVIS AN/AVS-6(V) 1 A systems (contract DAAB07-96-C-J209). These new ANVIS have improved image intensifier tube performance and can be readily identified by the yellowish color of the image.

(8) MX-10160 and MX-10160A image intensifier tubes shall not be mixed within any ANVIS. AN/AVS-G(V)1 A systems that require replacement image intensifier tubes will only use MX-10160A replacement tubes. MX-10160A replacement tubes will be installed in pairs in all AN/AVS-6(V) 1 and AN/AVS-602 systems requiring such maintenance.

(9) The ANVIS eyepiece tube retainer, NSN 5855-01-151-4226, material has been changed from plastic to metal. Either material is approved.

(10) Repair of the ANVIS Mount Assembly is limited to the repair of the shielded cable, IAW TB 1-1500-350-30.

(11) Beginning with the next 180-day service for ANVIS, remove the existing tamper mark from the six o'clock position on the eyepiece, and remark at the twelve o'clock position. This affects the following publications: TM 11-5855-263-10, Table 2-2, step 13 and TM 11-5855-263-23&P, Table 2-1, PMCS, sequence number 8 and setting collimation, para 3-15, step 23 (optional) and para 3-16, step 10. The use of any material other than the prescribed lacquer is prohibited.

e. Heads-Up Display.

[WARNING]

Use of any nylon cord as an ANVIS neck cord is unauthorized, as it may present a severe burning hazard in the event of a fire.

(1) AN/AVS-7 (ANVIS HUD)

(a) The ANVIS/HUD optical unit support clamps, when installed on the ANVIS monocular are permanent. Unit maintainers shall document the installation of the support clamps on DA Form 2408-I 5, Historical Record.

(b) Units are authorized to modify the foam insert of the ANVIS carrying case to accept ANVIS with optical unit support clamp installed.

(c) Installation of the ANVIS/HUD display unit requires removal of the standard ANVIS neck cord assembly, to facilitate egress from the aircraft in the event of an emergency. An additional (removal) neck cord assembly is provided with the ANVIS HUD. This cord must be removed from the ANVIS when the ANVIS/HUD is installed, and must be replaced prior to flying with the basic ANVIS. The assembly consists of a neck cord (strap, webbing), P/N 125302, NSN 5340-01-396-1746 and barrel fastener (cylinder), P/N 125301, NSN 5340-01-393-4890. This neck cord can also be used to replace the lanyard used on any standard ANVIS system.

(d) Current Technical Manuals supporting the AN/AVS-7 (ANVIS HUD) are as follows:

1 TM 11-5855-300-10, Operator's manual for Heads Up Display AN/AVS-7 (NSN 5855-01-350-0349) dtd 1 Aug 94.

2 TM 11-5855-300-23&P, Aviation Unit and Intermediate Maintenance Manual including Repair Parts and Special Tools List, Heads Up Display AN/AVS-7 (NSN 5855-01-350-0349), dtd 1 Dec 94.

3 TM 11-5855-263-10, Change 1, 1 Nov 96, Operator's Manual for the Night Vision Imaging System (ANVIS).

(2) OH-58D Optical Display Assembly (ODA). The ANVIS neck cord must be removed from the ANVIS when the ODA is in use.

f. Battery and Power Pack Assembly (Battery Pack) Information -

(1) ANVIS Clip-On Power Source (P/N A3260911) - PM NV/RSTA has provided, as initial issue (one per ANVIS system), a new power source which is an additional authorized item of the ANVIS, per Change 2 of TM 11-5855-263-10. This power source, utilizing two AA alkaline batteries, allows users to operate the ANVIS without the need for the Aviator's helmet mount. This item will facilitate testing with the TS-4348, and will assist aircrew members during escape and evasion,

(2) Batteries authorized for ANVIS are BA-5567/U lithium battery and (1.5 volt) AA alkaline battery, NSN 6135-00-985-7845. No other batteries (Nicad, Mercury, Carbon, any rechargeable, etc) are authorized for use with the ANVIS. The CECOM power sources team POC is Mr. Fee Leung at DSN 987-4735 or (732) 427-4735.

NOTE

AA lithium batteries (3.6 volts), NSN 6135-01-301-8776, are not authorized.

