



# MASTER ACTIVITIES PLAN

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## 1.3.3 RP/RPIE Turnover by The Martin Company

1.3.3.1 The Martin Company will relinquish the custodial responsibilities, operation, and maintenance of RP/RPIE following completion of the weapon system demonstration.

1.3.3.2 The Martin Company will relinquish custodial responsibilities, operation, and maintenance to SATAF on the basis of the following minimum divisions of the site:

- a. Complex
- b. Shop, Missile Assembly and Maintenance (SMAM)
- c. Re-entry vehicle facility
- d. Liquid Oxygen Plant

1.3.3.3 Relinquishment of custodial responsibilities from The Martin Company to SATAF will be effected by a SATAF signature of acceptance on all DD-1149 forms used to transfer the facilities to The Martin Company from SATAF.

1.3.3.4 The Martin Company will perform the following tasks prior to transfer of facilities to SATAF:

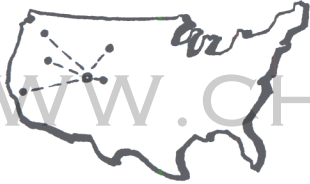
1.3.3.4.1 Inventory to assure all AFTO-2 forms and historical records of Operation and Maintenance reflect the current status of the pertinent RPIE.

1.3.3.4.2 Prepare a calibration report to reflect the current status of all pertinent RPIE devices that require calibration. The report will include the date of the last calibration and the next due date for calibration.

1.3.3.4.3 List all uncorrected discrepancies, scheduled completion dates of same, and assignment of responsibility for completion and acceptance.

1.3.3.4.4 Prepare a report for accountability of spares usage by The Martin Company during the period of custodial responsibility. (Relating to spares transferred to The Martin Company on the pertinent DD-1149 forms.)

1.3.3.5 The Martin Company will, concurrent with SATAF signing of the DD-1149 forms, return all documentation listed on the DD-1149 forms and attachments.



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## 1.3.4 Sequence of Events, RP/RPIE Turnover by The Martin Company

1.3.4.1 Five (5) days following completion of the demonstration of the last increment of a minimum division of a site, SATAF will form an inventory team composed of representatives of SATAF, SAC, and The Martin Company.

1.3.4.2 Six (6) days following completion of the demonstration of the last increment of a minimum division of a site, The Martin Company will:

1.3.4.2.1 Inventory to assure all AFTO-2 forms and historical records of operation and maintenance (transferred to The Martin Company with the pertinent DD-1149(s), or, as prepared by contract requirements) reflect the current status of the pertinent RPIE.

1.3.4.2.2 Prepare a calibration report to reflect the current status of all pertinent RPIE devices listed on the calibration report attached to the pertinent DD-1149(s). The report will include the date of the last calibration and the next due date for calibration.

1.3.4.2.3 List all uncorrected discrepancies, scheduled completion dates of same, and assignment of responsibility for completion and acceptance.

1.3.4.2.4 Prepare all documentation, listed on the DD-1149 forms, for transfer to SATAF.

1.3.4.2.5 Prepare a report for accountability of spares usage by The Martin Company during the period of custodial responsibility. The report will cover only those spares provided to The Martin Company on the pertinent DD-1149(s).

1.3.4.2.6 The Martin Company divisions having responsibility for the items noted in a, b, c, d, and e, above, will accomplish the actions as noted and provide The Martin Company Materiel Chief with a copy of all reports and lists.

1.3.4.3 Eight (8) days following completion of the demonstration of the last increment of a minimum division of a site, the inventory team will inventory all RP/RPIE, spares, and special equipment, directly accountable to the original DD-1149 and "Supplemental" DD-1149(s). The SATAF representative will be the team chairman.



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1.3.4.4 Nine (9) days following completion of the demonstration of the last increment of a minimum division of a site, The Martin Company Materiel Chief will present the following to SATAF:

- a. A statement to certify that all AFTO-2 forms and Historical Records of Operation and Maintenance reflect the current status of the pertinent RPIE.
- b. A report certifying the status of calibration. The report will include the date of the last calibration and the next due date for calibration.
- c. A list of all uncorrected discrepancies, scheduled completion dates of same, and assignment of responsibility for completion and acceptance.

