MIL-C-23727A(AS)
AMENDMENT-2
26 August 1970
SUPERSEDING
AMENDMENT-1
15 MAY 1967

MILITARY SPECIFICATION

Computer Set, Loft Bomb Release AN/AJB-3A

This amendment forms a part of Military Specification MIL-C-23727A(WP) dated 1 September 1965 and has been approved by the Naval Air Systems Command, Department of the Navy.

By this amendment, basic MIL-C-23727A(WP) is changed to MIL-C-23727A(AS) and throughout this specification, Bureau of Naval Weapons shall be changed to Naval Air Systems Command.

Page 1, Paragraph 3.2.2: Delete

Page 2, Paragraph 3.2.3, 3.2.4 and 3.2.5: Delete

*Paragraph 3.2.2.21: Delete last sentence

Paragraph 3.3.2.3: Delete "200" and substitute "300". Add "The MTBF of the Displacement Gyro shall be 800 hours. The Indicator and Amplifier Power Supply MTBF shall be 1000 hours."

*Paragraph 3.3.3.1: Add

"Flexible, flat ribbon cabling shall not be used unless authorized."

*Page 3, Paragraph 3.3.9.1, under Requirement: Delete "CURVE II" and substitute "CURVE IV extended to 2000 cps". Delete "CN-494/A" and substitute "CN-1359/AJB-3". Make this change wherever CN-494/A appears in this specification.

*Page 4: Add

"3.3.14 Lubrication - The lubricating oil used for gimbal bearings shall meet the performance requirements of Specification MIL-L-6085 except it shall conform with polyol- ester lubricant NRL-MB-20. Grease MIL-G-81322, Minipure grease or oil NRL MB-20-B may be used in spin rotor bearings.

Maximum particle size shall be 50 microns. All ball bearings shall be ABEC-7 grade or greater. Teflon separators shall be installed in gimbal bearings.

3.3.15 Barrier Coating Process - All bearings lubricated in accordance with requirements of paragraph 3.3.14 shall be processed in accordance with MIL-STD-1334. The coating material shall be in accordance with Specification MIL-B-81744. Bearing chamfers or corners shall be similarly processed.

FSC 5826

*Page 6, Paragraph 3.4.6: Delete and substitute

"3.4.6 Turn Rate Indication - A clockwise turn rate of 3 ± 1/2 degree per second shall cause the turn rate indicator on the attitude indicator to align with the second index to the right of center. A counter clockwise turn rate of 3 ± 1/2 degrees per second shall cause the indicator to align with the second index to the left of center."

*Page 29, Paragraph 3.5.8.6: Add

"The displacement gyroscope shall be balanced on internal vibration isolators, to prevent pitch and roll oscillation and shall comply with the requirements of CURVE IV of MIL-E-5400 with the frequency range extended to 2000 cps. It shall be demonstrated that the vibration has not caused gimbal or spin rotor bearing false brinelling after 20 hours of operation in above requirement."

Pages 35 and 36, Paragraphs 3.5.9 through 3.5.9.8.1: Delete and substitute:

"3.5.9 Rate Switching Gyroscope - The Rate Switching Gyroscope shall be in accordance with MIL-G-23723. Dimensions shall be in accordance with MS 17384."

*Pages 51 through 53, Paragraphs 3.5.12 through 3.5.12.11.2: Delete and substitute:

"3.5.12 Transmitter, Rate Gyroscope T-751/AJB-3A - The Rate Gyroscope Transmitter shall be in accordance with MIL-G-23733. Dimensions shall be in accordance with MS 17394."

Pages 57 and 58, Paragraphs 4.4.3 through 4.4.3.8: Delete and substitute:

"4.4.3 Reliability Assurance Tests - Reliability Assurance Tests shall be conducted using MIL-STD-781. Tests as required by both the Qualification Phase and the Sampling Phase shall be conducted.

4.4.3.1 Qualification Phase - Prior to acceptance of equipments under the contract or order, minimum of three (3) equipments shall be tested as outlined in MIL-STD-781, under the section entitled "Qualification Phase of Production Reliability Tests". The maximum number of equipments to be used shall be those listed in Table 5 of MIL-STD-781.

4.4.3.2 Reliability Production Acceptance (Sampling) Phase Tests - The equipment, throughout production, shall be tested as outlined in MIL-STD-781 (as modified herein) under the section entitled "Production Acceptance (Sampling) Phase of Production Reliability Tests". Test level E shall be used.

4.4.3.2.1 All Equipment Screening Test - The All Equipment Screening Test of Test Plan XXIX (Paragraph 4.2.9 of MIL-STD-781) shall be conducted on the Attitude Director Indicator, Displacement Gyroscope Assembly and Amplifier-Power Supply. The length of the test time per unit shall be 80 hours. Monthly Reliability Status Reports shall be submitted to the procuring activity with a copy to NAVAIRSYSCOM (Avionics Division).