(3) There is no authorized repair of the ANVIS battery pack and/or cap.

(4) Battery packs marked with P/N 54490-5008900 and MFR-13567 function the same as "G3" battery packs. These battery packs will be tested the same as the G3 battery packs (The Low Battery Indicator) (LBI) will blink during operation).

g. Test Sets.

(1) TS-4348/UV and TS-3895A/UV Test Sets require calibration every 12 months. Calibrations are tracked with DA Label 80 that is attached to the body of the test set. Upon initial issue, turn the items into local TMDE for calibration (prior to use).

(2) TS-3895/UV (not the "Aversion) test set does not require calibration. The DA Label 80 must be stamped with "CNR" (calibration not required) and affixed to the main plate.

(3) For maintenance guidance or calibration on TS-3895A/UV, TS-3895/UV, or TS-4348/UV contact US Army TMDE Activity, AMXTM-LM-AMR, Mr. Ed Copeland at DSN 788-2698 or (256) 842-2698, Fax (256) 876-3070 or PM-NVEO, Glen Nowak para 16a.

NOTE

During crewmember pre-Operational checks, the TS-4348/UV may be utilized as an optional check, to assist in evaluating image intensifier resolution and clarity. Operate the test set IAW TM 11-5855-238-10 (dtd 15 May 93), TM 11-5855-263-10 (dtd 1 Mar 94) or TM 11-5855-299-12&P (dtd 15 Mar 92).

(4) TS-3895A/UV and TS-3895/UV require an annual optical check using collimation attachment and diopter scope IAW TM 11-5855-264-14. Schedule and document the annual inspection IAW DA PAM 738-750.

(5) TM 11-5855-264-14, page 5-7, item number 3, Table 5-1: Delete the voltage verification check only for the TS-3895A/UV from the AVIM, DS/GS annual maintenance schedule.

(6) The use of the radiometric test set (interferometer, NSN 5860-01-178-5837) after replacing the TS-3895A/UV PC Board Box Assembly or the Reticule Lens Assembly at AVIM, DS/GS is no longer required. After replacing these items, send the TS-3895A/UV to TMDE for calibration.

(7) The correct NSN and P/N for the TS-3895A, goggle connector cable (power), is NSN 5855-01-151-4212, and P/N 5003265.

(8) CECOM is conducting a retrofit program to replace the TS-3895/UV, NSN 6625-01-134-7146, with the TS-3895A/UV, NSN 6625-01-301-6894. Repair parts are no longer available for the TS-3895/UV. Contact CECOM item manager Joe Hussey, DSN 987-1009 or (732) 427-1009. EMAIL is husseyj@doim6.monmouth.army.mil.

(9) AN/AVS-6 systems using MX-10160A image intensifier tubes are not required to pass the system current drain check using the TS-3895 or TS-3895A listed as part of the 180-Day service in TM 11-5855-263-23&P.

(10) The AVS-126 Test Set (a commercial item) is not authorized for use at the AVIM, AVUM, or DS/GS maintenance levels.

h. Modification Work Orders (MWO) -

(1) The following MWOs must be applied to aircraft prior to NVG operations (aircraft with NVG compatible components that have been replaced since initial application of MWO and do not meet interior lighting requirements must eliminate the effects of red or white lighting IAW para 81(1)).

(a) H-60 Series - Aircraft S/N 8524462 and subsequent are authorized for NVG use when delivered with exceptions listed below. Aircraft S/N 8524461 and prior are required to have MWO 55-1520-237-50-20 installed for NVG use. Aircraft 85-24745 thru 85-24750, 85-25511, and 85-25512 are required to have MWO 55-1520-237-50-20 installed for NVG use. All aircraft are required to comply with TB 1-1520-237-20-139 (UH-60-94-ASAM-01) (red lighting from PDU and CDU is filtered and NVG compatible).

