

CHAPTER 12

COMNAVAIRSYSCOM Aviation Depot Level Industrial Program, Depot Special Process Certification, and Naval Air Technical Data and Engineering Service Center (NATEC) Engineering Technical Services (ETS)

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CHAPTER 12

COMNAVAIRSYSCOM Aviation Depot Level Industrial Program, Depot Special Process Certification, and Naval Air Technical Data and Engineering Service Center (NATEC) Engineering Technical Services (ETS)

12.1 COMNAVAIRSYSCOM Aviation Depot Level Industrial Program

12.1.1 Introduction

COMNAVAIRSYSCOM is responsible for the management of the Aviation Depot Level Industrial Program. Management responsibilities include planning for and developing resource capabilities to meet industrial level material support needs for naval aviation active and reserve operating forces, and issuing policy and procedures for the operation of Depot Fleet Readiness Centers (FRC) within the Department of the Navy (DON).

a. The Aviation Depot Level Industrial Program provides depot level (D-level) maintenance, rework, and manufacturing within the Depot Fleet Readiness Centers (Depot FRC). It also provides support services to organizational level (O-level) and intermediate level (I-level) maintenance activities, such as providing technical expertise and repairs that exceed O-level or I-level responsibility or capability.

b. The following sections provide information and policy regarding processes and functions that are unique to the COMNAVAIRSYSCOM Aviation Depot Level Industrial Program.

12.1.2 Depot Quality Management System (QMS)

12.1.2.1 Overview

The Depot QMS is a single, formalized system which documents processes, procedures, and responsibilities for achieving quality policies and objectives while conforming to aerospace standard (AS) 9110 Quality Management Systems – Requirements for Aviation Maintenance Organizations. The Depot QMS is the system used to manage product and service quality.

12.1.2.2 Quality Management

The Depot FRC must manage quality by establishing quality policies and quality objectives, developing, maintaining, and improving processes to achieve these quality objectives through quality planning, quality assurance, quality control, and quality improvement. The primary quality management positions include:

a. Quality Manager (QM). The Quality Manager (QM) is responsible to the Depot FRC Commanding Officer for ensuring conformance of the Quality Management System to aerospace standard (AS) 9110 Quality Management Systems – Requirements for Aviation Maintenance Organizations and for the periodic certification of conformance. The QM is responsible establishing quality policies, objectives, and processes, and for achieving quality objectives through the application of quality planning, quality assurance, quality control, and quality improvement. The

QM must form Integrated Quality Teams and take such actions as may be necessary to improve Depot QMS effectiveness and efficiency.

b. Integrated Quality Team Lead (IQTL). Integrated Quality Teams (IQT) will be formed by the QM and assigned responsibility for improving the quality of specific products or services. Each IQT must have a leader assigned who is overall responsible to the QM for the IQT's performance in monitoring and improving the quality of the IQT's assigned products and services. The primary responsibility of the IQT must be to collect and analyze data, conduct root cause analysis, and make recommendations to the QM for corrective and preventative actions necessary to improve the effectiveness and efficiency of processes, procedures, and/or policies with regard to quality.

12.1.2.2.1 Quality Planning (QP)

Quality Planning is that part of quality management focused on setting quality objectives and specifying necessary operational processes and related resources needed to achieve the quality objectives. The QM is responsible for quality planning and must collaborate and coordinate with appropriate Depot FRC departments when setting quality objectives and conducting quality planning.

