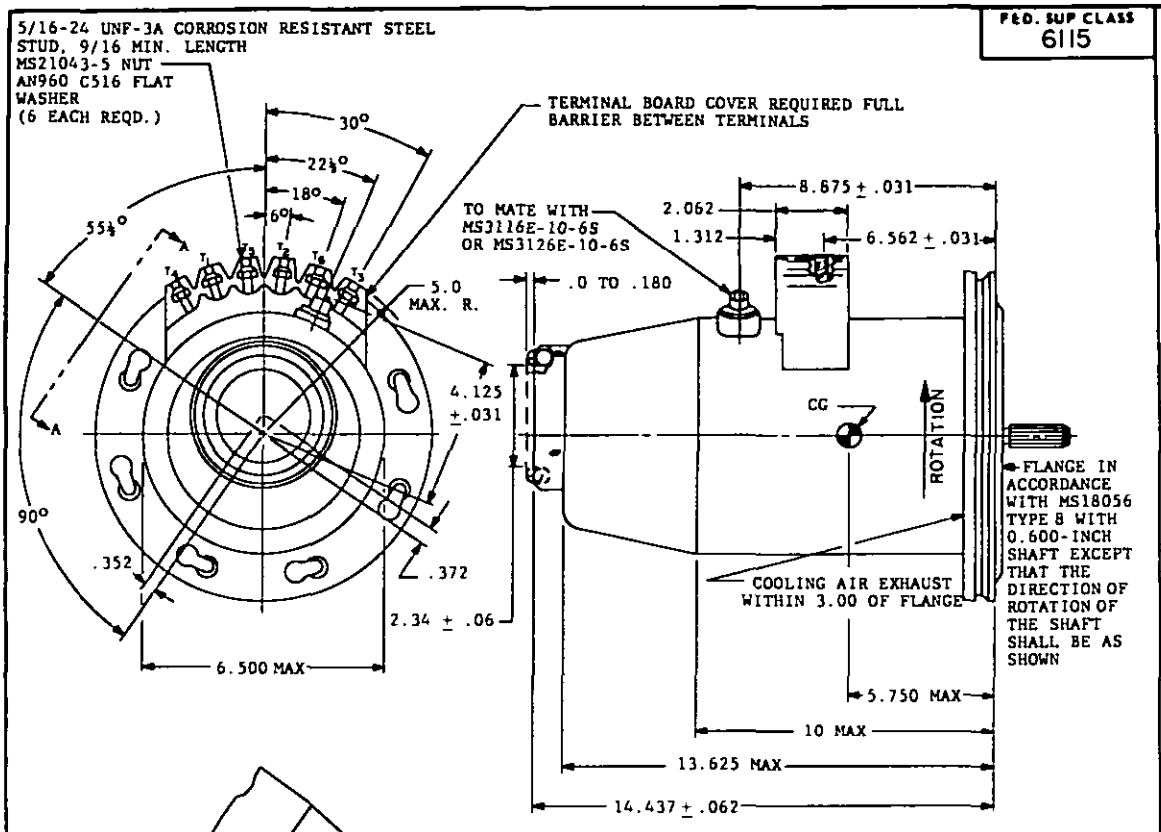
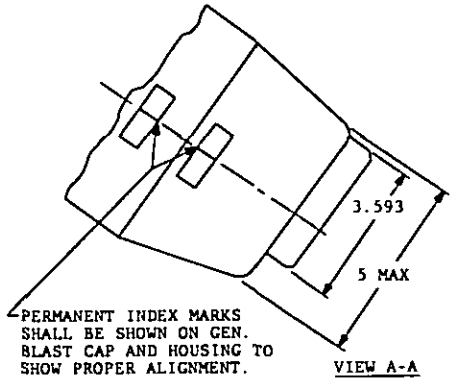
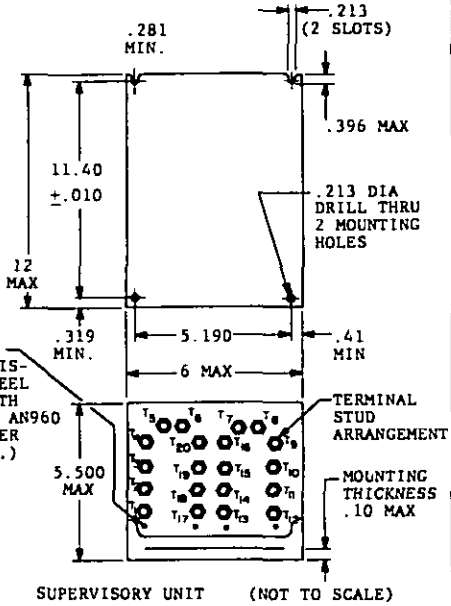
FED. SUP CLASS 6115