(b) UH-1H/V- Concurrent installation of MWO 55-1520-210-50-7 and MWO 55-1520-210-50-11 is required for NVG use. Otherwise, installation of MWO 55-1520-210-50-10 or MWO 55-1520-210-50-12 is required for NVG use. Aircraft are required to comply with TB 1-1520-243-20-24 (ASAM UH-1-97-ASAM-02) which removes obscuring paint or tape applied by the

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aforementioned MWOs. Aircraft are also required to comply with ASAM UH-1-97-ASAM-05 which reapplies paint to position lights after removal per UH-1-97-ASAM-02,

NOTE

UH-1 H/V aircraft which have the AN/ARC-186 radio and/or the AN/ARC-164 UHF radio installed must have the lighting to the control disabled until NVG compatible lighting for the control is available. Procedures for this is as follows:

1 If the C-10604/ARC-186 or the C-10606/ARC-186 is installed as a result of MWO 55-1520-210-50-14, disable the control head lighting wire by removing terminal lug for wire number ARC186-19A22 from TB12, Pin 3. Cap and stow wire for future use, This wire may be reconnected when the control is modified with NVG compatible lighting.

2 If the C-10604 or the C-10606 is not installed via use of an MWO (i.e. AN/ARC-186 radio is located in the rear of the aircraft, right side, on top of the previously installed RT-857/ARC-134 radio mount), disable the control head wire by removing terminal lug for wire number ARC134-35A20 from TB12, Pin 2. Cap and stow the wire for future use. This wire may be reconnected when the control is modified with NVG compatible lighting.

3 If the RT-1354/ARC-186 (red lighting) is installed in lieu of the AN/ARC-115, the lighting must be disabled by cutting wire number ARC 115-3A22 going to pin C of the AN/ARC-115 radio connector P1151. Cap and stow the wire for future use. This wire may be reconnected when the radio is modified with NVG compatible lighting.

4 If the AN/ARC-51BX UHF radio or the C-9682B/ARC-164 have quick control is installed, disable the lighting wire by cutting wire No. L122A20 going to Pin P of the C-6287/ARC-51 BX or C-9682B/ARC-164 control connector No. P3801.

5 If the C-9682C/ARC-164 have quick control or the C-11721/ARC-164 control is installed, the lighting may be enabled by reconnecting wire No. L122A20 going to pin P of radio connector P3801.

6 If the panel mount ARC 164 radio (RT 1518C) is installed with NVG compatible lighting, lighting to the radio may be activated by completing the connection of wire No. ARC 164-3A22 from the ARC 164 radio connector No. P1, pin C to TB12, Pin1. If the lighting is not NVG compatible, the lighting must be disabled by disconnecting wire No. ARC 164-3A22 from TB 12, Pin 1. See para h(2) below for avionics approved for NVG use.

7 Use of the ID-2192A/ARN-124 indicator is authorized for NVG missions in the UH-1 H/V aircraft.

(c) OH-58A - MWO 55-1520-228-50-31 is required to be installed for NVG use.

(d) OH-58C - MWO 55-1520-228-50-32 is required to be installed for NVG use.

(e) OH-58D Kiowa Warrior - All aircraft from production and retrofit lines are considered acceptable for NVG use. No MWO is required. Use of the ANVIS display symbology system optical display assembly is authorized. NVG use is prohibited when the Hamilton standard Pilot Display Unit (PDU) is installed.

(f) CH-47D - CH-47D aircraft are authorized for NVG use when delivered with the exception of aircraft S/N 84-24187 and prior which are required to have MWO 55-1520-240-50-3 installed.

(g) AH-1 S - MWO 55-1520-234-50-1 and MWO 55-1520-234-50-4 are required to be installed for NVG use.

(h) AH-1E, F, and P - MWO 55-1520-236-50-4 and MWO 55-1520-236-50-5 are required to be installed for NVG use.

(2) Update on ANVIS blue-green lighting upgrade/modification kits for avionics components.