1.3.4.5 Ten (10) days following completion of the demonstration of the last increment of a minimum division of a site, SATAF, SAC, and The Martin Company will reconcile any problem areas effecting satisfactory transfer of facilities to SATAF.

1.3.4.6 Eleven (11) days following completion of the demonstration of a minimum division of a site, SATAF will assure that all Associate Contractor DD-250 forms, pertinent to the facility area, have been signed by Air Force Quality Control (AFQC) affecting acceptance of all equipment by the Government.

1.3.4.7 Twelve (12) days following completion of the demonstration of the last increment of a minimum division of a site, The Martin Company Materiel Chief will present the pertinent DD-1149 forms, Supplements, and attachments, to the Administrative Contracting Officer (ACO). The ACO will accept custodial responsibility of the facilities by affixing signature of acceptance on the pertinent DD-1149 forms, Supplements, and attachments. The Martin Company will transfer all supporting equipments, spares, documentation, and keys, to the ACO, as listed on the DD-1149 form. The Martin Company Materiel Chief will deliver the DD-1149, Supplements, and attachments, to The Martin Company Contracts Chief for reproduction and distribution.



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## 1.4.0 TITAN I OPERATIONAL MAINTENANCE POLICY

### INTRODUCTION

The policy contained herein has been established to provide direction for a consistent and effective maintenance effort on the WS107A-2 for support activities and operation at all levels. This information should serve as a basis for planning all aspects of maintenance support for the weapon system, commencing with initial equipment design and including the performance and preparation of maintenance analysis, maintainability, spares provisioning, technical manuals and technical training. These functions must be performed in accordance with a single maintenance concept in order to effectively support WS107A-2 maintenance requirements outlined in AFBMD/STL report GM-60-0000-10288, "Titan Operational Data Summary," 15 March 1960 (SECRET)

### SCOPE

This policy is applicable to the operational phases of WS107A-2, Bases T-1 through T-5. This policy contains information on the maintenance and calibration requirements for RPIE, GOE/GSE, Airborne and MAMS equipment of the weapon system, which is controlled by TMC. The policy that appears in this section was prepared by Maintenance Engineering Department of the Field Service and Support Division.





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## I. MAINTENANCE CONCEPT

The launch complexes will be manned by personnel on a 24 hour day, 7 day-week basis. These personnel will be qualified technicians as well as operators and will have sufficient checkout equipment to perform the following maintenance functions: system and subsystem checkouts, periodic servicing, scheduled inspections, identification and isolation of equipment malfunctions, replacement or repair of malfunctioning equipment, and launch exercises. A limited number of spares will be stocked at each launch complex to minimize weapon system out-of-commission time when malfunctions occur.

The personnel, equipment and procedures will be available at the MAMS to enable performance of the following maintenance functions: receiving inspections, equipment malfunction verifications, extensive equipment repair; calibration, adjustment or alignment; equipment checkout, equipment cleaning, equipment modification, and spares storage.

## II. TYPES OF MAINTENANCE

Preventive maintenance and corrective maintenance are the two basic types of maintenance performed on the weapon system equipment. Calibration is not a basic type of maintenance in itself, but is associated with both preventive and corrective maintenance; for purposes of clarity, calibration is treated separately. The Martin-Denver Field Service and Support Division will determine the type, level and location of the maintenance functions. This includes identification of recommended spares, maintenance parts, tools and test equipment, technical data requirements, personnel skill levels necessary for this support, and the necessary time required to perform these maintenance functions.

### A. Preventive Maintenance

Preventive maintenance will consist of mandatory component replacement, readiness monitoring, missile recycle and scheduled inspections.

#### 1. Mandatory Component Replacement

This maintenance task consists of component replacement on a scheduled



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basis. This replacement program is primarily intended for, but not limited to, those components that have a predictable wearout factor and have a direct bearing on weapon system mission accomplishment, personnel safety, and the prevention of failure. The majority of the component replacements will be organizational maintenance. The exception will occur when component physical size or replacement complexity requires the use of equipment and personnel not available at the launch complex. Components that require mandatory replacement will be documented in the replacement schedule of the applicable technical order (TO). The replacement schedules will list the components of equipment that are to be replaced periodically and specifies how often they are to be replaced. The replacement items are segregated into operational control level (OCL) assemblies on which usage and status data shall be maintained. Replacement means removal of the equipment and installation of a new or newly overhauled item in its place. Replacement intervals are indicated in operating time, cycles, or calendar time as appropriate. Replacement will be accomplished during the inspection period occurring concurrently with or immediately prior to the replacement times specified in this schedule.