12.1.2.2.2 Quality Assurance (QA)

Quality Assurance is that part of quality management focused on providing confidence that quality requirements will be fulfilled. Auditing is the primary quality assurance activity at Depot FRCs. Audits are a systematic, independent and documented process for obtaining objective evidence and evaluating it, objectively, to determine the extent to which the audit criteria are fulfilled. There are many tools used to conduct audits, at a minimum, audits will use Computerized Self Evaluation Checklists (CSEC), e.Power Audit Tracking System (ATS) for scheduling and Evaluation Request/Action Request (ER/AR) for documentation of findings needed to be corrected. Audits at Depot FRCs will be broken into four specific types: Product Audits, Process Audits, Aerospace Audits (internal & external) and NAMP Audits.

a. Product Audits. Product audits are conducted either in-process or final product; to include components and aircraft. Product is verified for conformance to specifications delineated in technical data and local engineering documents. A percentage of final product will be sampled based on a surveillance plan developed by the QM during quality planning. Product audits are performed by the IQT as required.

b. Process Audits. D-level processes, either special processes or other processes will be audited on a regular basis as deemed necessary based on a surveillance plan developed by the QM during quality planning. Process focused audits utilize the NAMP, local specifications, and technical data to compare outputs to objectives to determine effectiveness and efficiency of the process, and are conducted by competent and qualified process auditors. Processes are audited from start to finish for conformance to the applicable industry or local specifications. The special processes audited are identified in paragraph 12.2 and within Advanced Skills Management (ASM).

c. Aerospace Audits. Internal and External Aerospace audits are a requirement for certification/registration to AS9110. Internal and External Aerospace audits are performed by trained auditors independent of the process and activity being audited thereby ensuring objectivity and impartiality of the process audited. These audits are conducted to ensure ongoing compliance with requirements of the QMS standards, organization's own requirements (policies and procedures), customer requirements, and applicable external standards (e.g., AS9110). A systematic, independent and documented process approach is used for obtaining audit evidence and evaluate it objectively to determine the extent to which audit criteria are fulfilled.

(1) Internal Audits. Internal audits, sometimes called first-party audits, must be conducted by the Depot FRC internal auditors for management review, to evaluate the effectiveness of the QMS, to identify improvement opportunities, and for other internal purposes. Internal audits will form the basis for the Depot FRC's declaration of conformity to AS9110.

(2) External Audits. External audits include those generally called second and third-party audits. Second party audits are conducted by parties external to the Depot FRC but with an interest in the organization, such as customers, or by other persons on their behalf. The QM may undertake second-party audits for purposes of improving QMS effectiveness and efficiency. Third-party audits are conducted by parties external to the Depot FRC, such as independent auditing organizations providing certification and registration of conformity, or governmental agencies. Depot FRC third party Aerospace audits are performed by a contracted Certification Body (CB) to achieve and maintain Aerospace certification status.

d. NAMP Audits. NAMP programs are managed by program managers or subject matter experts (SME) and are audited on a regular basis by those individuals charged with their management based on risk assessed through a surveillance plan and the NAMP Compliance Manager (CM). For specific NAMP auditing roles, responsibilities, and requirements please refer to COMFRCINST 4790.4.

12.1.2.2.3 Quality Control (QC)

Quality Control is that part of quality management focused on fulfilling quality requirements. Quality control focuses on identifying defects through physical and practical inspection, examination, and testing of product. Quality control requires determining the degree to which the products' inherent or acquired characteristics conform to applicable standards and specifications. Quality Characteristics (QC) are those characteristics considered critical or which positively determine product acceptability. QCs must be identified, classified, and integrated into work documents. This is especially important for Safety of Flight, Flight Critical, or Critical Safety Items. The QM is responsible to define quality control requirements for specific products and services during quality planning.

12.1.2.2.4 Quality Improvement (QI)

Quality Improvement is that part of quality management focused on increasing the Depot FRC's ability to fulfil quality requirements. The QM is responsible for instituting and overseeing recurring

activity as necessary to enhance performance of the QMS in order to increase the Depot FRC's ability to fulfil quality requirements. This recurring activity must include the process of establishing quality objectives and finding opportunities for improvement, continually, through the use of audit findings and audit conclusions, analysis of data, QMS management reviews, or by any other means that generally leads to corrective action or preventive action.

12.1.3 Depot Level Technical Support and Programs

D-level technical support and programs include all the engineering and logistics sustainment products and processes directly supporting Depot FRC production activities, including production engineer support, logistics support, material disposition and special process certification.