(a) MWOs have been approved and ANVIS lighting upgrade/modification lighting kits on avionics components listed below are available from USACECOM. Listed items have been identified as the primary avionics components requiring ANVIS blue-green lighting modification/upgrade:

AVIONICS COMPONENT/LRU	ANVIS LIGHTING MOD KITS NATIONAL STOCK NUMBERS	ESTIMATED MANHOURS/ LOCATION FOR KIT INSTALLATION
CP-1252/ASN-128, Doppler Radar	N/A	10 (Depot)
AN/ARC-164, UHF/AM Radio	1680-01-342-6491	3 (AVIM)
RT-1354/ARC-186 VHF/AM Radio	1680-01-342-6490	3 (AVIM)
C-10604/ARC-186 VHF/AM Radio Control	1680-01-342-6492	3 (AVIM)
C-10606/ARC-186 VHF/AM Radio Control	5821-01-209-0109	3 (AVIM)
RT-1285/APX-100 Transponder/IFF	1680-01-342-6489	6 (AVIM)
RT-1296/APX-100 Transponder/IFF	1680-01-342-6488	6 (AVIM)
C-10533/APX-100 Transponder/IFF	1680-01-342-6487	6 (AVIM)
AN/ARC-114 VHF/FM Radio	1680-01-342-6494	3 (AVIM)
ID-2192/ARN-124 DME Control	1680-01-407-4440	3 (AVIM)
C-7392A/ARN-89 ADF Control	6210-01-230-0531	1/2 (AVUM)
C-10048/ARN-123 VOR Control	5895-01-346-1368	5 (AVIM)
C-6533/ARC Intercom	6210-01-230-9106	(AVUM/AVIM) See TM

(b) With the exception of the CP-1252/ASN128, all ANVIS lighting upgrade/modification kit MWOs can be installed at the AVIM level. All assets for the above components/LRUs received from procurement or overhaul actions are now being issued with NVG compatible lighting. The C-10048/ARN-123 lighting upgrade kit may now be installed at the AVIM level, and is available through USACECOM. Kits may be ordered through the equipment manager for the various systems.

(c) The C7392A/ARN-89 ADF (NSN 6210-01-230-0531, P/N EGD-0929-1) and the C-6533/ARC intercom (NSN 6210-01-230-3109, P/N EGD-0929-5) require only a filter change to become NVG compatible. This modification can be done at the AVUM/AVIM level IAW the applicable TM.

(d) CECOM ANVIS lighting kit POC is Mr. Robert Mansfield, DSN 992-3800 or (732) 532-3800. EMAIL is mansfiel@doim6.monmouth.army.mil or Mr. Dwight Deatherage, DSN 992-1626 or (732) 532-1626. EMAIL is deathera@doim6.monmouth.army.mil.

(e) CECOM POC for ANVIS lighting support or data is Mr. Paul Truskowski, DSN 992-5065 or (732) 532-5065. EMAIL is truskow@doim6.monmouth.army.mil.

i. Lighting -

(1) Red or white lighting - Red or white lighting of any radio control, switch panel, instrument, master caution light, etc. must be attenuated IAW applicable publications to eliminate effects of red or white lighting prior to conducting NVG operations. Direct questions to Mr. Glen Nowak para 16a.

NOTE

Effects of lighting from nonstandard equipment must be eliminated IAW the above para prior to conducting NVG operations, unless the applicable airworthiness release (AWR) specifically authorizes the use of lighting from nonstandard equipment during NVG operations.

(2) Supplemental Lighting -

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(a) Supplemental lighting is defined as additional interior lighting which may consist of LIP lights (MIC Lights), finger lights, flashlights with filters and othersimilar devices. LIP/MIC lights and finger lights do not fulfill the flashlight requirements of AR 95-1.

(b) New Items - PM soldier has developed , tested and approved the following new items:

COMPONENT NOMENCLATURE	NATIONAL STOCK NUMBER
Finger Light	6230-01-357-2175
MIC Light	6240-01-362-4902
Flashlight Filter (1.715 inch)	6230-01-369-1658
Flashlight Filter (1 inch)	6230-01-369-1659
Flashlight Filter (0.895 inch)	6230-01-369-1657
AA Flashlight	6230-01-259-4495
ANVIS Compatible Flashlight Filter (W/Boot)	6230-01-393-2365

(c) If the above are not available, the use of supplemental lighting which passes the evaluation of para 81(2)(d) below is authorized. The specific lighting configurations authorized by unit commanders must be defined in unit SOPS. Additionally, unit commanders must ensure crew members receive instruction in the use of authorized supplemental lighting including flashlight filters. As a minimum, the following training must be addressed and documented:

- 1 Operation and use of lighting.
- 2 Cautions/Warnings associated with the lighting.
- 3 Demonstrate degradation of the NVG performance caused by supplementary lighting.
- 4 Verify knowledge of use.

