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MILITARY SPECIFICATION

AVIATOR'S NIGHT VISION IMAGING SYSTEM
AN/AVS-6(V)1, AN/AVS-6(V)2

This specification is approved for use by USACECOM, Department of Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the Aviator's Night Vision Imaging System, AN/AVS-6(V)1 and AN/AVS-6(V)2, referred to herein as ANVIS (see 6.1).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards. The following specifications, standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2.h).

SPECIFICATIONS

MILITARY

MIL-P-11268	-	Parts, Materials and Processes Used in
MIL-B-49030/6	-	Battery, Dry, BA-3058/U
MIL-L-49426	-	Lens Assembly, Objective for Aviator's Night Imaging System, AN/AVS-6(V)1, AN/AVS-6(V)2

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to : HQ, USA Communications-Electronics Command, ATTN: AMSEL-ED-TO, Fort Monmouth, NJ 07703 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A: FSC 5855
DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

MIL-L-49427	-	Lens Assembly, Eyepiece for Aviator's Night Imaging System, AN/AVS-6(V)1, AN/AVS-6(V)2
MIL-I-49428	-	Image Intensifier Assembly, 18 mm Microchannel MX-10160/AVS-6
MIL-B-49430/4	-	Battery, Primary, Lithium, Sulfur Dioxide Electronic Equipment BA-5567/N

STANDARDS

MILITARY

MIL-STD-171	-	Finishing of Metal and Wood Surfaces
MIL-STD-454	-	Standard General Requirements for Electronic Equipment
MIL-STD-461	-	Electromagnetic Interference Emission and Susceptibility Requirements for the Control of Electromagnetic Interference
MIL-STD-462	-	Electromagnetic Interference Characteristics, Measurement of
MIL-STD-810	-	Environmental Test Methods

(Unless otherwise indicated, copies of federal and military specifications, standards and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099).

2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

5002500	-	Aviator's Night Vision Imaging System AN/AVS-6(V)1
5002600	-	Aviator's Night Vision Imaging System AN/AVS-6(V)2
5002760	-	Image Intensifier Assembly, 18 mm, MX-10160/AVS-6

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specified procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document shall take precedence. Nothing in this document, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The Aviator's Night Vision Imaging System (ANVIS) is an image intensification system for use in military helicopters as a pilot's aid to vision during nighttime low level and nap-of-the-earth (NOE) flight. The ANVIS provides the imagery required for takeoff, landing, and hover as well as enroute flight at altitudes below 200 feet above ground level, to include NOE at airspeeds up to 150 knots. The exact speeds and altitudes will be environmentally dependent. The ANVIS is compatible with the XM-30 series protective gas mask.

3.1.1 AN/AVS-6(V)1 design. The AN/AVS-6(V)1 consists of a helmet mount, herein referred to as the mount, a binocular imaging assembly, herein referred to as the binocular, a power pack, a carrying case, a shipping/storage case, and ancillary equipment (see 3.12.6). The mount consists of a mounting block for the binocular and an ANVIS peculiar visor guard that permits use of the SPH-4 visor. The binocular consists of two monocular subassemblies and a pivot and adjustment shelf herein referred to as the PAS. The PAS provides optical alignment and adjustment to permit binocular viewing and provides the means of attaching the binocular to the mount. Each monocular subassembly consists of an objective lens assembly, third generation image intensifier tube assembly, monocular housing assembly and eyepiece lens assembly. The power pack contains either two lithium batteries (BA-5567/U in accordance with MIL-B-49430/4) or four AA batteries (BA-3058/U in accordance with MIL-B-49030/6 as the primary power sources and accepts power from an aircraft mounted power converter and will automatically switch from aircraft to battery power (the aircraft mounted power converter is not provided as part of the ANVIS). The power pack contains circuitry that monitors the voltage of the battery in use and provides in the mount a visual signal to the pilot when that battery approaches end of life. The carrying case provides protection for the ANVIS against the conditions associated with carrying the ANVIS in a field environment. The shipping case provides protection of the ANVIS against damage associated with transportation, handling and storage.

3.1.2 AN/AVS-6(V)2 design. The AN/AVS-6(V)2 design is identical to AN/AVS-6(V)1 except as follows: The mount is designed for installation in the slot of existing visor shields which are modified with a helmet mounted sight kit for weapon firing. The binocular PAS is offset to mate with the AN/AVS-6(V)2 Mount. Unless otherwise specified, all references to mounts and binoculars are for both the AN/AVS-6(V)1 and AN/AVS-6(V)2 designs.

3.2 Construction. The AN/AVS-6(V)1 shall be assembled in accordance with 5002500 and as specified herein. The AN/AVS-6(V)2 shall be assembled in accordance with 5002600 and as specified herein.

3.3 Qualification. Systems furnished under this specification shall be products which are authorized by the Government as Qualified Products (see 3.12.7).

3.3.1 Initial production testing (IPT). When specified in the contract, the supplier shall furnish and test assemblies as specified herein (see 4.3). Disposition of IPT samples shall be in accordance with contract or purchase order.

3.4 Parts and materials. Parts and materials shall be as specified herein and as shown on applicable drawings. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification and shall conform to MIL-P-11268.

3.5 Major components. The ANVIS consists of the following major components as detailed herein:

Drawing	COMMON ITEMS
5002550	Lens assembly, objective, MIL-L-49426
5005836	Lens assembly, eyepiece, MIL-L-49427
5002760	Image intensifier assembly, 18mm, MX-10160/AVS-6, MIL-I-49428
5008900	Power pack assembly
5002602	Carrying case assembly
5002480	Case, shipping and storage
5002530	Mount assembly
5002520	Binocular assembly
5002570	Pivot and adjustment shelf assembly
5002610	Offset mount assembly
5002636	Offset binocular assembly
5002620	Offset assembly pivot and adjustment shelf assembly

3.6 Performance and environmental characteristics.

3.6.1 Field of view (FOV). The field of view shall be 40, (+1, -2) degrees.

3.6.2 Magnification (M). System magnification shall be unity (1X, ± 5 percent).

3.6.3 Distortion. Distortion shall be not greater than 4 percent across the total field of view.

3.6.4 Resolution. At true infinity focus, each monocular shall have on-axis resolution not less than 0.76 cycles per milliradian. At 14 degrees off-axis, resolution shall be not less than 0.55 cycles per milliradian. At the infinity stop, each monocular shall have an on-axis resolution not less than 0.49 cycles per milliradian.

3.6.5 Brightness gain. The brightness gain shall not be less than 2,000 footlamberts per footlambert.

3.6.6 Collimation. When two parallel beams of collimated light are projected into the objective lenses, with the objectives adjusted to or operating in the infinity focus position and both eyepieces set at zero diopter, the conjugate beams emerging from the two eyepieces shall be collimated within 1 degree divergence/convergence and within 0.5 degree dipvergence.

3.6.7 Controls and adjustments.

3.6.7.1 ON/OFF/ON switch. The three-position switch located in the power pack shall turn the system ON, OFF and ON. Each ON position shall light both image tubes, when powered by aircraft power supplied by the aircraft power converter, or by batteries in the power pack. In either ON position, the power pack will automatically switch to battery power when aircraft power is lost or interrupted. Each ON position operates off of one battery/battery pack. In either ON position, with both batteries/battery packs installed, the power pack shall light the Low Battery Indicator LED located in the mount when the battery voltage of the battery in use reaches 2.3 +0.2, -0.1 volts direct current (Vdc). In the OFF position, neither image intensifier tube shall light.

3.6.7.2 Objective focus range. The objective focus adjustment range shall be from 28 $\pm$ 3 cm to infinity. The torque required to adjust the objective lens focus range shall be 80 inch-ounces maximum to 10 inch-ounces minimum.

3.6.7.3 Eyepiece diopter range. The minimum diopter focus range shall be from +2 to -6 diopters at a 15 millimeter (mm) eye relief. The torque required to adjust the eyepiece focus range shall be not less than 10 inch-ounces nor greater than 130 inch-ounces.

3.6.7.4 Interpupillary distance adjustment range. The interpupillary distance adjustment shall vary the interpupillary distance between the monoculars over a range of 52mm to 72mm.

3.6.7.5 Vertical adjustment range. The vertical adjustment in the mount shall vary the vertical distance of the binocular relative to the mount a distance not less than 16mm.

3.6.7.6 Fore/aft adjustment range. The fore/aft adjustment in the binocular shall vary the distance of the monoculars relative to the fore/aft shelf a distance not less than 16mm.

3.6.7.7 Tilt adjustment range. The tilt adjustment in the binocular shall vary the angle of rotation of the monoculars relative to the pivot and adjustment shelf a total of not less than 8 degrees.

3.6.8 Mount/binocular interface.

3.6.8.1 Automatic breakaway. The minimum force required for the binocular to break away from the mount in a forward direction away from the pilot's head shall be between 10 g and 15 g (see 3.12.5).

3.6.8.2 Flip-up/flip down. The binocular shall move from both the operating position to the stowed position or the stowed position to the operating position with less than a 10 g force, and always remain in the mount when the lock release button is activated. The binocular shall lock in position for both the operating and stowed positions. The image intensifier tubes shall not be activated when the binocular is in the stowed position.

3.6.8.3 Electrical interface. Interface with aircraft electrical power shall be with an aircraft power converter mounted through the aircraft's dc circuit panel. When supplied with the 3.8 ± 0.1 Vdc input power from the aircraft power converter, the ANVIS power pack/mount shall provide +2.9, (+0.3, -0.5) Vdc to the image intensifier tubes.

3.6.9 High temperature. The ANVIS shall be capable of continuous operation within the temperature range of ambient (see 3.12.3) to +52°C and shall not be damaged (see 3.12.1) by storage and transportation within the temperature range of ambient to +71°C.

3.6.10 Low temperature. The ANVIS shall not be damaged (see 3.12.1) by continuous operation within the temperature range of ambient to -32°C or storage and transportation within the temperature range of ambient to -35°C.

3.6.11 Temperature shock. The ANVIS shall not be damaged (see 3.12.1) by sudden temperature changes over the temperature range of +71°C to +23°C and +23°C to -35°C.

