TB 9-6625-2284-50

CHANGE 1

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR NIGHT VISION DEVICE DETECTOR STANDARD (APN 13335470)

Headquarters, Department of the Army, Washington, DC

27 September 2002

Approved for public release; distribution is unlimited.

TB 9-6625-2284-50, 9 January 1995, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page.

Remove Pages	Insert Pages
1 and 2	1 and 2
5 and 6	5 and 6

2. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

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REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedure, please let us know. Mail your letter or DA Form 2028 to: Commander, U. S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5230. A reply will be furnished to you. You may also send in your comments electronically to our e-mail address: 2028@redstone.army.mil or FAX 256-842-6546/DSN 788-6546.

CHANGE 1

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of transfer Night Vision Device (NVD) Detector Standard (APN 13335470). DA Form 3758 and engineering technique were used as the prime data sources in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. None

b. Time and Technique. The time required for this calibration is approximately 1 hour, using the dc and low and frequency technique.

2. Forms, Records, and Reports

a. Forms, records, and reports required for calibration personnel at all levels are prescribed by TB 750-25.

b. Adjustments to be reported are designated (R) at the end of the sentence in which they appear. Report only those adjustments made and designated with (R).

3. Calibration Description. TI parameters and performance specifications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Radiance responsivity at 820 nm	4.73×10^7 V/(W cm $^{-2}$ sr $^{-1}$) ± 10%
Intensity responsivity at 810 nm	1.51×10^7 V/(W sr $^{-1}$) ± 11%
Noise	NTE ± 0.02 mV

SECTION II
EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment to be used in this calibration procedure. This equipment is issued with Secondary Reference Calibration Standards Set, NSN 4931-00-621-7878. Alternate items may be used by the calibrating activity. The items selected must be verified to perform satisfactorily" prior to use and must bear evidence of current calibration. The equipment must meet or exceed the minimum use specifications listed in table 2. The accuracies listed in table 2 provide a four-to-one ratio between standard and TI. See footnote at table 2. Where the four-to-one ratio cannot be met, the four-to-one accuracy will be listed, and the actual accuracy of the equipment selected is shown in parenthesis.

5. Accessories required. The accessories required for this calibration are common usage accessories, issued as indicated in paragraph **4** above, and are not listed in this

calibration procedure. The following peculiar accessory is also required for this calibration: Collar, NVD Alignment, PN 13440057.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
SECONDARY REFERENCE NIGHT VISION DEVICE DETECTOR STANDARD	Radiance responsivity at 820 nm: 4.73×10^7(nominal) V/(W $Cm^{-2}sr^{-1}$) ±2.5% (±6%) Intensity responsivity at 810 nm: 1.51×10^7 V/(W sr^{-1}) ± 2.8% (± 7.5%)	PN 13335470 (1335470) (Selected, Blue Anodized with Calibration Test Report)
DIGITAL MULTIMETER	Range: 100 to 800 mV V dc resolution: .01mV Accuracy: ± 0.5% at 500 mV	John Fluke, Model 8506A/CT (p/o MIS-35974)
AUXILIARY SOURCE (REFERENCE)	Intensity at 810 (nominal): 3.03×10^{-8} W/sr	Test set electronic systems (modified TS-4348/UV) (TS-4348/UV modified)

'Procedure end item (TI) tolerance restricted to ±8% to maintain end item overall uncertainty of ±10%, 11% respectively

SECTION III
CALIBRATION PROCESS

6. Preliminary Instructions

a. The instructions outlined in paragraphs **6** and **7** are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration

b. Items of equipment used in this procedure are referenced within the text by common name as listed in table 2.

c. Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer's manual for this TI.

d. Unless otherwise specified, all controls and control settings refer to the TI.

7. Equipment Setup

a. Momentarily energize both secondary reference and transfer NVD detector standards; press battery test push-button and verify that red LED illuminates; if not, replace batteries and retest (see figure 1).

b. Remove auxiliary source (TS-4348/UV) from its protective case and orient vertically.

c. Install NVD alignment collar on the auxiliary source collimator port, ensuring that its scribe line is aligned with that on the body of the auxiliary source.

d. Firmly seat secondary reference NVD detector standard (blue anodized) into the NVD alignment collar, rotating in a clockwise direction until the scribe lines on the reference detector standard are in alignment with the auxiliary source scribe lines (fig. 2).

NOTE

Improper seating of NVD with alignment collar will result in erroneous readings.

e. Connect the reference NVD detector standard to digital multimeter (fig. 2).

NOTE

If NVD detector standard is exposed to overload light conditions, several minutes are needed in low light level conditions for it to recover.

f. Performance Check

(1) Turn secondary reference NVD detector standard power **ON/OFF** switch to **ON** and allow standard to warm up for 2 minutes.

NOTE

Digital multimeter must not be in autoranging position.

(2) Zero digital multimeter indication.

(3) Verify that reference NVD detector standard noise level does not exceed ±0.02 mV. (No adjustments can be made. Return reference standard to primary laboratory for maintenance/repair.)