2. Readiness Monitoring - The launch crew will maintain a continuous watch over monitoring devices in the control center which grossly indicate the ability of the weapon system to proceed immediately into a countdown. These monitoring devices continuously monitor selected parameters of the weapon system to assure a high confidence of launching within the specified reaction time.

3. Missile Recycle - At specified periods the missile will be removed from the launch silo and returned to the SMA for recycle maintenance. The purpose of recycle maintenance is to perform that maintenance required on the missile and its installed equipment which is not practical, in terms of downtime and special maintenance equipment, to perform in the launch silo. When a missile is removed from the launch silo for recycle maintenance, it



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will be immediately replaced by the spare missile from the MAMS so as to minimize downtime of the weapon system.

4. Scheduled Inspections - The scheduled inspections that are applicable to the 107A-2 weapon system are classified as receiving, storage, installation, daily, periodic and special. Requirements for each inspection will be in accordance with the inspection definitions and will be documented as related in Technical Order 00-20E-1.

The inspections are defined as follows:

a. Receiving Inspection - Accomplished whenever the applicable system and equipment is received with the intent of placing it in a serviceable condition. This inspection consists of the requirements necessary to determine configuration, and to insure the item has been unloaded and/or unpacked properly, is complete and properly assembled, and has not been damaged during shipment.

b. Storage Inspection - Those scheduled inspections performed on items held in storage (installed or uninstalled configuration), to assure integrity of packing and storage containers and that dormant equipment in exposed storage has not deteriorated. These requirements are for items under jurisdiction of site personnel, however, the requirements do not include those within the scope of other applicable storage directives.

c. Installation Inspection - Consists of the requirements to be accomplished whenever a missile is installed in the launch mount and/or integrated with ground equipment at the launch emplacement, and will assure that the missile and/or ground equipment has been properly installed in its launch emplacement and is in the required state of readiness. This will include inspection of any damage incurred during transportation to the launch site.

d. Daily Inspection - Brief visual inspection involving no disassembly. It is intended to quickly determine the status of the missile/system/equipment within a given state of readiness without degrading such readiness. Requirements for shift verification will be identified in the daily inspection.



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e. Periodic Inspections - Are conducted at specified calendar intervals of time. They consist of inspection requirements, which are designed to remove the missile/system/equipment from a readiness condition, determine its condition, and return it to the prescribed condition. The statement of each requirement indicates how thorough the inspection and/or test should be.

Periodic Inspections for the Weapon System will consist of a basic Periodic Inspection to be accomplished every 30 calendar days, and a 6th Periodic Inspection to be accomplished every 180 calendar days. Time intervals for accomplishment of Periodic Inspection of the missile begin to occur at the time of its installation on the launcher. Accomplishment of Periodic Inspections at the launch areas may be adjusted in order to provide simultaneous inspection of the Missile, Ground Operating Equipment, Ground Support Equipment, and Direct Support Real Property Installed Equipment. However, the prescribed time intervals will not be exceeded. Replacement and calibration of operating equipment that is to be replaced or calibrated periodically will normally be accomplished during the periodic inspections.

f. Special Inspections - Supplements other inspections and includes those requirements that do not have prescribed calendar intervals of frequency for performance and are accomplished because of peculiar events or conditions.

## B. Corrective Maintenance

The requirements for corrective maintenance on weapon system equipment will result from equipment usage, performance of scheduled inspections, sub-system checks, launch exercises, and corrective maintenance performed on other equipment. Facilities, equipment, material, methods, and personnel will be available to support the following corrective maintenance activities.