3.6.12 Temperature-altitude. The ANVIS shall not be damaged (see 3.12.1) by continuous operation throughout the operating temperature range at altitudes of sea level to 15,000 feet or the nonoperating temperature range at altitudes to 50,000 feet.

3.6.13 Humidity. The ANVIS shall not be damaged (see 3.12.1) by humidities greater than 95 percent, including conditions wherein condensation takes place in and/or on the equipment during both operating and nonoperating conditions. Fogging on the inside of glass or plastic elements shall not occur.

3.6.14 Vibration.

3.6.14.1 Sinusoidal vibration (ambient). The ANVIS shall not be damaged nor suffer degradation (see 3.12.1 and 3.12.2) of performance when subjected to vibration within the frequency range and amplitude shown on Figure 1 at ambient temperature (see 3.12.3).

3.6.14.2 Sinusoidal vibration (temperature). The ANVIS shall not be damaged nor suffer degradation (see 3.12.1 and 3.12.2) of performance when subjected to vibration within the frequency range and amplitude shown on Figure 1 at -32°C and +52°C.

3.6.14.3 Bounce, loose cargo. The ANVIS in its carrying case and shipping case shall not be damaged and shall operate without degradation after 3 hours of vibration normally induced during combat transportation as loose cargo (see 3.12.1 and 3.12.2).

3.6.15 Transit drop. The ANVIS in its carrying case and shipping case shall not be damaged and shall operate without degradation of performance after being subjected to a 48-inch drop on all faces, edges and corners of the shipping case (see 3.12.1 and 3.12.2).

3.6.16 Sand and dust. The ANVIS shall not be damaged and shall operate without degradation after exposure to fine sand and dust particles (see 3.12.1 and 3.12.2).

3.6.17 Fungus. The ANVIS including carrying case, shipping case, and ancillary equipment shall not be damaged by exposure to fungus growing environment (see 3.12.1).

3.6.18 Salt fog. The ANVIS shall not be damaged and shall operate without degradation after exposure to salt-fog atmosphere (see 3.12.1 and 3.12.2).

3.6.19 Explosive atmosphere. The ANVIS shall not cause ignition of a gaseous air mixture when operating in an explosive atmosphere environment.

3.6.20 Electromagnetic interference (EMI). The performance of the ANVIS system shall not be degraded nor shall it interfere with other equipment while operating in a military electromagnetic environment or be adversely affected by an existing electromagnetic interference.

3.6.20.1 Radiated Emissions Requirement. The ANVIS shall meet the requirements of MIL-STD-461 for RE02 over a frequency range 14 kHz to 12GHz with the following changes to both broad and narrow band measurements:

Frequency Range	Specification Limit (not greater than)
20.5 - 35.5 kHz	35db
35.5 - 60.0 kHz	45db
88.0 - 104.0 kHz	25db
130.0 - 340.0 kHz	11db

3.6.20.2 EMI Susceptibility requirement. The ANVIS shall not be degraded by electromagnetic interference while operating in the following military electromagnetic environments.

Frequency Range	E -Field (Volts/Meter)
14 kHz to 40 GHz	100 and 200

3.6.20.2.1 Degradation at 100 V/M. The system shall not be degraded by E-fields, at both vertical and horizontal polarization, up to 100 volts/meter. Degradation is defined as not more than one distinct change not exceeding ± 15 percent in output brightness from steady state condition over the following specified frequency ranges:

14 kHz to 1 mHz range = 1 degradation every 100 kHz division

1 mHz to 1 gHz range = 1 degradation every 100 mHz division

1 gHz to 40 gHz range = 1 degradation total

3.6.20.2.2 Distinct changes. Distinct is defined as: Over any given frequency range as stated in paragraph 3.6.20.2.1 the bandwidth of the degradation, measured at the fifty (50) percent amplitude points of the change in output brightness, shall not exceed ten (10) percent of the specified frequency division within each frequency range (i.e., 10 kHz bandwidth in the 100 kHz division, 10 mHz bandwidth in the 100 mHz division, 4 gHz in the 40 gHz division at both vertical and horizontal polarization).

3.6.20.2.3 Degradation at 200 V/M. At the E-field of 200 volts/meter, the system shall not exhibit an increase in output brightness greater than 100 percent or a decrease in output brightness greater than 35 percent. Any change in output brightness shall not adversely affect image intensifier reliability.

3.7 Interchangeability.

3.7.1 Major component interchangeability. The mounts, binoculars and power packs shall be physically interchangeable between ANVIS systems of the same design (AN/AVS-6(V)1 or AN/AVS-6(V)2) without degradation of the ON/OFF/ON switch (3.6.7.1), flip-up/flip-down (3.6.8.2) or vertical adjustment range (3.6.7.5) requirements of this specification.

3.7.2 Subcomponent interchangeability. The objective lens, eyepiece lens and monocular housing shall be physically interchangeable between binoculars without degradation of the resolution (3.6.4), collimation (3.6.6), objective focus range (3.6.7.2, except torque), eyepiece diopter range (3.6.7.3 except torque), and interpupillary distance adjustment range (3.6.7.4) requirements of this specification.

3.8 Weight. The weight of the binocular shall be less than 550 grams.

3.9 Treatment and painting. Unless otherwise specified, all metallic parts shall be treated and painted in accordance with MIL-STD-171.

3.10 Marking. The assembly and all components, subassemblies, and parts shall be marked in accordance with 5002500 or 5002600, as appropriate.

3.11 Workmanship. Workmanship shall be in conformance with MIL-STD-454, Requirement 9. All assemblies shall be free from cracks, burrs, chips, dirt, grease or any embedded foreign material. Threads shall be full and undamaged for the entire length or depth as required on the applicable drawings. Joints and seams shall be a tight fit, and electrical wiring shall be secure with unbroken insulation. All moving parts and adjustments shall be examined to ensure that they move freely throughout their entire range without sticking, binding, or creeping.

3.12 Technical interpretations. The following technical interpretations are, when referenced in sections 3, 4, or 5, mandatory for this specification.

3.12.1 Damage. Damage is defined as the following:

3.12.1.1 Electrical failure or malfunctioning including arcing, corona, intermittent operation, flickering.

3.12.1.2 Brittleness, cracking, corrosion or failure of any finish.

3.12.1.3 Condensation, residue, fogging or moisture of any internal surface.

3.12.1.4 Dents, cracks or breakage of any hardware, connection or component or any change in alignment.

3.12.2 Degradation. A significant change in measurable characteristics which results in the assembly no longer meeting specified requirements or indicates that there is an inherent defect in the operating characteristics of the unit.

3.12.3 Ambient temperature. Ambient temperature is defined as +23°C, (+10°C, -2°C).

3.12.4 Environmental tests. For the purpose of this specification, environmental tests are those tests discussed in 4.6.9 through 4.6.20.

3.12.5 "g'. g is defined as an acceleration or deceleration of 32.17 ft/s^2.

3.12.6 Ancillary equipment. Ancillary equipment is defined as: the velcro fastener, objective and eyepiece lens caps, neck cord, screw driver, and operators manual.

3.12.7 Qualified product. A product which has successfully met the requirements of an IPT or first article witnessed by the procuring activity.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection and test requirements specified herein unless disapproved by the Government. The Government reserves the right to perform any of the inspections and/or tests set forth in the specification where such inspections and/or tests are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of section 3 and 5. The inspection set forth in this specification shall become a part of the Contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the Contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, not does it commit the Government to accept defective material.

4.2 Classification of inspections and tests. Inspections and tests shall be classified as follows:

a. Initial production testing (4.3)
b. Quality conformance inspections and tests (4.4)

4.3 Initial production testing (IPT) inspections and tests.

4.3.1 Inspection. Unless otherwise specified seven IPT units selected from the first production lot shall be inspected in accordance with Table I. Presence of one or more defects shall be cause for rejection of that unit and may be cause for rejection of IPT.

TABLE I. Inspections.

Inspection	Requirement paragraph	Method
Parts, materials and components missing or not as specified	3.2, 3.4	Visual/gages
Interchangeability	3.7	4.7
Treatment and painting	3.9	Visual
Marking	3.10	Visual
Workmanship	3.11	Visual

4.3.2 Tests. Upon successful completion of the inspections specified in Table I, the seven (7) IPT assemblies will be verified to contain image intensifier tubes assemblies which conform to MIL-I-49428, objective lens assemblies which conform to MIL-L-49426 and eyepiece assemblies which conform to MIL-L-49427. Upon verification the assemblies shall be subjected to the tests in Table II, subgroup I. Two assemblies which have successfully passed all of the tests listed in subgroup 1 shall be subjected to all of the tests in subgroup 2. Three assemblies which has successfully passed the tests listed in subgroup 1 shall be selected for the tests of subgroup 3. Each test shall require one assembly and the selection can be made by the contractor. Representative piece parts may be used for fungus tests and lens glass may be covered during sand and dust testing.

TABLE II. Initial production testing.

Test	Requirement paragraph	Test paragraph
Subgroup 1		
Resolution	3.6.4	4.6.4
Brightness gain	3.6.5	4.6.5
Collimation	3.6.6	4.6.6
Controls and adjustments	3.6.7	4.6.7
Mount/binocular interface	3.6.8	4.6.8
High temperature	3.6.9	4.6.9
Low temperature	3.6.10	4.6.10
Temperature shock	3.6.11	4.6.11
Temperature-altitude	3.6.12	4.6.12
Humidity	3.6.13	4.6.13
Sinusoidal vibration (ambient)	3.6.14.1	4.6.14.1
Bounce, loose cargo	3.6.14.3	4.6.14.3
Transit drop	3.6.15	4.6.15
Weight	3.8	4.8
Subgroup 2		
Field of view	3.6.1	4.6.1
Magnification	3.6.2	4.6.2
Distortion	3.6.3	4.6.3
Sinusoidal Vibration (temperature)	3.6.14.2	4.6.14.2
Subgroup 3		
Sand and dust	3.6.16	4.6.16
Fungus	3.6.17	4.6.17
Salt fog	3.6.18	4.6.18
Explosive atmosphere	3.6.19	4.6.19
EMI	3.6.20	4.6.20

4.4 Quality conformance inspections and tests.

4.4.1 Inspections. Each system shall be inspected for the requirements of Table III. Failure to meet the requirements specified shall be cause for rejection of that system.