GENERATOR MS21967-6



SUPERVISORY UNIT P/N MS21967-3 (NOT TO SCALE)

GENERATOR DATA

RATED VOLTAGE	120/208V
RATED OUTPUT	20 KVA
PHASE	3
SPEED RANGE	7600-8400 RPM
MAX SPEED FOR REGULATION	8800 RPM
OVERSPEED	10,500 RPM
RATED POWER FACTOR	.75 LAGGING TO 1.0
EFFICIENCY MIN AT RATED LOAD	82%
MAX WEIGHT	49.75 LB
OVERHUNG MOMENT, MAX	275 IN. LB
FREQUENCY	380-420 HZ
SHEAR	1200 IN. LB ± 10%

VOLTAGE REGULATOR WEIGHT - - MAXIMUM 3.6 LBS.
SUPERVISORY UNIT WEIGHT - - MAXIMUM 10.5 LBS.

© ENTIRE MS REVISED AND REDRAWN

APPROVED 11 MAY 1962 REVISED (A) 14 JUNE 1962 (B) 24 SEPT 1964 © 10 Jan 1978

P.A. NAVY - AS
Other Cust

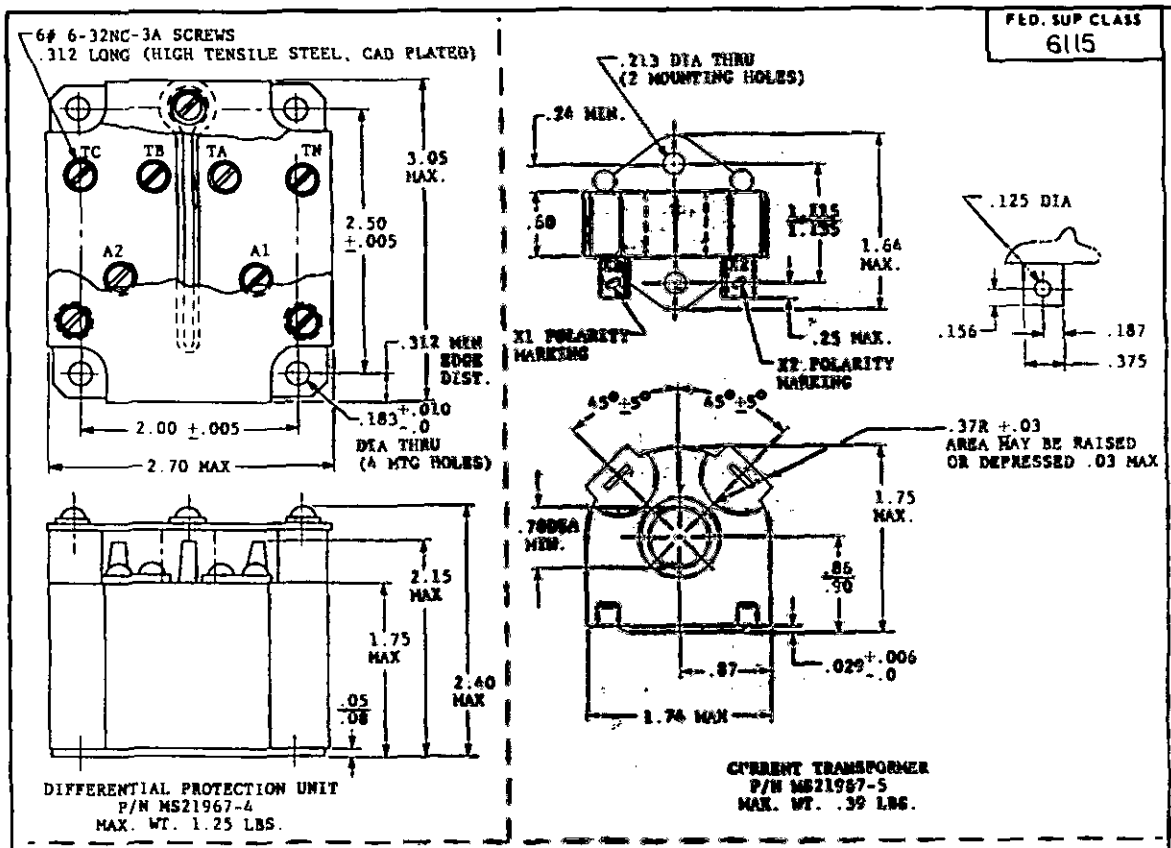
TITLE: GENERATOR SYSTEM, ALTERNATING CURRENT, INTEGRALLY EXCITED, BRUSHLESS, 20 KVA