### 1) Airborne

Corrective maintenance on the missile and airborne components will consist of the following tasks:





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a. Airframe - There are four categories of corrective maintenance on the airframe. (1) structural repair, (2) structural replacement, (3) fastener replacement, and (4) corrosion correction. Major airframe maintenance (propellant tank repair, extensive skin repair and structural replacement) will normally be accomplished at the factory (depot). The exception will occur when squadron personnel determine that the proper tools and facilities are available to repair the structural damage at the MAMS. This performance of field maintenance on major structural assemblies will be allowed providing such repair is practical and can be accomplished without affecting reliability and safety.

Minor airframe maintenance (fastener replacement, corrosion correction, and repair of minor skin dents) will normally be accomplished in the silo by launch complex personnel. Structural modification will be performed at either the MAMS or the Depot, depending upon the nature of the modification.

b. Re-Entry Vehicle - Re-Entry vehicle GOE in the launch complex determines the state of readiness of a re-entry vehicle on a GO/NO-GO basis. A few NO-GO conditions can be rectified by appropriate maintenance action without removal of the re-entry vehicle from the silo. However, most NO-GO conditions will necessitate field level maintenance at the SMA. To hold missile downtime to a minimum, should field level maintenance be required, the malfunctioning re-entry vehicle will be replaced immediately with a spare re-entry vehicle.

Maintenance on the re-entry vehicle in the silo by launch complex personnel (Organizational Maintenance) will be limited to the tasks defined in applicable Technical Orders. Field level maintenance on the re-entry vehicle will be performed at either the launch silo or SMA, and repair will be accomplished to the full extent of the capabilities of this level



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of maintenance. Re-entry vehicle field level maintenance will be performed by specialist, supplemented upon request by personnel and facilities of other SMA organizations, the host base, and/or depot.

c. Electrical System - The missile electrical system consists of power generating and distribution equipment and inter-connecting electrical wiring. Malfunctions will be isolated to the smallest replaceable components, using GOE, GSE, available test equipment, and troubleshooting procedures. The malfunctioning component will then be replaced with a serviceable spare from the control center or MAMS. Damage to interconnecting wiring will be isolated to a specific cable run and the individual cable replaced with a spare, design permitting (i.e. cable ends terminating at connectors or terminal boards). All other wiring damage will necessitate replacement of individual wires. Damage to wiring connectors will be corrected by replacing the entire affected cable, where design permits. All other connector replacement will be accomplished by splicing in a serviceable spare from the Control Center or MAMS. Normally, all wiring and connector replacement will be accomplished within the silo.

Following any component, connector or wiring replacement, the necessary calibration, alignment, and performance checks will be accomplished to re-establish an acceptable state of system readiness. Malfunctioning components will be returned to the MAMS for further disposition. The performance of field maintenance on specified electrical components (distribution panels, relay panels, junction boxes, etc.) will be allowed providing such repair is considered practical and can be accomplished without affecting reliability and safety.

d. Electronic Systems - The missile electronic systems (Guidance and Flight Controls) include the rate gyro packages, three axis reference package, decoder, receiver transmitter, etc. Malfunctions in one of these systems will be isolated to the smallest replaceable components, using



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GOE, GSE, available test equipment, and trouble-shooting procedures. The malfunctioning component will then be replaced with a serviceable spare from the Control Center or MAMS. Associated system equipment (waveguides, antennae, etc.) will also be replaced in the Silo. Many of the system packages are sealed and pressurized. A low package pressure will be recognized and corrected (in place) utilizing a portable ground pressurization unit. Following system operating equipment replacements, the necessary calibration, alignment and performance checks will be accomplished to re-establish an acceptable state of system readiness. Malfunctioning components which are sealed will be returned to the MAMS for failure verification and subsequently to the depot for repairs. Unsealed packages and associated system equipment will be returned to the MAMS for final disposition (repair or discard). The full field level maintenance capability of the MAMS will be used to repair, calibrate and checkout malfunctioning system components, whenever practical.

e. Mechanical Systems - The airborne mechanical systems consist of the hydraulic, propellant fill and drain, propellant feed, and pressurization and pneumatic systems. Malfunctions in one of these systems would be isolated to the smallest replaceable components, using GOE, GSE, available test equipment, and trouble-shooting procedures. The malfunctioning component will be replaced with a serviceable spare from the Control Center or the MAMS. The faulty components will be returned to the MAMS for further disposition.