TABLE III. Quality conformance inspections.

Inspection	Method
Workmanship	Visual
Markings	Visual
Parts, materials and components missing or not as specified	Visual/gages
Treatment and painting	Visual

4.4.2 Group A tests. Each system shall be tested in accordance with Table IV. Failure to meet the requirements shall be cause for rejection of that system.

TABLE IV. Group A tests.

Test	Requirement paragraph	Test paragraph
Resolution	3.6.4	4.6.4
Collimation	3.6.6	4.6.6
ON/OFF/ON switch	3.6.7.1	4.6.7.1
Flip-up/flip-down	3.6.8.2	4.6.8.2

4.4.3 Group B tests. Systems which have passed the inspections and tests of Tables III and IV shall be formed into lots. Sampling plans shall be as specified by the contract or purchase order (see 6.2.d). Systems shall be randomly selected and subjected to the tests of Table V.

TABLE V. Group B tests.

Test	Requirement paragraph	Test paragraph
Brightness gain	3.6.5	4.6.5
Objective focus range	3.6.7.2	4.6.7.2
Eyepiece diopter range	3.6.7.3	4.6.7.3
Interpupillary distance adjustment range	3.6.7.4	4.6.7.4
Vertical adjustment range	3.6.7.5	4.6.7.5
Fore/aft adjustment range	3.6.7.6	4.6.7.6

TABLE V. Group B tests. - (Continued)

Test	Requirement paragraph	Test paragraph
Tilt adjustment range	3.6.7.7	4.6.7.7
Automatic breakaway	3.6.8.1	4.6.8.1
Electrical interface	3.6.8.3	4.6.8.3

4.4.4 Group C tests. Group C tests shall be performed on systems that have passed inspections of Table III and tests of Tables IV. The sampling for Group C tests shall be as specified by the contract or purchase order (see 6.2.d).

4.4.5 Group C failures. Actions required in the event of a Group C failure shall be as specified in the contract or purchase order (see 6.2.c).

4.4.6 Disposition of group C units. Assemblies that have been subjected to the tests listed in Table VI shall be refurbished as necessary and subjected to the tests of Table IV and brightness gain as a minimum and shipped as part of the contract. If refurbishment requires disassembly of the binocular, objective focus range (4.6.7.2) and eyepiece diopter range (4.6.7.3) tests shall be performed in addition to Table IV. Failure to pass these tests shall be cause for rejection of the unit.

TABLE VI. Group C tests.

Test	Requirement paragraph	Test paragraph
Subgroup 1		
High temperature	3.6.9	4.6.9
Low temperature	3.6.10	4.6.10
Temperature shock	3.6.11	4.6.11
Temperature-altitude	3.6.12	4.6.12
Sinusoidal Vibration (ambient)	3.6.14.1	4.6.14.1
Subgroup 2		
Bounce Loose Cargo	3.6.14.3	4.6.14.3
Transit drop	3.6.15	4.6.15
Major component interchangeability	3.7.1	4.7.1
Sinusoidal vibration temp.	3.6.14.2	4.6.14.2
Subgroup 3		
Humidity	3.6.13	4.6.13

4.5 Test conditions.

4.5.1 Test methods. Tests shall be conducted in accordance with the test procedures specified herein. Unless otherwise specified, the following conditions shall apply:

a. The radiation source used in the tests shall be a tungsten filament lamp operated at a color temperature of 2856 kelvins (K), ± 50K.
b. The photometer used for screen brightness measurements shall be a Pritchard Model 1970 PR, or equal.
c. The photometer used for brightness measurements shall be calibrated against a standard source as specified below:

(1) Tungsten filament lamp operated in conjunction with an opal glass such that the color temperature of the radiation emitted from the opal glass is 2856, ± 50K.

(2) Corning spectral filters Nos. 3-71 and 4-67, or equivalent.

(3) Opal glass to produce a uniform, Lambertian distribution.

(4) Output brightness to be 0.1 to 1.0 footlambert uniformly distributed.

d. Tolerances on specified radiation levels shall be ± 10 percent.
e. Meters used for monitoring lamp current and voltage shall have an accuracy of ± 0.25 percent.
f. Neutral density filters used in test equipment shall have transmission characteristics within 10 percent of the nominal filter transmission from 0.35 to 1.0 micrometer.
g. Tests shall be performed at ambient conditions as defined in 3.12.3 except where otherwise specified.
h. Test chambers used for environmental temperature tests shall maintain the temperature within ± 2.0°C.
i. Unless otherwise specified, tests shall be performed using lithium batteries, BA-5567/U in accordance with MIL-B-49430/4. Output of the power converter may be simulated by a 3.8, ± 0.3 Vdc power source.
j. Resolution targets shall be a positive, 100 percent contrast USAF 1951 resolving power test target.

4.5.2 Operation during environmental tests. When operation during environmental tests (see 3.12.4) in required the assembly shall as a minimum successfully pass the requirements of paragraph 4.6.7.1, "ON/OFF/ON switch." Should an assembly indicate an operational failure after the last environmental test it shall be the contractor responsibility to determine and prove where (in which environmental test condition) the operational failure occurred.

TABLE VII. Environmental performance test categories.

Parameter	Requirement paragraph	Category 1	2	3	4
Resolution (on-axis only)	3.6.4	X		X	
Collimation	3.6.6	X			
Objective focus range	3.6.7.2	X		X	
Eyepiece diopter range	3.6.7.3	X		X	
Flip-up/Flip-down	3.6.8.2	X		X	X
Automatic breakaway	3.6.8.1	X			
Fit adjustment ranges	3.6.7.4 to 3.6.7.7	X			
ON-OFF-ON switch	3.6.7.1	X	X	X	X

4.6 Operational and environmental tests. For the purpose of operational and environmental testing, the ANVIS shall be defined as the binocular, mount, and power pack unless otherwise stated. Each ANVIS selected for Group C testing shall, following the last Group C test performed upon it, demonstrate its ability to perform properly after being subjected to all the post-environmental test required for it. For the purpose of post-environmental testing, "perform properly" shall be defined as the ability to successfully complete the category 1 tests listed in Table VII.

4.6.1 Field of view (FOV). Place the binocular in the setup shown in Figure 2. Set the slit target brightness to 1×10^{-3} footlambert or less. Looking through a monocular, rotate the table to the left until the edge of the field if located. Record this field angle. Rotate the table right until the slit is at the edge of the field. Record this angle. The difference between the two recorded angles is the FOV. Repeat for the other monocular. Failure to meet requirements of 3.6.1 shall constitute failure of this test.

4.6.2 Magnification (M). Place the binocular in the test setup shown in Figure 3 and place the diopterscope (which is set to infinity) 15 mm behind a monocular eyepiece. Looking through the diopterscope mounted on a small rotary table, superimpose the slit image and the scope crossline by rotating the small table.

Record the reading from the vernier scale of the small rotary table. Rotate the large rotary table to a point θ_n on either side of the optical axis. Measure the amount of small table rotation required to superimpose the image and diopterscope reticle again and record the reading. The difference between the second reading and first reading determines the real angle of image rotation ϕ_n. Repeat these steps with the image positioned on the opposite side of the optical axis (θ_n', ϕ_n'). The average tan ϕ_n' is used to calculate the magnification:

$$M = \overline{\tan \phi_n} \; / \; \overline{\tan \theta_n}$$

where

$\overline{\tan \theta_n} = (\tan \theta_n + \tan \theta_n')/2$ $\quad$ $\overline{\tan \phi_n} = (\tan \phi_n + \tan \phi_n')/2$

θ_n = semifield Angle

Repeat for the other monocular. Failure to meet requirements of 3.6.2 shall constitute failure of this test.

4.6.3 Distortion. Calculate distortion for each monocular using data from 4.6.2. The distortion at any point is calculated as:

$$D = (\overline{\tan \phi_n} - M \tan \theta_n)/M \tan \theta_n \times 100$$

where M = magnification of the system.

Data shall be recorded for several field angles, including the largest semifield angle of 19.75 ± 0.75 degrees. Failure to meet the requirements of 3.6.3 shall constitute failure of this test.

4.6.4 Resolution. Place a resolution target in the infinity focal plane of a test collimator. Adjust target brightness to obtain maximum resolution. Look into the collimator with one monocular and obtain best focus. Determine test pattern resolved. Repeat for infinity stop. Determine resolution of test patterns seen (RA in c/mm). Calculate system resolution in cycles per milliradian (c/mrad) as:

R = RA (Coll EFL mm)/1000.

Repeat tests for other monocular. Rotate binocular 14 degrees off-axis, obtain best focus, and read resolution in each monocular. Failure to meet requirements of 3.6.4 shall constitute failure of this test.

4.6.5 Brightness gain. Place a 2856K, extended Lambertian light source at least 28cm in front of the binocular objectives. The extended Lambertian source shall be large enough to represent a 40-degree field of view to the binocular (i.e., both photocathode formats are illuminated). Using a calibrated photometer, the extended light source shall be set to a brightness of not greater than 5×10^{-4} footlambert. Activate the binocular looking at the extended source, and read output through each eyepiece using a photometer calibrated to read with a 5 mm entrance pupil. The 5 mm entrance pupil shall be placed on the optical axis of the photometer and the optical axis of the monocular under test at the specified 15 mm eye relief distance. Gain is calculated for each monocular as:

$$\text{Gain} = \frac{\text{Output brightness}}{\text{Input brightness}}$$

Failure to meet requirements of 3.6.5 shall constitute failure of this test.

4.6.6 Collimation. With two parallel beams of light entering the binocular objectives (or one beam large enough to fill both objectives) as shown in Figure 4, use a traveling telescope fitted with a filar eyepiece to measure the difference between the emergent beams. Failure to meet requirements of 3.6.6 shall constitute failure of this test.