(4) Set auxiliary source **HIGH LOW** switch to **HIGH.**

(5) Set auxiliary source **II**, **III**, **OFF** switch to **II**, and allow the auxiliary source to warm up for 10 minutes.

(6) Momentarily deenergize auxiliary source, re-zero digital multimeter, as required, and then reenergize auxiliary source.

(7) The multimeter indication shall be between 0.99 and 1.01 of the V(STD). If not, adjust auxiliary source through the adjustment access hole (fig. 2) for in-tolerance reading. Refer to calibration test report to obtain V(STD) value. If adjustment cannot be made, return reference detector standard and auxiliary source to primary laboratory for recertification.

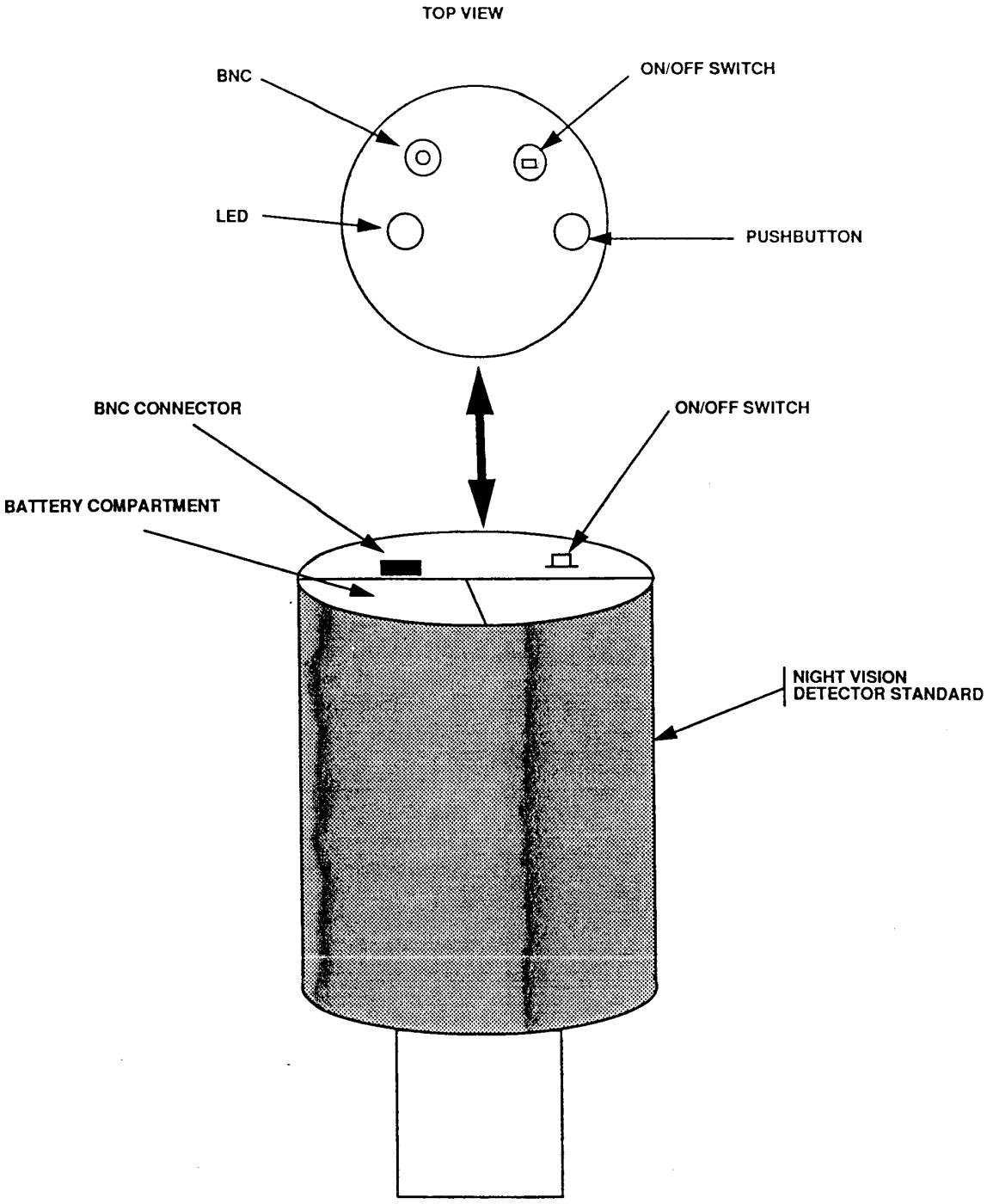

Figure 1. Night vision device detector standard - battery compartment cover location