## 1) Hydraulic System

Each sustainer and booster actuator must be adjusted to a specific length, peculiar to the particular installation involved. This actuator adjustment will be performed by squadron personnel (MAMS) upon request from the launch complex. All other hydraulic components will be received from the spares area previously adjusted, calibrated and



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cleaned (spare components will normally be received by the squadron from the depot in this condition).

Whenever a hydraulic line is disconnected (component or tubing replacement), the airborne system must be filled and flushed, utilizing the ground hydraulic unit. Hydraulic system tubing will be fabricated in the MAMS, as the need arises.

## 2) Propellant System

Because of the physical properties of LOX, extreme care must be exercised to prevent LOX from contacting materials of a hydro-carbon nature. All component and tubing replacements in LOX systems must be completely free of all hydro-carbon contamination prior to installation on the missile. Replacement components will be received from the SMA previously decontaminated and calibrated. There will be no in-place decontamination or calibration of components (excluding engine degreasing).

Because of the storable fuel concept, the replacement of any components in direct contact with the fuel will necessitate draining the particular fuel tank involved. Underground facilities are available for transferring, filtering and storing the fuel while replacements and/or repairs are being conducted.

Replacement of LOX Hi-Point Sensors will necessitate entering the tank interiors. Equipment protective clothing and procedures will be available to accomplish this task.

After any of the above maintenance is performed, the necessary subsystem performance checks will be accomplished to establish an acceptable state of system readiness.

f. Rocket Engine Systems - The rocket engines consist of valves, gas generator assemblies, turbine pump assemblies, thrust chambers, trusses, associated interconnecting wiring, etc. These components can be re-





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placed as individual assemblies or complete units. However, the larger assemblies and the complete unit cannot be replaced in the silo due to space limitations. Malfunctions will be isolated to the smallest replaceable components using the engine control ground operating equipment. Malfunctioning components will be replaced with serviceable spares from the Control Center or MAMS. Replaced valve assemblies will be returned to the depot for overhaul. All other assemblies will be returned to the MAMS for further disposition. Normally, field maintenance of the replaced assemblies at the MAMS (other than physical damage) will re-establish satisfactory components operation; however, calibration critical components must be returned to the depot for a calibration firing (hot-run). Engine degreasing may be accomplished in the silo utilizing portable degreasing equipment from the MAMS.

g. Ordnance - Airborne ordnance equipment consists of various explosive squibs, staging bolts, staging rockets and engine ignitors. Unscheduled maintenance on these items will result from visual inspections and continuity checks. The malfunctioning components will be removed and replaced with spares from the SMA. The faulty components will be returned to the SMA for disposition. All maintenance pertinent to airborne ordnance will be performed by authorized ordnance personnel from the MAMS.

h. Missile and Airborne Component Contamination Control - The missile and airborne component requiring contamination control will be cleaned in accordance with AFBM Specification for Cleaning Liquid Oxygen - Hydrocarbon Fuel Propellant Loading Systems, 25 January 1960.

#### 1) Components

Replacement components will be received from the depot previously cleaned and decontaminated. Those components repaired by squadron personnel will be cleaned and decontaminated utilizing MAMS facilities,



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or by authorized vendors. Should it be determined that installed airborne components have become contaminated, these components will be replaced with previously cleaned and decontaminated spares and the contaminated components returned to the MAMS for disposition. There will be no in-place cleaning of airborne components (excluding engine degreasing).

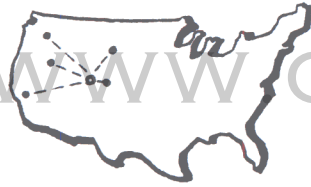
2) Tubing - will be fabricated from stock at the MAMS as the need arises. Tubing fabricated by site maintenance personnel will be cleaned utilizing the MAMS cleaning facilities.