4.4.3.3 Test Level - The test levels for the Qualification phase and the Reliability Sampling Phase shall be as follows:

Except for the initial temperature cycle of +71°C (+160°F) followed by -54°C (-65°F), the high temperature shall be +55°C (+130°F) and low temperature shall be -40°C (-40°F). The initial temperature cycle shall be conducted at the start of each system and on each unit thereafter upon repair of replacement. The length of each cycle shall not exceed 24 hours nor shall either of the high or low temperature conditions be less than 4 hours. The equipment shall be vibrated $\frac{1}{2}$ g except for the gyro which shall be 2 g's, at a non-resonant frequency between 20 and 60 cps for 10 minutes at each extreme temperature. No unit shall be subjected to temperature or vibration conditions exceeding the unit specification requirements.

4.4.3.3.1 Duty Cycle - Upon receipt of the equipment, following operational tests (or debugging) the system shall be placed in a chamber at +71°C (+160°F) and operated for 4 hours using nominal voltage. The system shall be tested by Scorsby motion during this test (at least ±5°). The system shall then be tested at -54°C (-65°F) after a 4-hour soak at -54°C (-65°F). The system shall then be tested as follows:

The system shall be operated for $2\frac{1}{2}$ hours at nominal voltage and shall be de-energized for $\frac{1}{2}$ hour. This duty cycle shall be conducted at least eight times each day. Time counted toward the reliability tests shall be the sum of all $2\frac{1}{2}$ hours running periods.

Following the initial hot and cold tests of the one temperature cycle (See 4.4.3.3), the tests shall continue at -40°C (-40°F) to +55°C (+130°F). At all times when power is applied during the Reliability Test, including heat and cold (except for a period including the starting cycle on each start and not to exceed 5 minutes) the displacement gyro, the rate switching gyro, and the proportional rate gyro shall be on a Scorsby table operating at between 5 and 7 cycles per minute and at an angle sufficient to cause positive switching of the rate switching gyro.

4.4.3.4 Lot Size for Sampling Phase - To evaluate whether the contracted MTBF is being met, the entire contract quantity (with the exception of those equipments used in the Qualification Phase) shall be considered one lot. The test program shall start the first month after the Qualification Phase has been completed. Samples of each month's production shall be selected and placed on test in the same manner as though one month's production was a lot. The samples shall be tested until an accept or reject decision is reached. In the meantime, other equipments constructed shall be shipped. The test results shall be summarized monthly for the procuring activity. The procuring activity reserves the right to stop the acceptance of equipment at any time after one or more reject decisions have been reached, pending a review of the contractor's efforts to improve the equipment, the equipment parts, the equipment quality control etc., so that the entire contract quantity will show an accept decision.

4.4.3.5 Test Details - The test details such as the length of the test cycle, the length of the heat portion of the cycle, the performance characteristics to be measured, special failure criteria, preventive maintenance to be allowed during the test, etc. shall be part of the test procedures to be submitted and approved by the procuring activity prior to the beginning of the Qualification Test Phase of the Reliability Assurance Tests.

4.4.3.6 Accept-Reject Criteria - Test Plan III of MIL-STD-781 shall be used to determine the accept-reject criteria for the Reliability Qualification Test Plan. Test Plan IV of MIL-STD-781 shall be used to determine the accept-reject criteria for Reliability Sampling Test Plan.

4.4.3.7 Performance Characteristics to be Measured - The performance characteristics to be measured shall be as specified in 6.9.

4.4.3.8 Failure Criteria - In addition to the requirements of MIL-STD-781, the following requirements shall be used to determine when a failure has occurred during the test:

(1) Whenever performance characteristics fall below the acceptance requirement (paragraph 4.4.3.7) at least one failure has occurred. If subsequent analysis reveals that several parts have deteriorated, each shall be counted as a failure, unless one caused the other parts to fail.

4.4.3.9 Preventive Maintenance - During the test no preventive maintenance, other than simple adjustments normally performed on the equipment by the operator, shall be permitted. However, a log of all such adjustments must be kept. The procuring activity may weight these adjustments and if it feels justified assign excessive ones as failures.

4.4.3.10 Additional Requirements - The procedure set forth herein requires a complete system or a suitable simulation of the system loads and sequencing when the test is applied for the item specified."

*Page 62, Paragraph 6.10: Delete

*Pages 62 and 63, Paragraph 6.11: under SPECIFICATIONS Military: Delete

"MIL-E-4682, MIL-R-23094 and MIL-S-23603" and titles and add

"MIL-B-81744 Barrier coating solution and solvent."

*Page 63, Paragraph 6.11, under standards - Military: Add

"MIL-STD-781 Reliability Tests, Exponential Distribution"

"MIL-STD-1334 Barrier coating process for anti-friction bearings."

Delete "MS-17382 Gyroscope Assembly CN-494A/AJB-3" and substitute

"MS-3504 Gyroscope Assembly CN-1359/AJB-3 "