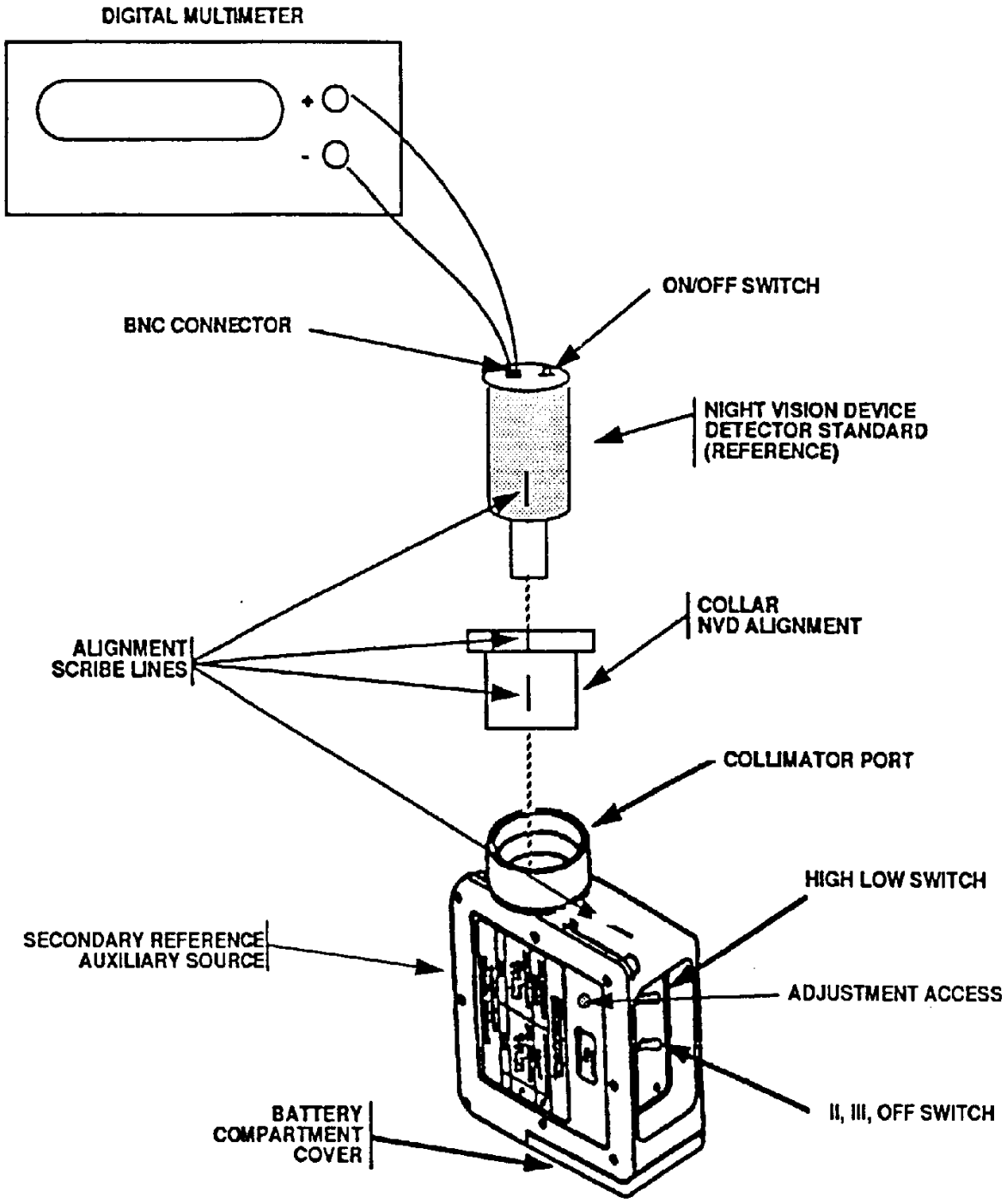

Figure 2. Night vision device detector (standard) - equipment setup

(8) Set secondary reference NVD detector standard power **ON/OFF** switch to **OFF,** disconnect BNC cable from NVD detector standard, and remove NVD detector standard from auxiliary source alignment collar.

8. Electro-Optical Gain Accuracy

NOTE

Scribe lines are not used on the transfer NVD detector standards (TI), but the TI must be rotated in the alignment collar to peak the voltage output.

a. Performance Check

(1) Install TI into auxiliary source collimator port, connect BNC cable to TI BNC jack, and ensure that TI is firmly seated into the alignment collar.

(2) Turn TI power **ON/OFF** switch to **ON** and allow TI to warm up for 3 minutes.

(3) Set auxiliary source **II**, **III**, **OFF** switch to **OFF.**

(4) Zero digital multimeter indication.

(5) Verify that TI noise level does not exceed ±0.02 mV. (No adjustments can be made). Return TI to primary for maintenance/ repair.

(6) Set auxiliary source **II, III**, **OFF** switch to **II,** and allow 2 minutes for settling time.

(7) TI will indicate between 421 and 495 mV.

(8) Deenergize and replace TI with secondary reference NVD detector standard to verify correct operation of auxiliary source. Repeat subparagraphs **8a**(1) through (4), (5) (except for 10-minute warm up), and (7).

CAUTION

Ensure proper alignment of scribe lines on reference NVD.

b Adjustments. No adjustments can be made. If out of tolerance, return TI to primary for repair/recertification

9. Final Procedure

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA label/form in accordance with TB 750-25.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief Of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant To The
Secretary Of The Army

Distribution:
To be distributed in accordance with Std IDS No. RLC-1500, 11 May 1992, Requirements For Calibration Procedure TB 9-6625-2284-50