### 3) Systems

a. The airborne systems will be flushed utilizing the ground hydraulic unit whenever an airborne hydraulic component or tubing is replaced. Contamination will be held to an acceptable level by sampling hydraulic fluid, and cleaning or replacing the filters in the ground hydraulic unit.

b. Contamination in the pressurization systems will be held to an acceptable level by filters in the components and by separate system filters.

c. When maintenance is to be performed inside the propellant tanks, personnel entering the tanks will wear protective clothing and use cleaned tools. Contamination caused by the maintenance operation will be removed using lint-free cheese cloth and vacuum cleaning. The LOX tank interiors will be visually inspected (aided by ultraviolet light) for hydrocarbon contamination. After the tank manhole covers are replaced, the propellant tanks will be purged with dry nitrogen. All missile gases (nitrogen and helium and propellants (RP-1 and LOX) are filtered by the ground propellant loading and pressurization systems (PLPS) equipment before delivery to the missile.



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## 2. Ground Operating & Ground Support Equipment (GOE/GSE)

### a. Electronic Equipment

Launch Complex electronic equipment includes all consoles, monitor sets, chassis and electronic checkout equipment. Malfunction indicating capability is designed into this equipment, thereby allowing rapid isolation to a faulty chassis. Further malfunction isolation can be accomplished by the use of equipment such as Dolly CP N4966, Patching Panel CP M4948, Fan Assembly CP M4947, Cable Assembly Set, CP M4951, and Air Force Standard test equipment. The chassis can be repaired to the extent of replacing the smallest type of "plug-in" module except in those cases where complexity of calibration or adjustment necessitates MAMS or vendor/depot checkout. Non plug-in type "bits and pieces" will not be replaced. Removed "plug-in" modules or chassis not repairable at the site will be shipped to MAMS for further disposition. If the Mobile Maintenance Van is available, a limited amount of repair can be accomplished at the site contingent upon economical considerations, readiness requirements, and the maintenance and technical capabilities of the van involved. Calibration and complete checkout of a repaired chassis will be accomplished prior to re-installing the unit into the system. The following type of units, however, will not be repaired at the site: Sealed units and items in a calibrated state that are normally disturbed during maintenance and which require extensive and special test equipment not provided at the site.

At the MAMS, malfunctions in chassis and modules returned from the site will be further isolated using equipment such as the electronic equipment test stand (CPN1810), and Air Force standard test equipment. Chassis and modules can be repaired utilizing serviceable spares of all parts, except "bits and pieces" of printed circuit boards. Calibration and alignment of GOE chassis and functional testing upon completion of repair will be performed. Units which cannot be repaired at the MAMS or



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depot due to economical considerations will be salvaged. Components which, due to their complexity, require special skills or equipment not available at the MAMS, will be shipped to the depot if economically feasible.

b. Electrical Equipment - Launch Complex electrical equipment includes power supplies, motor generators, interconnecting cable assemblies and electrical switch gear. The malfunctioning component or cable can be readily isolated within the system by normal trouble-shooting procedures using standard Air Force test equipment. Limited repair of the system will be accomplished at the launch complex to the extent of replacing switches, meters, bulbs, controls, fuses, batteries, cabling, etc., that do not necessitate recalibration of equipment. Units such as motors, generators, alternators, etc., which have an internal malfunction will be removed to the MAMS and replaced by a repaired system will be accomplished by operation of the system and verifying its normal operation by means of meters or lights on the applicable console.

At the MAMS, motors and generators shipped from the launch complex will be repaired to the extent of replacing bearings, switch wiring, terminals, controls, etc., but will not include rewinding of armatures or overhaul of the complete basic unit. Motors and generators repaired at the MAMS will be functionally tested and adjusted prior to returning the unit to service.

c. Mechanical Equipment - Launch Complex mechanical equipment includes components in the air conditioning supply and service sets, hydraulic pumping unit, propellant transfer and vent systems, pneumatic system, umbilicals, test stands, maintenance platforms and missile and component handling equipment.

Malfunction isolation will be accomplished by trouble-shooting with Air Force standard test equipment to the smallest replaceable component.

Malfunctioning components will be replaced with serviceable spares.





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Components such as valves, pumps, and hydraulic actuators with internal malfunctions will be removed and shipped to MAMS for further disposition. Functional checkout of a repaired system will be accomplished by verification of proper operations.