4.6.6.1 Alternative method. Using equipment described in Figures 7, 8 and 9 or equivalent, measure amount of decollimation in vertical and horizontal direction at system output, or assure (by use of an approved Government Go-No, Go method) that decollimation is within limits of paragraph 3.6.6. Failure to meet the requirements of 3.6.6 shall constitute failure of this test.

4.6.7 Controls and adjustments.

4.6.7.1 ON/OFF/ON switch. With the ANVIS as defined in paragraph 4.6, the ON/OFF/ON switch shall be exercised to assure the following conditions:

a. Both image tubes are lit when the switch is in either ON position and power by either battery or aircraft power inputs.
b. Each ON position operates from a different battery/battery pack.
c. Each ON position operates low battery/battery pack indicator when voltage reaches the range of 2.2 to 2.5 Vdc.
d. In the OFF position, neither image tubes will light.

Failure to perform any of the above tests or meet the requirements of 3.6.7.1 shall constitute failure of this test.

4.6.7.2 Objective focus range. A resolution target shall be placed in the infinity focal plane of a test collimator. Adjust target brightness to obtain maximum resolution. Place a second USAF 1951 target, illuminated to the same light level, beside the front aperture of the collimator and 28 $\pm$ 3 cm in front of the binocular objectives. Place the binocular in its holding fixture with one monocular objective looking into the collimator. Using objective focus ring rotation, determine if the infinity focus and the 28cm focus will achieve the minimum specified resolution in c/mrad at both focus positions. Repeat for the other monocular. The focus range adjustment on each objective lens shall be rotated not less than 3 times throughout the total range of movement, and returned to the close focus (28cm) position stop. A suitable torque measuring device shall be used to determine the breakaway torque of the focus range adjustments. Failure to meet requirements of 3.6.7.2 shall constitute failure of this test.

4.6.7.3 Eyepiece diopter range. A resolution target shall be placed in the infinity focal plane of a test collimator. Adjust the target brightness for maximum system resolution. Set each monocular objective focus to infinity. Look into each monocular eyepiece with a diopterscope of at least 3 power and verify the diopter focus is larger than or equal to +2, and less than or equal to -6 over the range of eyepiece travel. Ensure that the 15mm eye relief is maintained for each reading. Rotate each eyepiece through its full adjustment range not less than 3 times. Measure the torque over the full range of travel in each direction.

Failure to meet requirements of 3.6.7.3 shall constitute failure of this test.

4.6.7.4 Interpupillary distance (IPD) adjustment range. Set the binocular IPD adjustment to its minimum. Using a caliper, measure the distance between the outer edge of the left monocular (measured at the adjustment screw) to the outer edge of the right monocular (measured to the adjustment screw) minus the diameter of either monocular and record it. Set the binocular IPD to its maximum. Repeat the measurement and record it. Failure to meet requirements of 3.6.7.4 shall constitute failure of this test.

4.6.7.5 Vertical adjustment range. Measure the amount of travel when the vertical adjustment is moved to its extremes. Failure to meet requirements of 3.7.6.5 shall constitute failure of this test.

4.6.7.6 Fore/aft adjustment range. Measure the amount of travel when the fore/aft adjustment is moved to its extremes. Failure to meet requirements of 3.6.7.6 shall constitute failure of this test.

4.6.7.7 Tilt adjustment range. Measure the amount of rotation of the monoculars relative to the pivot and adjustment shelf when the tilt adjustment is moved to its extremes. Failure to meet requirements of 3.6.7.7 shall constitute failure of this test.

4.6.8 Mount/binocular interface.

4.6.8.1 Automatic breakaway. With the mount and binocular mounted on a secured SPH-4 helmet or equivalent, apply a force of 9 g in a direction away from and horizontal to the helmet. The binocular shall not break away from the mount for a period of 15 seconds. Apply a force of 15 g in a direction away from and horizontal to the helmet. The binocular shall break way from the mount in less than 1 second. Failure to meet requirements of 3.6.8.1 shall constitute failure of this test.

4.6.8.2 Flip-up/flip-down. The ANVIS defined by paragraph 4.6 shall be tested for compliance to 3.6.8.2. Moving the binocular from the operational position to the storage position using an appropriate force gage six times assuring that the position change can only take place when the lock release button is depressed and the binocular remains in the mount at all times. Then provide power to the image tubes and assure that the image tubes cut off and remain off when in the stowed position and turn on when in the operation position. Failure to meet the above requirements or the requirements of 3.6.8.2 shall constitute failure of this test.

4.6.8.3 Electrical interface. When the ANVIS power pack/mount is tested at an input voltage of 3.8 $\pm$ 0.1 Vdc from the aircraft power converter and a load current of 50 $\pm$ 5 milliamps, the output shall meet the requirements of 3.6.8.3. Failure to meet requirements of 3.6.8.3 shall constitute failure of this test.

4.6.9 High temperature. The ANVIS shall be tested in accordance with MIL-STD-810, Method 501.1, Procedure II. When inspections or operational tests are required, it is permissible to open the chamber door to conduct the test provided that the door does not remain open for greater than five (5) minutes per unit. Failure to satisfactorily perform the operation of Table VII, category 2, during this test, and upon completion of the test, shall constitute failure of this test.

4.6.10 Low temperature. The ANVIS shall be tested in accordance with MIL-STD-810, Method 502.1, Procedure I. When inspections or operational tests are required, it is permissible to open the chamber door to conduct these tests provided that the door does not remain open for greater than five (5) minutes per unit. Failure to satisfactorily perform the operation of Table VII, category 2, during this test, and upon completion of this test shall constitute failure of this test.

4.6.11 Temperature shock. The ANVIS shall be tested in accordance with MIL-STD-810, Method 503.1, Procedure I with temperature conditions of 3.6.12 and as shown in Figure 5. Not later than 20 minutes after removal from the -35°C environmental chamber, the system shall be visually inspected for condensation, fogging, residue and moisture on any internal surface. Failure to satisfactorily perform the operations of Table VII, category 2 or the above requirements shall constitute failure of this test.

4.6.12 Temperature-altitude. The ANVIS shall be tested in accordance with MIL-STD-810, Method 504.1, with modified temperature and altitude conditions per 3.6.9, 3.6.10, and 3.6.12 herein. These conditions are: Operating temperature +52°C and -32°C, nonoperating temperature +71°C and -35°C. Operating altitude 15,000 feet, storage altitude 50,000 feet. The following test sequence shall be followed:

TABLE VIII. Test sequence.

MIL-STD-810 Equipment category	Procedure step	Altitude (feet)	Temperature (°C)	Operating Test
3	1-b	Site	-32	No
3	3	15,000	-32	Turn ON, check for green glow
5	3	50,000	-35	No
3	5	Site	Site	No
3	6	Site	+52	No
3	10	15,000	+52	Turn ON, check for green glow and LED operation.
6	10	50,000	+71	No
6	15	Site	Site	No

Failure to satisfactorily perform the listed operating test in preset "ON" position during test or the operations of Table VII, category 2 after the test shall constitute failure of this test.

4.6.13 Humidity. The ANVIS shall be tested in accordance with MIL-STD-810, Method 507.1, Procedure I. Step 5 and 6 shall be followed as modified herein. After the fourth cycle, run the test of Table VII, category 3, less flip up/flip down, with chamber door open. Run the tests of Table VII, category 3 before and after humidity test. Failure to meet the requirements of 3.6.13 or the tests prescribed herein shall constitute failure of this test.

4.6.14 Vibration

4.6.14.1 Sinusoidal vibration (ambient). The ANVIS system consisting of the binocular assembly, the visor guard mount, and the power pack with cable shall be mounted to the test fixture maintaining the same dimensions and geometry as the SPH-4 helmet. This assembly shall be rigidly mounted to the vibrator armature and tested as follows and at the vibration levels contained in Figure 1. MIL-STD-810, Method 514.2, Procedure 1, Category C shall be followed as modified herein. Run the tests of Table VII, category 2 after vibration. Failure to meet requirements of 3.6.14.1 or the above tests shall constitute failure of this test.

a. With the ANVIS mounted on a vibration table such that the axis of vibration is the X-axis, defined as along the pivot and adjustment shelf (PAS), stabilize the ANVIS at ambient temperature. With the ANVIS operating, vibrate the ANVIS over the frequency range of 5-600-5 Hz according to Figure 1 in a period of 30 minutes. The ANVIS shall then be vibrated for 5 minutes at each resonant frequency with the ANVIS OFF. The resonance dwell frequencies shall be determined by measuring the response of a test system at the center of either monocular housing and any other critical locations. The frequencies at which response amplitudes exceed or equal twice the input shall be critical frequencies and used for each dwell.

b. Repeat with the test item oriented in the Y and then Z axis.

4.6.14.2 Sinusoidal vibration (temperature). Perform the test in 4.6.14.1 a. and b. with the temperatures stabilized at -32°C, then repeat with the temperature stabilized at +52°C. Failure to meet the requirements of 3.6.14.2 or the prescribed tests shall constitute failure of this test.

4.6.14.3 Bounce, loose cargo. The test shall be conducted in accordance with MIL-STD-810, Method 514.2, Procedure XI, Part 2. Run the tests of Table VII, category 1 herein before and after the bounce, loose cargo test. Failure to meet requirements of 3.6.14.3 or the prescribed test shall constitute failure of this test.

4.6.15 Transit drop. The test shall be conducted in accordance with MIL-STD-810, Method 516.2, Procedure II. Run the tests of Table VII, category 1 herein before and after this test. Failure to meet requirements of 3.6.15 shall constitute failure of this test.

4.6.16 Sand and dust. The ANVIS shall be tested in accordance with MIL-STD-810, Method 510.1, Procedure I. At the end of the test, before the item is cleaned per Procedure I, run the tests of Table VII, category 2. Clean the item of excess dust and run the tests of Table VII, category 1. Failure to meet requirements of 3.6.16 shall constitute failure of this test.

4.6.17 Fungus. The ANVIS shall be tested in accordance with MIL-STD-810, Method 508.1, Procedure I, nonoperating. Failure to meet requirements of MIL-STD-810 and 3.6.17 shall constitute failure of this test.