NOTE

Flashlights with red or white lighting may not be used except for ground operations or in the cargo compartment of UH-1, UH-60 or CH-47 aircraft, at the discretion of the pilot in command (PC).

(d) Supplemental lighting degradation evaluation - A method for evaluating the effects of supplemental lighting with ANVIS is as follows:

1 **At** night, in an aircraft located in an area of low ambient light (landing zone, etc), with interior lighting set for NVG operations, and with ANVIS prepared for use, position a reflective material (map sheet, note card, vinyl checklist, etc) at reading distance from your eyes (approximately 12 to 18 inches).

2 **Shine** the supplemental light onto the material. With the unaided eye, look at the resultant reflection cast on the windscreen,

3 **Observe** the same reflection through the ANVIS. An acceptable supplemental light source will allow NVG aided vision through the reflection, The reflection can even disappear.

4 If the reflection blocks ANVIS aided vision, this light source should be deemed unacceptable.

j. Laser Pointers -

(1) A study has been performed regarding the use of laser pointers in the cockpit of army aircraft. Results indicate the use of visible laser pointers, or near-infrared (Near-IR) laser pointers greater than class I, severely degrades the performance of NVGs and creates an eye hazard when used in the cockpit of army helicopters,

(2) The AN/PA&4C infrared aiming light (NSN 5855-01-398-4315, LIN Number 34938, \$225.00 ea) is a class I, Near-IR (830-860 nanometers) laser, which provides reasonable range performance

with little to no degradation of the ANVIS performance when directed through the windscreen of helicopter cockpits. This laser is deemed acceptable for use. Any class I Near-IR laser is acceptable for use in the cockpits or cargo compartments of army helicopters.

(3) Laser pointers other than class I Near-IR lasers may only be used in the cargo compartment of UH-1, UH-60 or CH-47 aircraft, at the discretion of the PC. The PC should include the use of laser pointers in the crew and passenger briefing.

WARNING

Users should be aware that any laser can permanently or temporarily degrade the performance of NVGs if used improperly. Any laser that is not a class I laser device has the potential to cause direct permanent damage to the eye.

(4) Unit commanders will (if applicable) develop SOPS regarding the safe use of laser pointers during NVG helicopter missions. Guidance regarding hazards associated with tactical laser pointers is available from the U.S. Army Center for Health Promotion and Preventive Medicine, DSN 584-3932 or (410) 671-3932. EMAIL is mchbdsl@aeahal.apgea.army.mil. General guidance regarding the safe use of lasers is available in the following video tapes:

- (a) TVT-20-835, Guidelines for Laser Safety.
- (b) TVT-20-854, SAVPIN 705980DA, Lasers in Combat and Training.
- (c) TVT-20-855, SAVPIN 705981 DA, Lasers, The New Threat.

k. IR Bandpass Filters -

(1) The IR filter (pink light), P/N EGD-0931-1 may be installed IAW the applicable aircraft MWO or in the absence of MWO instruction, based on the operational requirements of the user.

(2) Units are authorized to use the bulb which best suits their operational environment and mission as follows:

PART NUMBER	NSN	VOLTAGE	WATTAGE	CANDLEPOWER
4571	6240-00-690-1094	28.0	150	7,000
4551	6240-00-583-3334	28.0	250	75,000
4553	6240-00-816-4808	28.0	250	300,000
4596	6240-00-577-8450	28.0	250	150,000
4626	6240-00-917-0771	28.0	150	3,000

PART NUMBER	HORIZONTAL (BEAM SPREAD)	VERTICAL (BEAM SPREAD)
4571	80 Degrees	25 Degrees
4551	50 Degrees	10 Degrees
4553	11 Degrees	12 Degrees
4596	11 Degrees	12 Degrees
4626	9 Degrees	40 Degrees

NOTE

Maximum permissible wattage is 250 watts.

l. Physical Security -

(1) Units should use the following references and their local requirements for ANVIS physical security and accountability:

- (a) AR 190-51, Physical Security.
- (b) AR 710-2 and AR 735-5, Unit Supply.