MILITARY STANDARD
MS21967(AS)

PROCUREMENT SPECIFICATION: MIL-G-21480
SUPERSEDES:
SHEET 1 OF 5

DD FORM (MAR 72) 672-1 (Limited coordination)
PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.
PROJECT NO. 6115-N380
PLATE NO. 23871

FED. SUP CLASS
6115



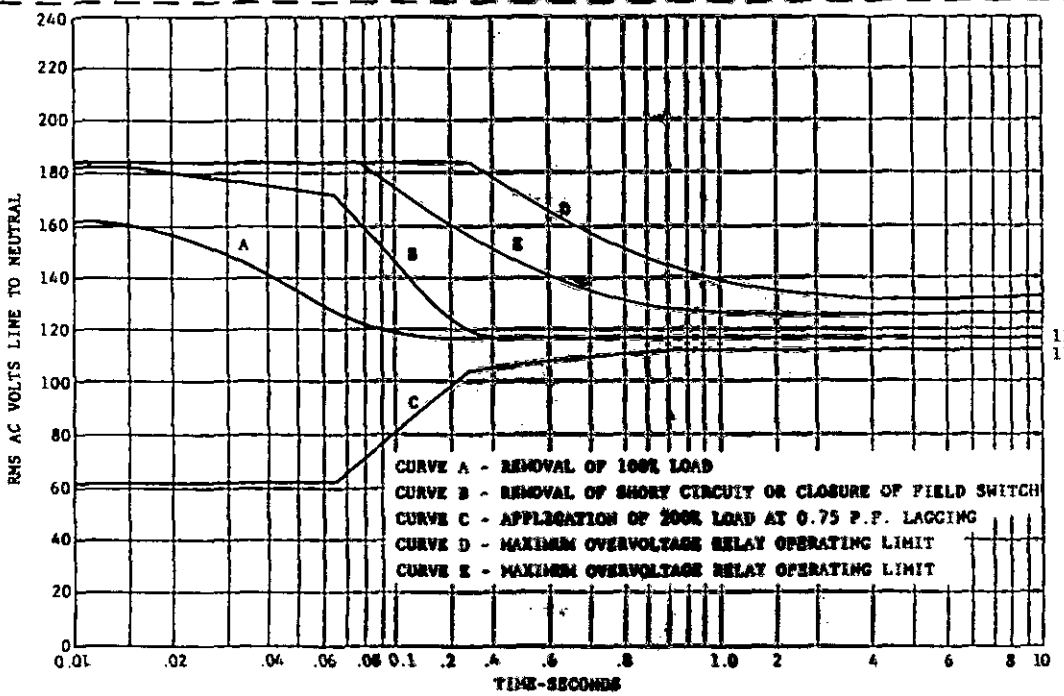


FIGURE 1 SYSTEM VOLTAGE LIMITS

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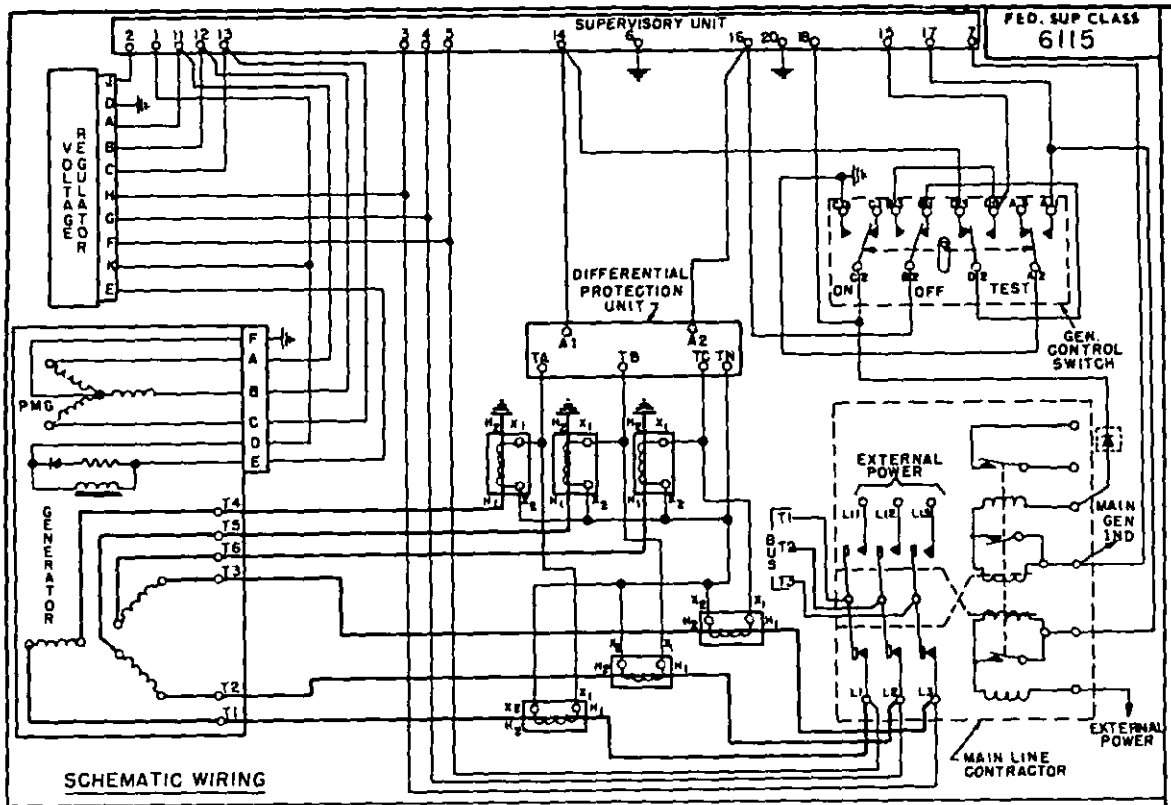
P.A. NAVY - AS Other Cust	TITLE GENERATOR SYSTEM, ALTERNATING CURRENT, INTEGRALLY EXCITED, BRUSHLESS, 20 KVA	MILITARY STANDARD MS21967(AS)
PROCUREMENT SPECIFICATION MIL-G-21480	SUPERSEDES:	SHEET 2 OF 5



SCHEMATIC WIRING

REQUIREMENTS

1. THE AIRCRAFT MANUFACTURER SHALL PROVIDE CONNECTING LEADS SHOWN.
2. ALL OUTLINE DIMENSIONS ARE LIMITING DIMENSIONS ONLY.
3. THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
4. REFERENCE DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATION FOR BIDS. THE REQUIREMENTS OF MILITARY SPECIFICATION MIL-G-21480 PERTAIN WITH THE FOLLOWING DELETIONS, ADDITIONS, AND/OR SUBSTITUTIONS:

REPLACE FIGURE 3 WITH FIGURE 1 OF THIS SPECIFICATION.

REPLACE FIGURE 6 WITH FIGURE 1 OF THIS SPECIFICATION.

DELETE THE FOLLOWING PARAGRAPHS: 3.4.2.2 THROUGH 3.4.2.8, 3.4.6, 3.4.15, 3.5.7.5, 4.5.20, 4.5.22.1 THROUGH 4.5.22.3.4, 4.5.23.1 THROUGH 4.5.23.1.2, 4.5.24.1 THROUGH 4.5.24.3.4, 4.5.25.1 THROUGH 4.5.25.2.1.