12.1.3.1 In-Service Support Center (ISSC) and Fleet Support Teams (FST)

The ISSCs represent the technical authority of COMNAVAIRSYSCOM. Engineering and logistics sustainment technical support will be provided to all FRCs and associated FRC sites through the three ISSCs located at FRC East (FRCE), FRC Southeast (FRCSE) and FRC Southwest (FRCSW). FSTs are the primary elements of the Program Manager-Air (PMA) organizations chartered with ensuring effective Fleet support is identified, implemented, analyzed/assessed, and sustained. The ISSCs house and staff FSTs for their assigned areas of equipment, systems, and platform cognizance as a primary mission element in support of Fleet and FRC maintenance organizations. FSTs are assigned to various COMNAVAIRSYSCOM related weapons systems, such as aircraft, engines, and components. The FSTs provide responsive support to Fleet and FRC maintenance organizations when engineering and logistics technical support issues are encountered as well as providing acquisition support to the PMAs to ensure new equipment and modifications and upgrades to existing equipment are designed, tested and fielded with Fleet support and in-service sustainment as a primary consideration.

12.1.3.2 Technical Authority, Certification, and Qualification

The COMNAVAIRSYSCOM Chief Engineers at each ISSC are the technical authority Deputy Warranting Officers for the support provided to their associated FRCs and FSTs. The Chief Engineers provide:

- a. Safe for Flight requirements for FRC production and quality processes and FST one-time flight recommendations.
- b. Provide engineering and technical oversight, guidance, and assistance to FRC Depots.
- c. Provide engineering and technical oversight, guidance, and assistance Center for Naval Aviation Technical Training (CENNAVAVNTECHTRA).
- d. Develop and issue engineering requirements for special skill certifications for maintenance technologies, such as non-destructive inspection (NDI), welding and brazing, and composite repair.

e. Provide products and services in the establishment of training materials and methods, such as course content and testing and examination procedures, as requested by COMNAVAIRFOR, CENNAVAVNTECHTRA, and COMFRC.

12.1.3.3 Reliability and Maintainability (R&M)/Reliability Centered Maintenance (RCM) Program

a. COMNAVAIRSYSCOM has directed the application of R&M/RCM to all in-service and future aircraft, engines, aircrew systems, weapon systems, aircraft launch and recovery equipment, and support equipment (SE), from technology development through disposal per NAVAIR 00-25-403 and NAVAIRINST 4790.20.

b. R&M/RCM must be applied as a continuous, integrated activity based on sound engineering and sustainment principles for developing safe and affordable failure management strategies. Conduct of this analysis must be the basis for any effort that establishes or adjusts preventive maintenance (PM) tasks and intervals as an element of the overall maintenance planning process.

12.1.3.4 Structural Life Limits (SLL) Program

The SLL Program provides policy and assigns responsibilities to ensure continuing structural safety of fixed and rotary wing aircraft throughout their assigned service life. All levels of maintenance are responsible for ensuring structural life limited items and components do not exceed the specified limits per NAVAIRINST 13120.1 for fixed wing and NAVAIRINST 13130.1 for rotary wing aircraft and applicable Service Life Bulletins (SLB), periodic maintenance information cards (PMIC), technical directives (TD), and interim rapid action changes (IRAC). Structural modification or alteration of life limited items and components may be changed by applicable TDs, but not without determining the effect on aircraft assigned service life and approval by COMNAVAIRSYSCOM. Responsibilities:

a. ISSCs must verify all structural life limited items and dynamic components are incorporated in applicable aircraft PMICs.

b. Depot FRCs must verify all individual aircraft logbooks and auto log-sets (ALS) reflect work accomplished by the Depot FRC which may affect the structural life limited items or dynamic components service life. For aircraft reworked on-site, reflect work accomplished in aircraft logbooks or provide the documentation for aircraft logbook entry by the operating activity (as applicable). The ISSC must include instructions for any required logbook or scheduled removal component (SRC) card entries with Fleet Engineering Dispositions (FED).