4.6.18 Salt fog. The ANVIS shall be tested in accordance with MIL-STD-810, Method 509.1, Procedure I. After the first 48-hour period, open the chamber door and run the test of Table VII, category 2. After the next 48-hour period, run the tests of Table VII, category 1. Failure to meet requirements of MIL-STD-810, Method 509.1 and 3.6.18 shall constitute failure of this test.

4.6.19 Explosive atmosphere. The ANVIS shall be tested in accordance with MIL-STD-810, Method 511.1, Procedure I. When operation is required, run the tests of Table VII, category 4. Failure to meet requirements of MIL-STD-810, Method 511.1 and 3.6.19 shall constitute failure of this test.

4.6.20 Electromagnetic Interference. The AN/AVS-6(V) system under test shall consist of a binocular assembly and battery pack mounted to an SPH-4 helmet. The system shall be tested for the requirements specified in paragraph 3.6.20 in conformance with the test method of MIL-STD-462. Failure to meet the requirements of 3.6.20 shall constitute a failure of this test.

4.6.20.1 RE02 testing. For test RE02, the system shall fail the test if the emitted radiation exceeds the limits of paragraph 3.6.20.1. The system shall pass only if its emitted radiation is below the specified limits at all frequencies between 14 kHz and 12 GHz.

4.6.20.2 RS03 testing. In performing the RS03 test, the AN/AVS-6(V) system shall be oriented in three (3) different positions. These positions will be designated as follows:

A. Horizontal 0° - Objective lenses facing source of radiation.
B. Horizontal 270° - Rotated clockwise around the vertical axis 270° from horizontal 0°.
C. Vertical 90° - Rotated 90° downward from horizontal 0°.

The AN/AVS-6(V) system shall be subjected to E-Field level of 200v/m in both horizontal and vertical polarization, over the frequency range specified in 3.6.20.2.1 and 3.6.20.2. If a failure (as defined in 3.6.20.2.2) occurs within a given frequency range for a set of test conditions, the test conditions shall be noted.

At the conclusion of a portion of the test where a failure did occur, the test conditions under which the failure occurred shall be repeated, with reduced field strength, to determine the field threshold which will induce the failure. The AN/AVS-6(V) system shall be subjected to E-Field levels of 100v/m, in both horizontal and vertical polarization, over the frequency ranges specified in 3.6.20.2. If a failure (as defined in 3.6.20.2.1 and 3.6.20.2.2) occurs within a given frequency range for a set of test conditions, the test conditions of the failure shall be noted. At the conclusion of the portion of the test where a failure did occur, the test conditions under which the failure occurred shall be repeated, with reduced field strength, until it is determined what level E-Field induces the failure.

During RS03 testing, the output brightness shall be monitored continuously and recorded for each monocular assembly. The system shall be tested in both a linear operating region (5×10^{-5} FC photocathode illumination) and in a ABC region (1×10^{-4} FC to 1×10^{-3} FC photocathode illumination). In each of the operating regions, linear and ABC, the input voltage shall be provided by a battery with a nominal 3.0 Vdc. In performing RS03 testing, the illumination on the photocathode does not have to be a color temperature of 2856K. However, the illumination levels shall provide the linear and ABC operating modes as referred to above. Failure to meet the requirements of 3.6.20.2 shall constitute a failure of this test.

4.6.20.3 Classification. Results of the RS03 testing shall be classified secret and subject to review by the procuring activity.

4.7 Interchangeability.

4.7.1 Major component interchangeability. The mounts, binoculars, and power packs shall be assembled in combinations such that each mount is tested with each power pack and each binocular. Testing shall consist of ON/OFF/ON switch (battery power only)(4.6.7.1), flip-up/flip-down (4.6.8.2), and vertical adjustment range (4.6.7.5). Major components only from the same ANVIS design (AN/AVS-6(V)1 or AN/AVS-6(V)2) shall be tested for interchangeability. Failure to meet requirements of 3.7.1 shall constitute failure of this test.

4.7.2 Subcomponent interchangeability. Two binoculars shall be tested for resolution (4.6.4), collimation (4.6.6), objective focus range (4.6.7.2) (except torque), eyepiece diopter range (4.6.7.3) (except torque), and interpupillary distance adjustment range (4.6.7.4). The objective lens, eyepiece lens and monocular housing shall be interchanged between the binoculars as shown in Figure 6, and the performance test repeated after each arrangement (except for arrangement 5, which requires only collimation (4.6.6) and interpupillary adjustment range (4.6.7.4)). After completion of arrangement 5, reassemble the binoculars as in arrangement 1. Failure to meet requirements of 3.7.2 shall constitute failure of this test.

4.8 Weight. Using a calibrated scale with sensitivity ten times better than the requirement, weigh the binocular assembly. Failure to meet the requirements of 3.8 constitutes failure of this test.

5. PACKAGING

5.1 Packaging requirements. The packaging requirements for the desired level(s) of protection shall be as specified by the acquisition activity (see 6.2).

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.

6.1 Intended use. The ANVIS is intended for use in military helicopters as a pilot's aid to vision during nighttime, low-level, and nap-of-the-earth flight. The AN/AVS-6(V)1 is designed for use on the SPH-4 flight helmet. The AN/AVS-6(V)2 is designed for use on the SPH-4 flight helmet modified with a helmet-mounted sight kit for weapon firing.

6.2 Acquisition documents. Acquisition documents must specify the following:

a. Title, number, and date of this specification.

b. The contractor shall furnish sufficient batteries of each type to conduct all of the tests. The batteries used for testing shall not be deliverables.

c. Necessary actions by the contractor in the event of Group C (4.4.5) failure.

d. Sample plans for Group B and Group C tests . As guidance, unless otherwise specified, sampling shall be conducted per the requirements of MIL-STD-105.

e. Qualification - If product is not qualified at time of award contract must require qualification prior to first delivery.

f. Quantity and schedule for initial production testing and disposition of IPT samples for all line items.

g. MIL-STD-810C shall be used for environmental tests of section 4.

h. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.1.2).