3.4.2 ENVIRONMENTAL REQUIREMENT: DELETE AND ADD: ALL COMPONENTS SHALL OPERATE IN ACCORDANCE WITH THIS SPECIFICATION WHEN SUBJECTED TO THE CONDITIONS OF MIL-E-81910.

3.4.2.1 TEMPERATURE AND ALTITUDE: ADD: THE SUPERVISORY EQUIPMENT SHALL OPERATE AT 100°C AT SEA LEVEL WITH A STRAIGHT LINE VARIATION TO 71°C AT 70,000 FEET.

3.4.7 MANUAL SYSTEM CONTROL - DELETE AND ADD:

ON - GENERATOR COMES ON THE BUS AUTOMATICALLY WHEN ITS ELECTRICAL CHARACTERISTICS ARE WITHIN PRESCRIBED LIMITS DISCONNECTING GROUND POWER. INDICATOR DISPLAYS "OFF" IF CHARACTERISTICS ARE OUTSIDE THE PRESCRIBED LIMITS, OTHERWISE "ON" IS DISPLAYED. PROTECTIVE SYSTEM OPERATIVE.

OFF-RESET - GENERATING SYSTEM ELECTRICALLY DEENERGIZED AND MAIN LINE CONTACTOR OPEN. INDICATOR DISPLAYS "OFF".

TEST - GENERATOR ENERGIZED BUT NOT CONNECTED TO AIRCRAFT BUS. GROUND POWER CONNECTED TO AIRCRAFT BUS IF PLUGGED INTO AIRCRAFT. INDICATOR DISPLAYS "ON" IF POWER IS WITHIN PRESCRIBED LIMITS OTHERWISE "OFF" IS DISPLAYED. PROTECTIVE SYSTEM OPERATIVE.

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P.A. NAVY - AS Other Cust	TITLE GENERATOR SYSTEM, ALTERNATING CURRENT, INTEGRALLY EXCITED, BRUSHLESS, 20 KVA	MILITARY STANDARD MS21967(AS)
PROCUREMENT SPECIFICATION MIL-G-21480	SUPERSEDES:	SHEET 3 OF 5

3.4.8.2 OVERLOAD CAPACITY. CHANGE "5 MINUTES" TO "2 MINUTES".

3.4.9.3 ADD: THE GENERATOR SYSTEM SHALL BE SO DESIGNED THAT UPON REMOVAL OF ANY CONNECTOR PLUG, EXCEPT CURRENT TRANSFORMER CONNECTOR, THE SYSTEM SHALL BE DE-ENERGIZED.

3.4.17 RELIABILITY. THE SYSTEM SHALL HAVE A MINIMUM TIME BETWEEN MAINTENANCE ACTIONS OF 2,000 HOURS.

3.5.4 WAVEFORM. CHANGE "1.41 ± 5%" TO "1.41 ± 10%". CHANGE "1.5%" TO "3.0%". CHANGE "3.0%" TO "4.0%".

3.5.5 ADD: THE DC CONTROL POWER SHALL BE AT LEAST 50 WATTS. THE PERMANENT MAGNET GENERATOR USED FOR INTEGRAL CONTROL POWER SHALL RECOVER TO NORMAL VOLTAGE AFTER A SHORT CIRCUIT.

3.5.7.2 OVERVOLTAGE. CHANGE "FIGURE 6" TO "FIGURE 1" OF THIS SPECIFICATION.

3.5.7.3 UNDERVOLTAGE. DELETE AND ADD: THE SYSTEMS SHALL PROVIDE FOR THE GENERATOR TO BE DISCONNECTED FROM THE LOAD BUS WHEN THE AVERAGE OF THE PHASE VOLTAGES DROP TO OR BELOW 95 VOLTS AND REMAIN AT THIS LIMIT FOR A PERIOD OF 3 TO 7 SECONDS. THE DEVICE SHALL HAVE A MINIMUM PICKUP OF 110 VOLTS.