Valves, actuators and pumps shipped from the launch complex will be repaired at the MAMS by replacing parts within the components provided equipment is available to calibrate, adjust, and functionally test the repaired components. Components which are non-repairable at the MAMS due to complexity or lack of test equipment will be shipped to the applicable Vendor/Depot for repair.

### 3. Real Property Installed Equipment (RPIE)

a. Electrical Systems - The primary electrical portions of RPIE include the Power Generation and Distribution System, and function regulating and control elements of other facility systems including:

(1) Air Conditioning, Heating and Ventilating, (2) Propellant Transfer, (3) Water Distribution and Sewage, (4) Damage and Facility Control, and (5) Compressed Air. Malfunctions occurring in these systems will be isolated by the use of monitoring and/or control equipment, trouble-shooting equipment, and applicable procedures. Malfunctioning components that are replaceable will be removed and replaced with serviceable spares (micro switches, plug-in relays, governors, indicators, transducers, damage control sensors, lamps, etc.).

Malfunctioning components that necessitate in-place repair due to size, weight and/or installation will be disassembled, repaired and reassembled using available tools, test equipment and serviceable spare parts (generator, transformers, power racks, etc.).

In-place repairs exceeding field level maintenance capabilities will be accomplished by depot-level maintenance representatives (i.e. vendors, associate contractors). Components that are removed and replaced will be forwarded to the MAMS for further maintenance disposition: (1) repair, (2) return to depot or appropriate vendor, (3) disposal. Component re-



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pairs at the MAMS will be accomplished by use of available tools, and test and verification equipment.

## b. Mechanical Systems

General - The primary mechanical systems of RPIE include the (1) Air Conditioning, Heating and Ventilating, (2) Propellant Transfer, (3) Water Distribution and Sewage, (4) Damage and Facilities Control and (5) Compressed Air. Malfunctions occurring in these systems will be isolated by the use of monitoring and/or control equipment, troubleshooting equipment and applicable procedures. Malfunctioning components that are replaceable will be removed and replaced with serviceable spares (pressure switches and indicators, seals, filter, and bellows). Malfunctioning components that necessitate in-place repair due to size, weight, and/or installation will be disassembled, repaired and re-assembled using available tools, test equipment, decontamination equipment and serviceable spare parts (air conditioning sets, heat exchangers, compressors, sumps, separators, air dryers, and pumps).

In-place repairs exceeding field-level maintenance capabilities will be accomplished by depot-level maintenance representatives (i.e., vendors, associate contractors). Components that are removed and replaced will be forwarded to the MAMS for further maintenance disposition: (1) repair, (2) cleaning, (3) decontamination, (4) return to depot or appropriate vendor, (5) disposal. Component repairs at the MAMS will be accomplished by the use of available tools, decontamination and test verification equipment.

## III. Calibration

The Martin-Denver Maintenance Engineering Department will determine the calibration requirements for Martin designed and/or Martin controlled equipment on WS 107A-2. Frequency and procedure of calibration will be according to the -6 manual and the applicable technical manuals. All equipment requiring calibration or verification will be listed in one of four categories dependent upon extent and accuracy of its calibration limits with increasing accuracies in each category:



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## Category I

Operational equipment consists of items installed in the missile and associated ground monitoring and launch equipment. Includes items such as gauges, transducers, thermostats, resistors, switches, meters, etc. that perform a function requiring measurement, test or check.

## Category II

Peculiar test equipment required to check out, maintain and calibrate Category I equipment. Examples: test sets, fault isolation equipment, etc.

## Category III

Precision test equipment (commercial or Air Force standard items) used for maintenance trouble-shooting, testing, verification or calibration of Category I & II items and also referred to as transfer standards.

## Category IV

Calibration equipment used to calibrate items in Category II & III will include those items normally assigned to the Base Standards laboratory. Calibration of this equipment will be accomplished by Air Materiel Area (AMA).

It is not intended to provide calibration capability at Base Standards level to calibrate all working standards. In those cases where it is not economical to provide this capability, the item will be exchanged with the applicable AMA. If the working standards are the property of the squadron, (Category III), the Base Standards Laboratory (Category IV) will be responsible to have a calibrated exchange item on hand when required. Examples of such items are dead weight testers, standard cells, etc. This calibration process should be established on a scheduled basis, with consideration for proper time phasing.