6.3 Definitions. See 3.12.

6.4 Subject term keyword listing.
ANVIS
Image Intensifier
Lens Assembly

Custodian
Army - CR

Preparing Activity
Army - CR

Project 5855-A302

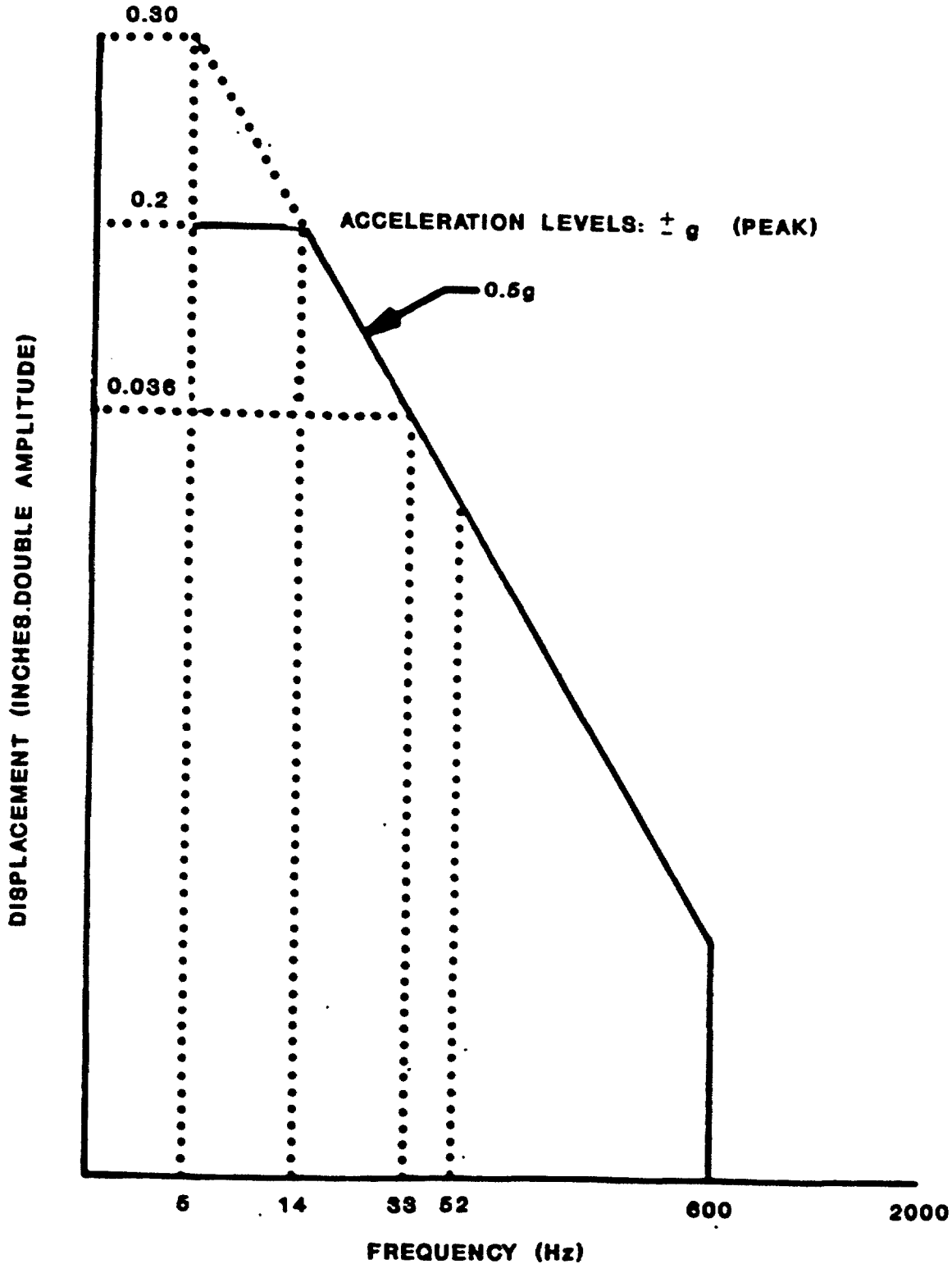


FIGURE 1. Vibration Test Profile

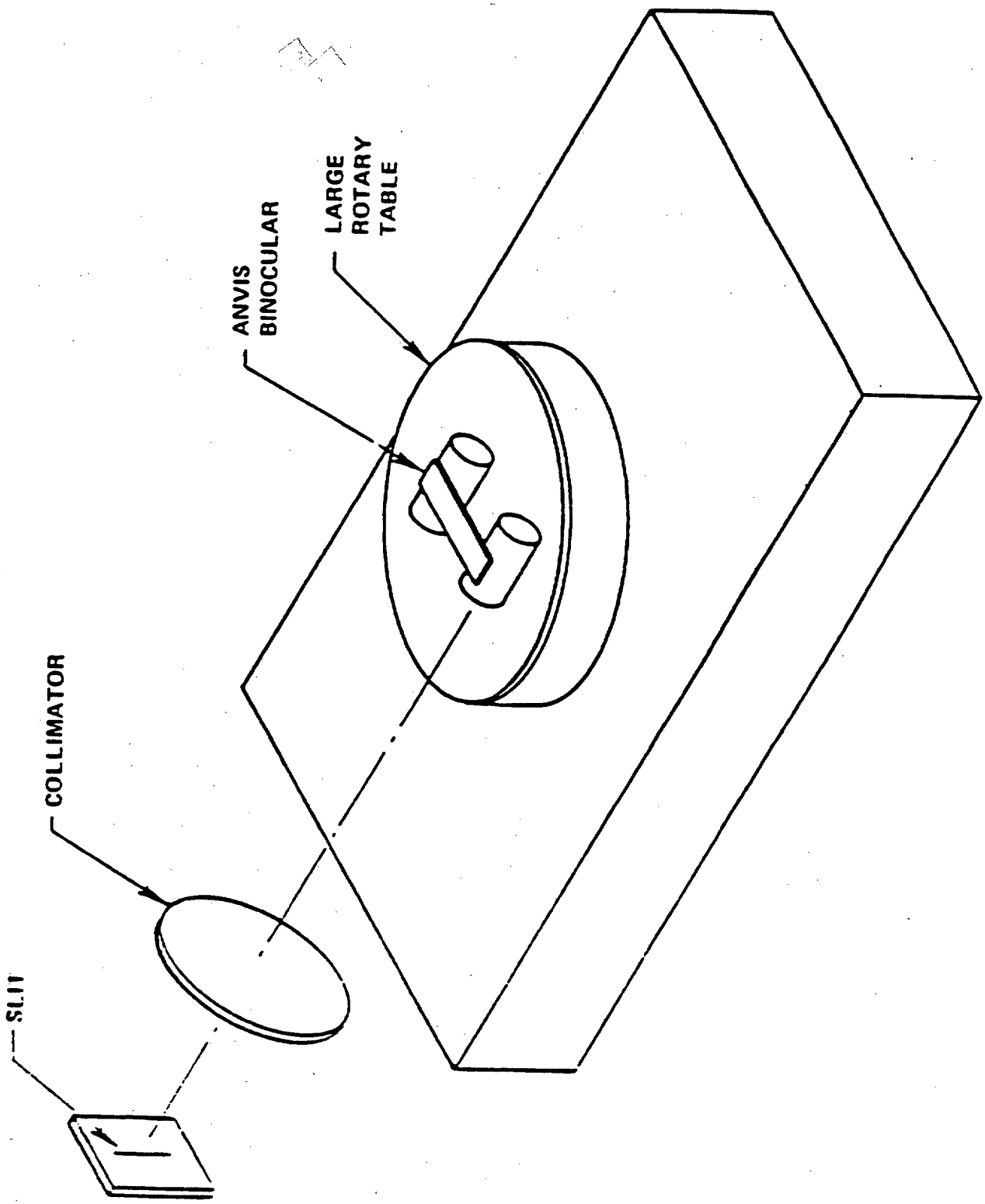


FIGURE 2. Field of view test setup.

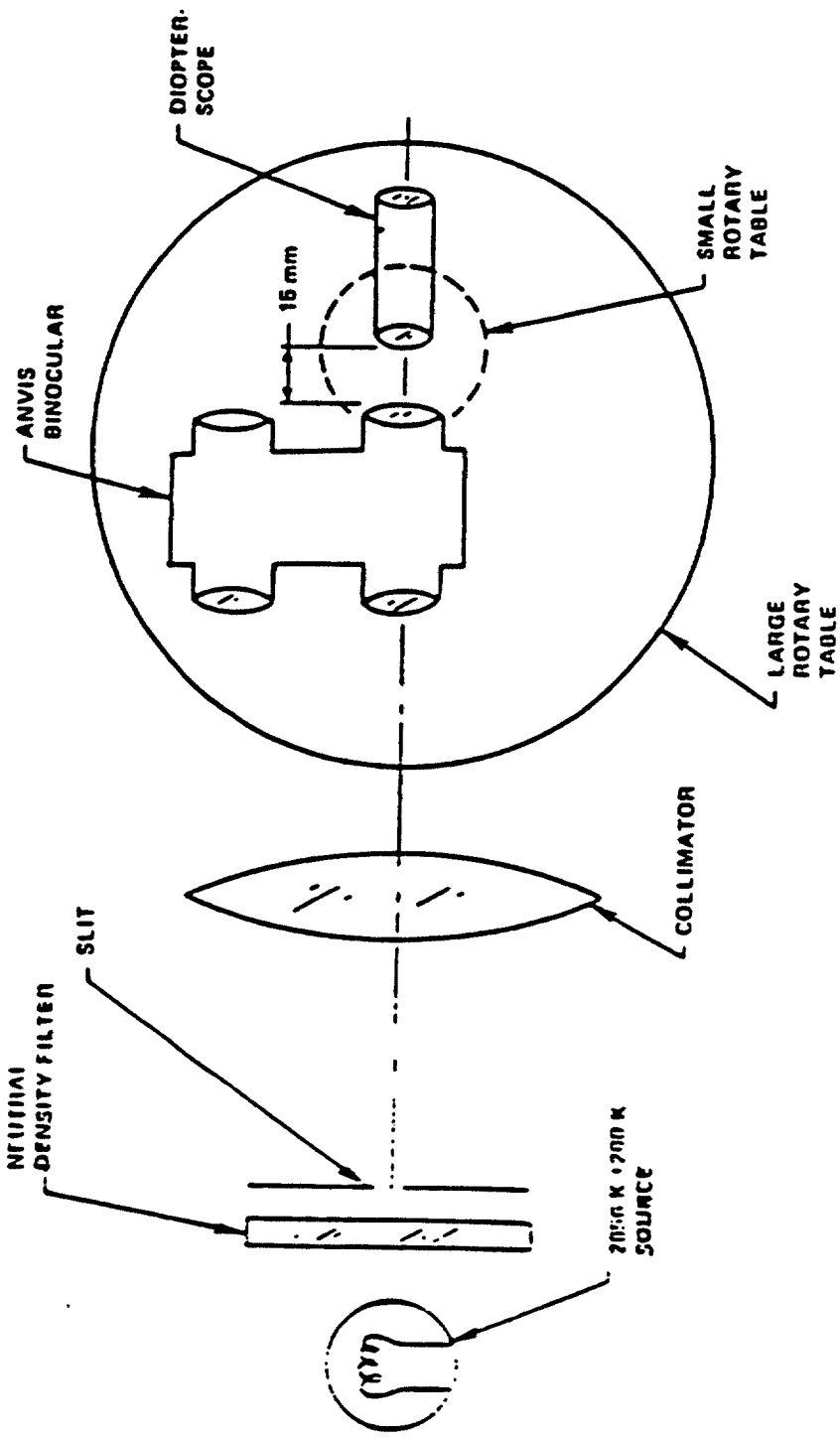


FIGURE 3. Magnification test setup.

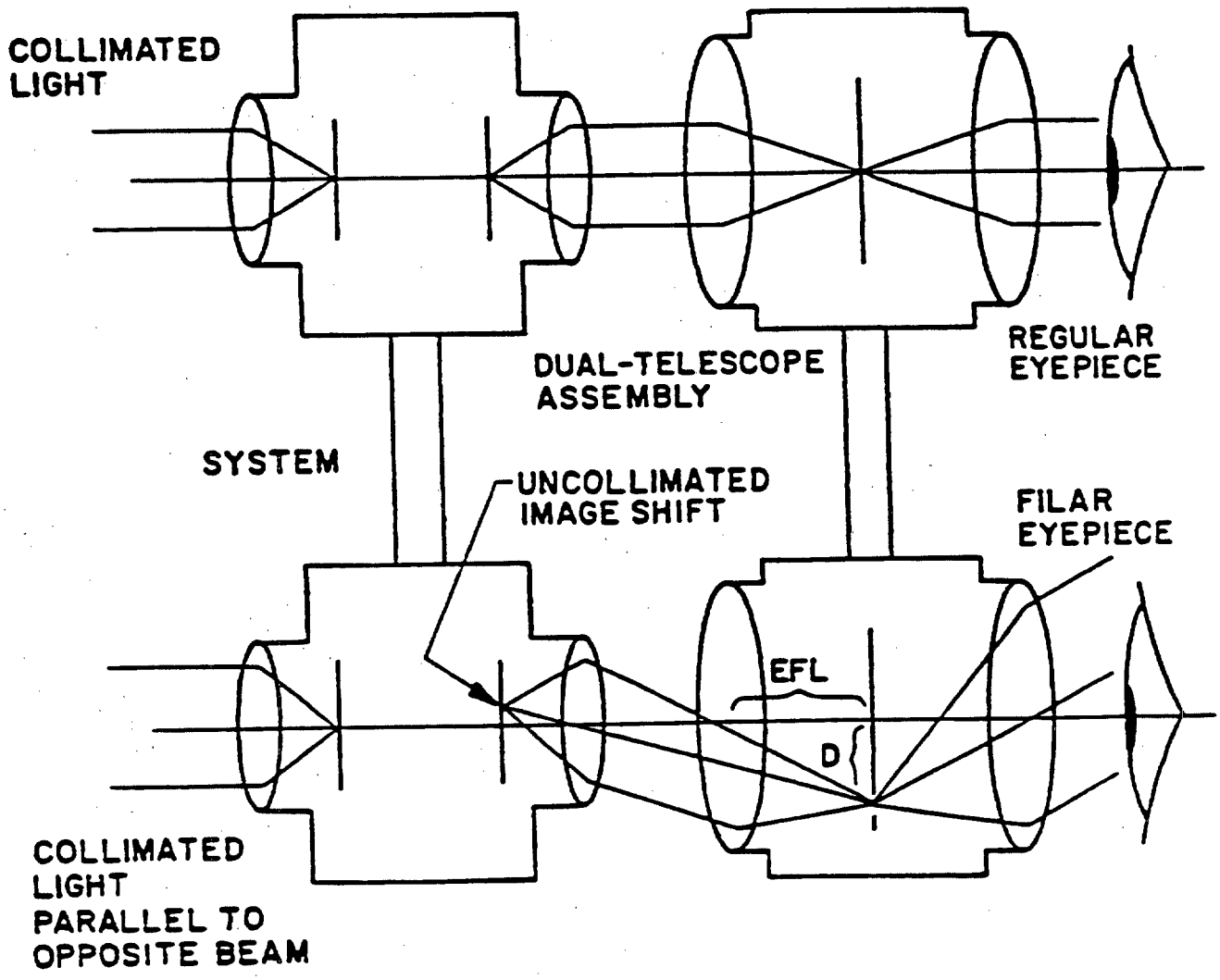


FIGURE 4. Collimation test setup.