(2) For further guidance, contact the local physical security manager/officer.

m. Miscellaneous Information -

(1) NVG operations in the AH-64 aircraft will be conducted IAW the Interim Statement of Airworthiness Qualification (ISAQ), dtd 29 Jun 94 with latest additions/changes dtd 29 Nov 94. Specific NVG restriction extracts of the ISAQ are included as follows:

NOTE

Night Vision Goggles are intended to augment the PNVIS by providing the CPG with the capability to look for obstacles,

- (a) Pilot night vision sensor remains the primary sensor and must be operational prior to take-off, and during the entire mission.
- (b) The pilot will use PNVIS while the CPG is using NVG.
- (c) Only the CPG may use NVG during flight, assuming flight control only at times when the pilot cannot safely fly the aircraft, and for training requisite for NVG qualification as specified by TC1-214, 24 May 1990.
- (d) CPG integral red panel lighting will be "OFF".
- (e) CPG caution/warning/advisory light (red only) will be set to night (dim) mode.
- (g) CPG glarshields will be full extended with "bat wings" in place.

NOTE

Light interference resultant of fire handle or master caution light activation can cause NVG to become inoperative.

(g), Operating and maintenance instructions shall be IAW TM 11-5855-263-10, Operator's manual for Aviator's Night Vision Imaging System (ANVIS), AN/AVS-601 and AN/AVS(V)2, 5 July 1983, and with TM 11-5855-263-23, Aviation Unit and Direct Support Maintenance Manual, Aviator's Night Vision Imaging System, AN/AVS-G(V)1 and AN/AVS-602, 1 June 1986.

(h) CPG NVG training will be IAW TC-1-214.

(i) During close formation flying, external lights will be limited to formation lights only, except for the trail aircraft which will also utilize navigation and anti-collision lights.

(2) Problems have been reported with the metal clip in the SPH-4B ANVIS attachment Kit. Problems concern the fact that the retaining screws that secure the clip to the visor loosen after minimum use. The clip will not tighten enough to secure the NVG cable, and others. Recommend using clamp loop, NSN 5340-00-434-9596, to properly secure the NVG cable connector to the helmet.

(3) TM 11-5855-263-10, dtd 1 Mar 94, Table 2-2, page 2-11, step 13, Not usable If Column, add the following: "aircrew shall check that both eyepieces are identical (either two 15MM eyepieces or two 25MM eyepieces)".

(4) TM 11-5855-263-10, dtd 1 Mar 94, page 2-40, para 2-6a, Operating Instructions, change the NOTE text to the following: "ANVIS will accommodate the use of eyeglasses."

(5) TM 11-5855-263-10, dtd 1 Mar 94, page B-6, section 3, Basic Issue Items, illustration No. 6, change NSN for neck cord assembly to read: NSN 5855-01-149-4106. The length of this neck cord is 42 inches. An additional neck cord assembly is available, see para 8e(1)(c) of this TB.

(6) TM 11-5855-263-10, dtd 1 Mar 94, page C-2, section II, Additional Authorized Items, neck cord holder kit is authorized for use.

(7) TM 11-5855-263-23&P, dtd 15 May 95, page 3-35, para 3-16, setting collimation for 25mm eyepiece, add the following anti-tamper lacquers in the initial setup, under Material/Parts: NSN 8030-00-408-1137 (green), NSN 8030-01-077-7674 (white), NSN 8030-01-163-3483 (yellow).

(8) TM 11-5855-263-23&P, dtd 15 May 95, page B-8, section III, Tools and TEST Equipment Requirements, tool ref code 13, soldering iron, electric change NSN to read "3439-01-183-4632".

(9) The new monocular housing, housing image intensifier, P/N 5009524, NSN 5855-01-380-9669 on the ANVIS has a new anti-wobble enhancement. When replacing the monocular housing in the Pivot and Adjustment Shelf (PAS), do not reinstall the PAS bellows when reassembling the shelf.