3.5.7.4 UNDERFREQUENCY. DELETE AND ADD: THE SYSTEM SHALL PROVIDE FOR THE GENERATOR TO BE DISCONNECTED FROM THE LOAD BUS WITHIN A PERIOD OF 1 TO 3 SECONDS AFTER THE FREQUENCY FALLS BELOW 370 ± 5 HZ. PICKUP SHALL OCCUR WITHIN THE SAME RANGE AS DROPOUT BUT THE PICKUP VALUE SHALL BE GREATER THAN THE DROPOUT VALUE UNDER ALL CONDITIONS.

3.5.7.6 FEEDER FAULT. DELETE AND ADD: THE SYSTEM FEEDER PROTECTION SHALL OPERATE ON A DIFFERENTIAL CURRENT ON ANY PHASE OF 0.6 PER UNIT. THE TIME TO COMPLETE THE TRIP SHALL BE A MAXIMUM OF 40.0 MILLISECONDS.

3.5.8 DELETE AND ADD: THE SYSTEM SHALL MEET THE REQUIREMENTS OF MIL-E-81910, CLASS NO. III B FOR THE GENERATORS AND CONTROL EQUIPMENT, EXCEPT THE TEN MICROFARAD FEEDTHROUGH CAPACITOR SHALL BE REMOVED.

4.2.1.1 ADD: QUALIFICATION TESTS SHALL BE SUPPLEMENTED WITH A MINIMUM 100 HOUR FAILURE FREE FLIGHT TEST BEFORE CONSIDERATION IS GIVEN TO INCORPORATING THE ITEM ON THE QUALIFIED PRODUCTS LIST.

4.5.12 DELETE AND ADD: THE GENERATOR, VOLTAGE REGULATOR, SUPERVISORY UNIT, AND CT SHALL BE SUBJECTED TO A ELECTROMAGNETIC INTERFERENCE TEST IN ACCORDANCE WITH MIL-E-81910, FOR CLASS III B EQUIPMENT.

4.5.13 WAVEFORM. CHANGE "1.41 ± 5%" TO "1.41 ± 10%". CHANGE "1.5% TO "3.0%". CHANGE "3.0%" TO "4.0%".

4.5.20.1 DELETE AND ADD: THE VOLTAGE REGULATOR, SUPERVISORY UNIT, DPU, AND CT SHALL BE SUBJECTED TO A SALT FOG TEST IN ACCORDANCE WITH MIL-E-81910. AT THE COMPLETION OF THIS TEST THE UNIT SHALL SUCCESSFULLY DEMONSTRATE ITS BUILDUP CHARACTERISTICS, THE EFFECT OF APPLICATION AND REMOVAL OF RATED AND 200% LOAD, AND PROTECTIVE FUNCTIONS.

4.5.20.2 DELETE AND ADD: THE GENERATOR SHALL BE SUBJECTED TO AN OIL SALT WATER INGESTION TEST IN ACCORDANCE WITH MIL-E-81910. AT THE COMPLETION OF THIS TEST THE UNIT SHALL SUCCESSFULLY DEMONSTRATE ITS BUILDUP CHARACTERISTICS, THE EFFECT OF APPLICATION AND REMOVAL OF RATED AND 200% LOAD, AND PROTECTIVE FUNCTION.

4.5.21 FUNGUS RESISTANCE. DELETE AND ADD: THE GENERATOR, VOLTAGE REGULATOR, SUPERVISORY UNIT, DPU, AND CT SHALL BE SUBJECTED TO A FUNGUS TEST IN ACCORDANCE WITH MIL-E-81910, WITH THE INSTALLATION INSTRUCTIONS AND MOUNTING NUTS ATTACHED. AT THE COMPLETION OF THIS TEST THE UNIT SHALL SUCCESSFULLY DEMONSTRATE ITS BUILDUP CHARACTERISTICS, THE EFFECT OF APPLICATION AND REMOVAL OF RATED AND 200% LOAD, AND PROTECTIVE FUNCTIONS. MOUNTING NUTS ARE TO BE UNAFFECTED AND THE PACKAGE HOLDING THE NUTS SUITABLE FOR SHIPMENT. INSTRUCTIONS ARE TO BE LEGIBLE.