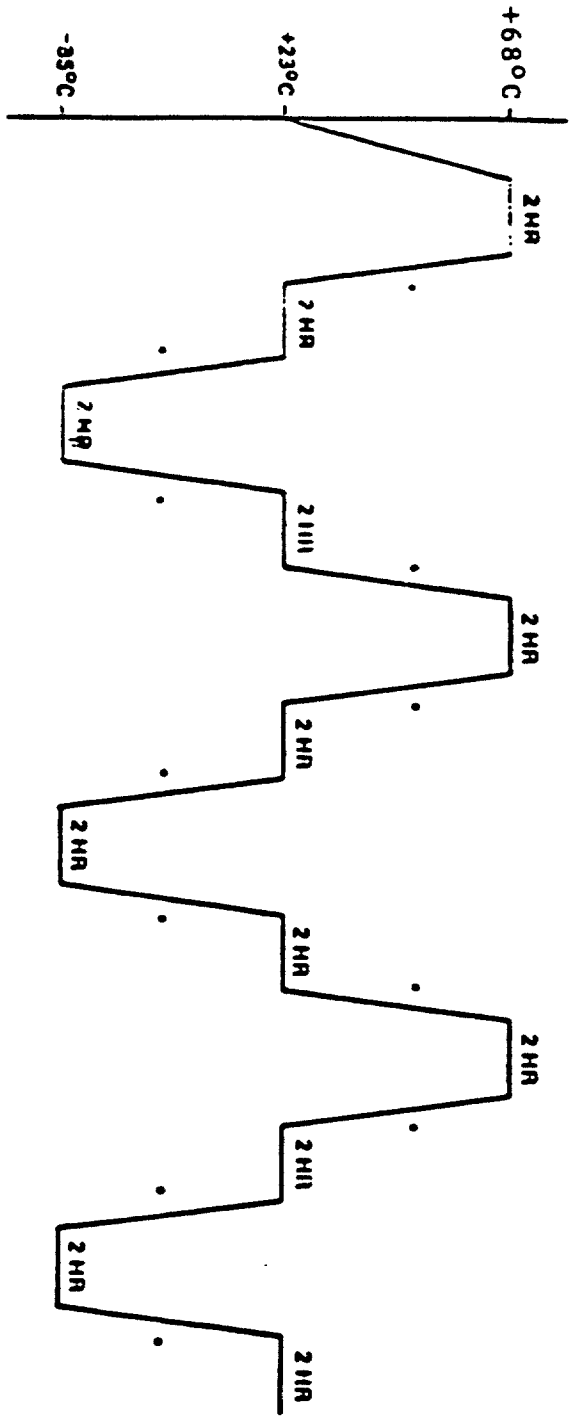


FIGURE 5. Temperature shock cycle.

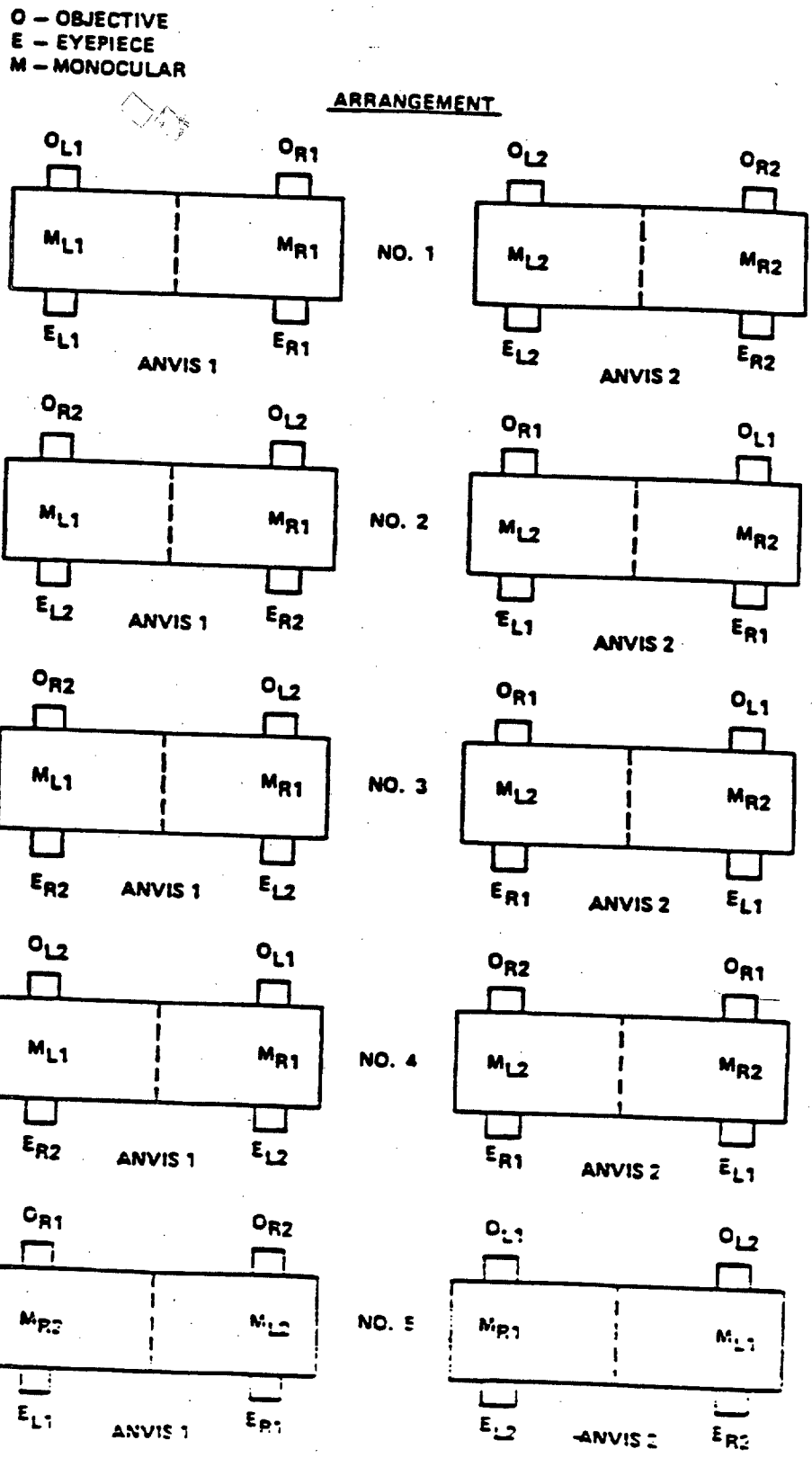


FIGURE 6. Subcomponent interchangeability arrangements.