(10) The following NSNs are available from supply:

- (a) 9150-00-145-0161, silicon grease
- (b) 6830-01-335-5741, compressed air refill (16 oz)
- (c) 6230-01-259-4495, AA flashlight
- (d) 6230-01-393-2365, ANVIS compatible flashlight filter (w/boot)
- (e) 5120-00-729-6392, wrench, hex, 5/64 inch (for ANVIS HUD clamps)

(11) The ANVIS purge device (JA215008) has a builtin pressure regulator called a PSI pop-up valve, P/N B-4CP2-5. If problems have been experienced, units should ensure the pop-up valve is a P/N B-4CP2-5 and not B-4CP2-1. This item may be purchased from Nupro Company, 4800 east 345th Street, Wiloughby, Oh 44094. Call Nupro customer service (216) 951-7100 for the local distributor.

(12) ANVIS components such as the battery pack and visor assembly do not require PMCS until placed into service; however, those not in service are required to be tagged IAW DA PAM 738-751,

(13) This is a clarification regarding completion of the permanent maintenance record for the ANVIS on DA Form 2408-15. All maintenance repair, such as installation of the enhanced PAS, or replacing 15 MM lens assemblies with 25 MM lens assemblies, will be documented by transferring the information from the maintenance work order to the DA Form 2408-15.

(14) AVUM unit maintainers will conduct a records check prior to submitting ANVIS to AVIM for 180-day service. This records check will be annotated on DA Form 2407 remarks block A.

(15) AVIM maintenance organizations, upon completion of the 180-day service for AVIM-owned ANVIS systems, must document this maintenance action on DA Form 2407.

(16) The use of electronically generated forms is authorized.

n. The following Technical Bulletins and messages have expired:

(1) TB 1-1520-237-20-139, subject - H60, Night Vision Goggle (NVG) Compatibility Rework of Master Warning Panel Assembly. This TB expired 17 Oct 95.

(2) TB 1-1520-237-50-139, subject - H-60, Night Vision Goggle (NVG) Compatibility Rework of Master Warning Panel Assembly. This TB was superseded by TB 1-1520-237-20-139.

(3) TB 1-1500-347-30, subject - Use of the Dual Visor on the SPH-4B, dated 19 Nov 93. This TB was superseded by TB 1-1500-350-30, dated 26 Feb 96.

(4) TB 1-1500-348-30, subject - Aviation Night Vision Goggle Maintenance Documentation, dated 18 Nov 94. This TB was superseded by TB 1-1500-350-30, dated 29 Dec 95. This TB will be superseded by the new DA PAM 738-751.

TB 1-1500-346-20

(5) CDR USAAVNC Message, 211300Z Dec 93, subject Aviator's Night Vision Imaging System (ANVIS) Maintenance Qualification Training Guidance. This message **was** superseded by CDR USAAVNC Message, 0416002 Mar 96. This message was superseded by CDR USAAVNC, 1819022 Nov 96. This message has been superseded by CDR USAAVNC Message, 1915372 Feb 97.

9. **Correction Procedures - N/A.**

10. **Supply/Parts and Disposition - N/A.**

11. **Special Tools, Jigs and Fixtures Required - N/A.**

12. **Application - N/A.**

13. **References - N/A.**

14. **Recording and Reporting Requirements - N/A.**

15. **Weight and Balance - N/A.**

16. **Points of Contact -**

a. PM-NV/RSTA POC is Mr. Glen Nowak, SFAE-IEW-NV-L, DSN 654-3453 or (703) 704-3453. Fax is (703) 704-1111. EMAIL is gnowak@nvl.army.mil.

b. Aviation Training Brigade POC is CW5 Stevens, or CW3 Ron Price, ATZQ-ATB-NS, DSN 558-9545/9515 or (334) 255-9545/9515. Fax is DSN 558-3532 or (334) 255-3532. EMAIL is atz-qatbns@rucker-emh4.army.mil. The ATB's NVG web page is at <http://www-rucker.army.mil/atb/nvd/nvdm.htm>.

c. AN/AVS-7 (ANVIS HUD) POC is Ms. Chris Massimi, SFAE-IEW-NV, DSN 654-2130 or (703) 704-2130. Fax is DSN 654-3449. EMAIL is cmassimi@nvl.army.mil,

d. CECOM IAR Action Officer is Mr. Steve Borman, DSN 236-4064/2814, or (910) 396-4064/2814, beeper 1-888-553-7347. EMAIL is borman@doim6.monmouth.army.mil.