4.5.22 SAND AND DUST. DELETE AND ADD: THE GENERATOR SHALL BE SUBJECTED TO A DUST TEST IN ACCORDANCE WITH MIL-E-81910. AT THE COMPLETION OF THIS TEST THE UNIT SHALL SUCCESSFULLY DEMONSTRATE ITS BUILDUP CHARACTERISTICS, THE EFFECTS OF APPLICATION AND REMOVAL OF RATED AND 200% LOAD, AND PROTECTIVE FUNCTIONS.

4.5.23 VIBRATION. DELETE AND ADD: THE GENERATOR, VOLTAGE REGULATOR, SUPERVISORY UNIT, DPU, AND CT SHALL BE SUBJECTED TO A VIBRATION TEST IN ACCORDANCE WITH MIL-E-81910, EXCEPT THAT THE AMPLITUDE OF VIBRATION MONITORED AT THE ANTI-DRIVE END OF THE GENERATOR DURING THE MAIN BENDING MODE SHALL BE LIMITED TO 20 G'S BUT THE VIBRATION INPUT SHALL NOT BE LOWERED BELOW 5 G'S. AT THE COMPLETION OF THIS TEST THE UNIT SHALL SUCCESSFULLY DEMONSTRATE ITS BUILDUP CHARACTERISTICS, THE EFFECT OF APPLICATION AND REMOVAL OF RATED AND 200% LOAD, AND PROTECTIVE FUNCTIONS.

4.5.24 SHOCK. DELETE AND ADD: THE GENERATOR, VOLTAGE REGULATOR, SUPERVISORY UNIT, DPU, AND CT SHALL BE SUBJECTED TO A SHOCK TEST IN ACCORDANCE WITH MIL-E-81910. AT THE COMPLETION OF PROCEDURE I, THE UNIT SHALL SUCCESSFULLY DEMONSTRATE ITS BUILDUP CHARACTERISTICS, THE EFFECT OF APPLICATION AND REMOVAL OF RATED AND 200% LOAD, AND PROTECTIVE FUNCTION. THERE SHALL BE NO FAILURE OF THE MOUNTING ATTACHMENTS, AND THE TEST ITEM SHALL REMAIN IN PLACE AND NOT CREATE A HAZARD DURING PROCEDURE III.

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4.5.25 HUMIDITY. DELETE AND ADD: THE GENERATOR, VOLTAGE REGULATOR, SUPERVISORY UNIT, DPU, AND CT SHALL BE SUBJECTED TO A HUMIDITY TEST IN ACCORDANCE WITH MIL-E-81910. AT THE COMPLETION OF THIS TEST THE UNIT SHALL SUCCESSFULLY DEMONSTRATE ITS BUILDUP CHARACTERISTICS, THE EFFECT OF APPLICATION AND REMOVAL OF RATED AND 200% LOAD, AND PROTECTIVE FUNCTIONS.

4.5.30 DELETE FIRST SENTENCE AND ADD: ALL SYSTEM COMPONENTS EXCEPT THE GENERATOR SHALL BE SUBJECTED TO THE ACCELERATION TESTS OF MIL-E-81910.

NOTES

1. DIMENSIONS IN INCHES. TOLERANCES: DECIMALS ± 0.31, ANGLE ± 1°, UNLESS OTHERWISE SPECIFIED. DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH MIL-STD-8.

2. COMPONENTS SHOWN ENCLOSED IN DOTTED LINES NOT FURNISHED UNDER THIS DRAWING.

ITEM	PART NUMBER
COMPLETE SYSTEM (CONSISTS OF ONE GENERATOR, ONE VOLTAGE REGULATOR, ONE SUPERVISORY UNIT, ONE DIFFERENTIAL PROTECTION UNIT, SIX CURRENT TRANSFORMERS)	MS21967-7
GENERATOR	MS21967-6
VOLTAGE REGULATOR	MS25368-2
SUPERVISORY UNIT	MS21967-3*
DIFFERENTIAL PROTECTION UNIT	MS21967-4
CURRENT TRANSFORMER	MS21967-5

*MS21967-3 SUPERSEDES AND IS INTERCHANGABLE WITH MS21967 OF REVISION B DATED 24 SEPTEMBER 1964.

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PROCUREMENT SPECIFICATION MIL-G-21480	SUPERSEDES:	SHEET 5 OF 5