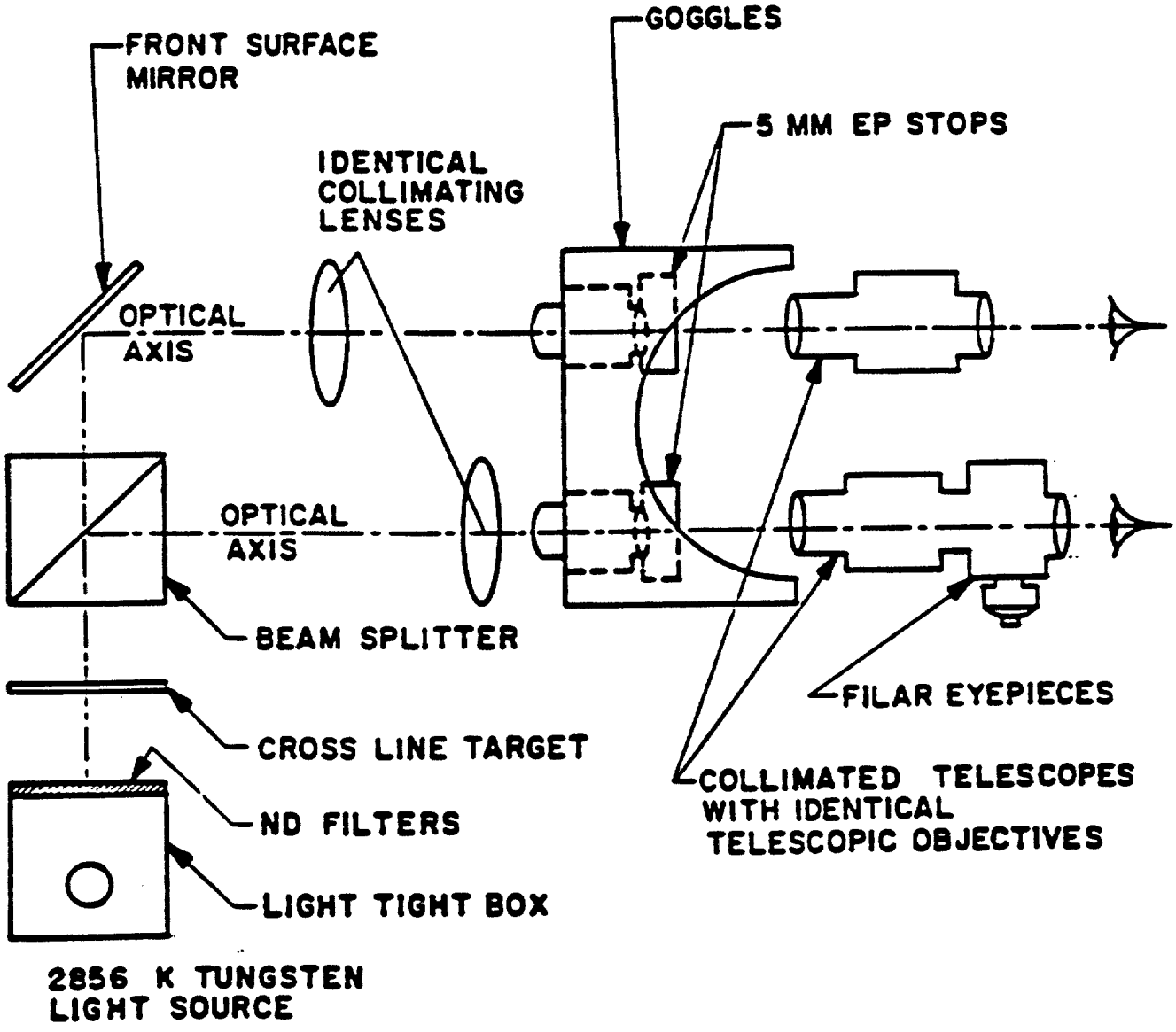


Figure 7. Assembly Collimation.

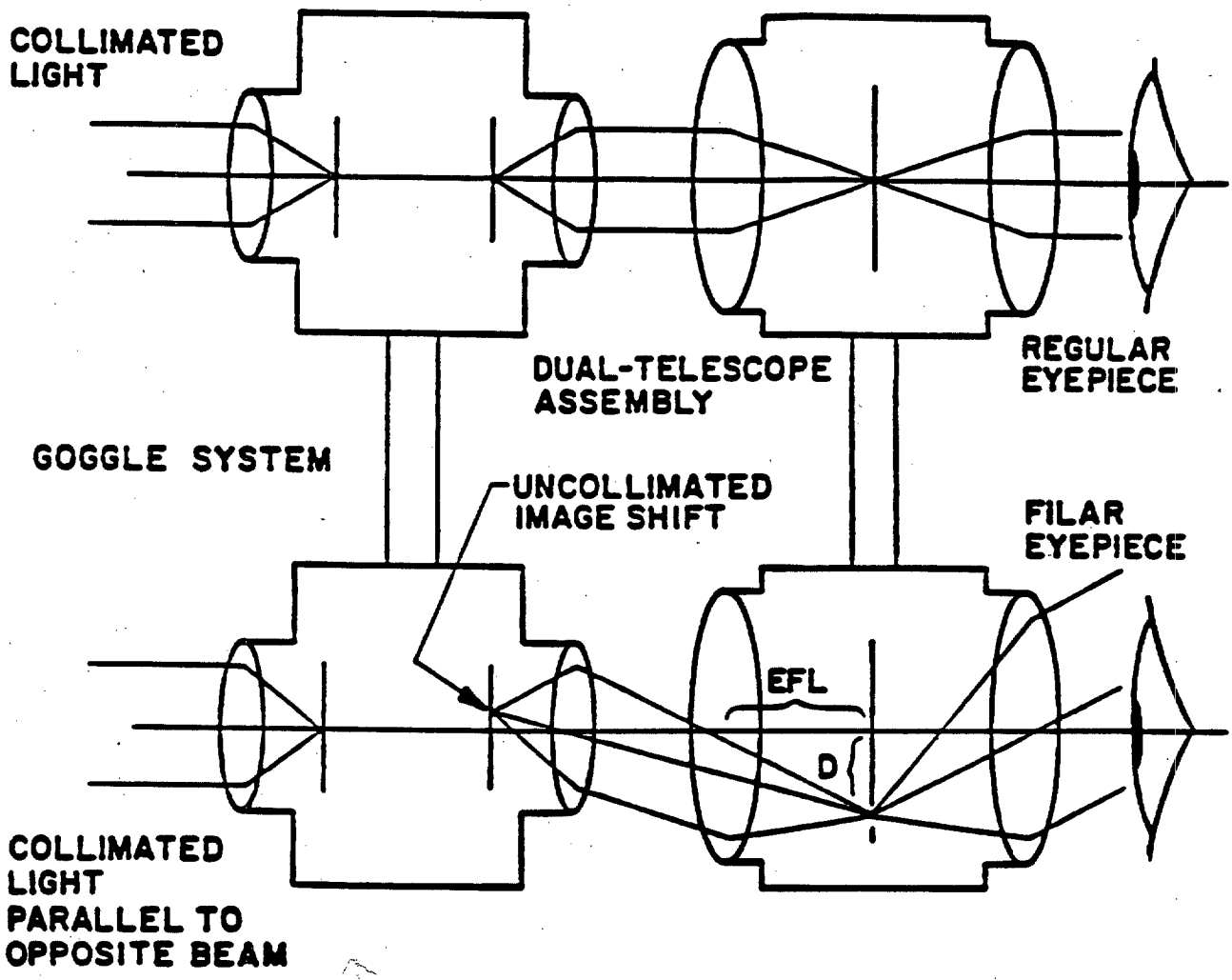
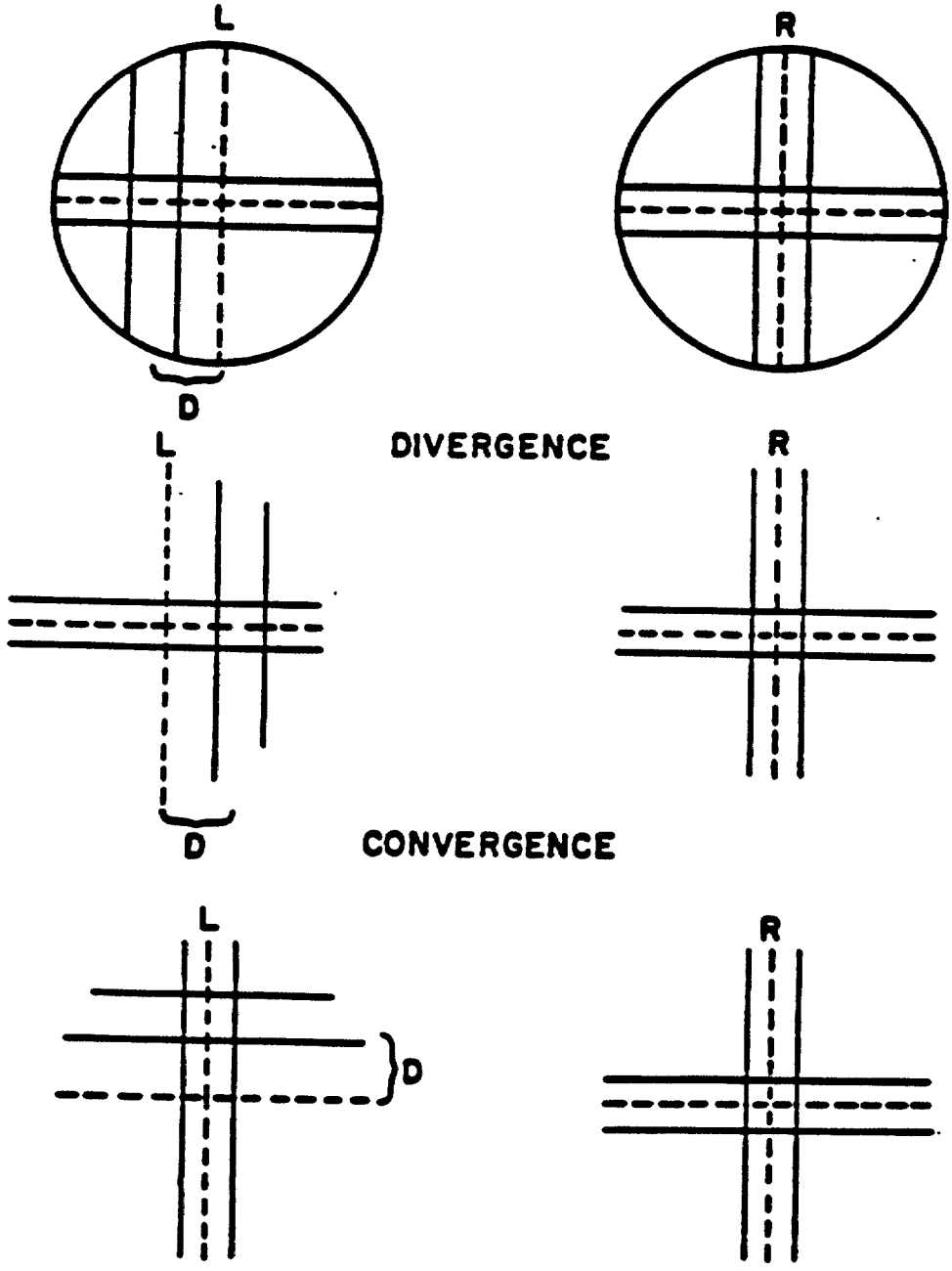


Figure 8. Assembly Collimation.



$$\text{TAN } \theta = \left(\frac{D}{EFL}\right)$$

$$\text{THUS } \theta = \text{TAN}^{-1}\left(\frac{D}{EFL}\right)$$

Figure 9. Assembly Collimation.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-A-49425(CR)	AVIATOR'S NIGHT VISION IMAGING SYSTEM AN/AVS-6(V)1, AN/AVS-6(V)2

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR ☐ USER ☐ MANUFACTURER ☐ OTHER *(Specify)*: _____
b. ADDRESS *(Street, City, State, ZIP Code)*	

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426 PREVIOUS EDITION IS OBSOLETE.