e. CECOM Safety POC is Mr. Jay Hanrahan, AMSEL-SF, DSN 992-0084, ext 6406 or (732) 532-0084 ext 6406. EMAIL is hanrahan@doim6.monmouth.army.mil.

f. Supplemental lighting at AMCOM POC is Mr. Robert D. Brock, AMSAM-SF-A, DSN 788-8632 or (256) 842-8632. EMAIL is brock-rd@redstone.army.mil.

g. Supplemental lighting and SPH-4B helmet at PM Soldier is Mr. Ed Taylor, DSN 654-3845 or (703) 704-3845. Fax is DSN 654-3820/3841. EMAIL is pmsdr@pmsoldier.us.net.

h. NGB POC is CW5 Rick Andrews, DSN 327-7759 or (703) 607-7759. EMAIL is andrewsr@arngr-cemh2.army.mil or CW4 Don Beatty, EAATS-FTD, DSN 491-8688 or (717) 861-8688. EMAIL is beatyde@pa-arngr.ngb.army.mil.

i. PM ACIS POC is Mr. James Hauser, SFAE-AV-LSE, DSN 897-4267, or (256) 313-4267. EMAIL is hauserj@peoavn.redstone.army.mil.

j. PM ACIS POC is SSG Marcella Fisher, SFAE-AV-LSE, DSN 897-4259, or (256) 313-4259. EMAIL is fisherm@peoavn.redstone.army.mil.

k. USASC POC is CW5 Bob Brooks, CSSC-PMA, DSN 558-1253 or (334) 255-1253. EMAIL is brooksr@safety-emhl.army.mil.

l. AH-1 and OH-58A/C is Mr. John Guenther, AMSAM-DSA-CO, DSN 788-0974 or (256) 842-0974. EMAIL is guenther-js@redstone.army.mil.

m. UH-1 POC is Mr. Steve Riebling, AMSAM-AR-E-I-B-U, DSN 645-0629 or (256) 955-0629. EMAIL is riebling-sc@redstone.army.mil.

n. UH-60 POC is Mr. Ralph Smith, AMSAM-DSA-UH-L, DSN 645-6547 or (256) 955-6547

o. OH-58D(I) POC is Mr. Buzz Evers, AMSAM-DSA-A, DSN 645-6451 or (256) 955-6451. EMAIL is evers-rv@redstone.army.mil.

p. CH-47D POC is Mr. Cliff Karvinen, SFAE-AV-CH, DSN 897-4308 or (256) 313-4308. Fax is 897-4348.

q. AH-64A POC is Mr. Tony Mance, AMSAM-AR-E-S-C, DSN 987-4856 or (313) 4856. EMAIL is mancea@redstone.army.mil.

r. AMCOM Safety POC is Mr. Robert D. Brock, AMSAM-SF-A, DSN 788-8632 or (256) 842-8632. EMAIL is brock-rd@redstone.army.mil.

s. Foreign Military Sales (FMS) recipients requiring clarification of action by this TB should contact Mr. Ronnie Sammons, AMSAM-SA-CS-NF, DSN 897-0869 or (256) 313-0869. EMAIL is sammons-rd@redstone.army.mil.

t. Forms and Records POC is Ms. Ann Waldeck, AMSAM-MMC-RE-F, DSN 876-5564 or (256) 746-5564. EMAIL is waldeck-ab@redstone.army.mil.

u. After hours contact AMCOM Command Operations Center (COC) at DSN 897-2066/2067 or (256) 313-2066/2067.

17. **Reporting of Errors and Recommending improvements.** You can help improve this TB, If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) to US Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, AL 35898-5230. You may also submit your recommended changes by EMAIL directly to 1s-1p@redstone.army or by Fax 256-842-6546/DSN 788-6546. A reply will be furnished directly to you.

By Order of the Secretary of the Army:

Official:



JOEL B. HUDSON

*Administrative Assistant to the
Secretary of the Army*

04637

DENNIS J. REIMER
*General, United States Army
Chief of Staff*

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THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

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PUBLICATION DATE

PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE NO.

PARA-GRAPH

FIGURE NO.

TABLE NO.

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



PIN: 070030-000