12.1.3.5 Integrated Maintenance Concept/Program (IMC/P)

IMC/P is a multi-phased (Prototype-to-Implementation) program maintenance philosophy based on RCM analysis and focused on developing pro-active Preventive Maintenance Plans. NAVAIR AL-081AO-IMC-000 is used by the PMA for planning to transition to the IMC/P and will be used in preparing for the prototype and final approval processes to ensure all programmatic requirements are anticipated and put in place prior to the commencement of the first PMI at the IMC/P site. This handbook contains the general requirements which must be met for the plan before seeking

concurrency from the Integrated Maintenance Review Board and CNO (N980L). The planned maintenance interval (PMI) Specification details inspection and processing specification requirements necessary to perform scheduled aircraft D-level maintenance. The PMI Specification is written per NAVAIRINST 13023.5 and can be used by both government and commercial contractor activities.

a. Key aspects of the IMC/P include:

(1) A comprehensive RCM analysis that includes the justification of all maintenance tasks without regard to specific levels of repair. It relies on decision logic for defining PM tasks that are applicable and effective for a specific set of failure modes and outcomes. RCM engineering analysis will be used to develop and identify PM tasks that will produce the highest degree of availability and readiness at the lowest overall life cycle cost. IMC/P targets improvement in the overall material condition of the aircraft, optimum life-cycle costs, and reduced out-of-service time while retaining safety considerations.

(2) The consolidation of maintenance tasks that safely minimizes the duplication of effort among O-level, I-level, and D-level. Eliminating redundant tasks and combining multi-level artisan skill sets will allow programs to achieve a wider range of tasks without regard to location. This initiative allows programs to move D-level skilled artisans closer to the warfighter, improves Fleet readiness through personnel training, and reduces aircraft downtime.

(3) Fixed Service Periods (FSP) are established by type/model/series (T/M/S) and are based on RCM analysis, operational requirements, safety, and economic considerations. Fixed Induction Dates (FID) for IMC/P events are set for the specific Month and Year. Planners may induct an IMC/P aircraft any time during that specified month, or up to 2 months earlier if required, for scheduling purposes to support operational requirements, promote level scheduling of D-level events, or compliment budget submission timelines.

(4) Calendar Based induction scheduling consists of Fixed Induction Dates (FID) for IMC/P events set for a specific Month and Year. Planners may induct an IMC/P aircraft any time during that specified month, or up to 2 months earlier if required, for scheduling purposes to support operational requirements, promote level scheduling of D-level events, or compliment budget submission timelines.

(5) Block Scheduling inductions consists of prescribed blocks (i.e. induction) at each designated repair point (D-level facility) while also allowing the flight experience of the aircraft dictate which aircraft are to be inducted by filling the pre-determined induction blocks at said designated repair point (DRP). The concept aligns with OPNAV requirement in that the prescribed blocks meet the budget forecast requirement. The concept meets the Fleet requirement where filling the blocks based on aircraft flight experience provides the Fleet with more flight line time & flexibility to adjust to changing mission requirements as well as eliminate the early inductions that are taking away valuable utilization time from the Fleet.

12.1.3.6 Aircraft Service Period Adjustment (ASPA) Program

The purpose of the ASPA Program is to establish a process to evaluate the material condition of a small number of aircraft that have not converted to the Integrated Maintenance Concept (IMC). ASPA processes are defined in NAVAIRINST 4730.10 and NAVAIR 00-25-403.

12.1.3.7 Automatic Test Equipment (ATE) and ATE Test Program Sets (TPS)

a. ATE are required to support present and future complex aircraft weapon systems. The development of Navy organic capability to support these weapon systems includes the requirement to support the required ATE TPS. Functionally, the TPS computer program operates within an ATE system and is connected to a unit under test (UUT) in such a manner to isolate and detect faults within the UUT to its defective part(s). All ATE and ATE TPS used in common by I-level or D-level maintenance activities in support of designated airborne weapon systems, and all D-level only ATE and ATE TPSs are funded and developed by COMNAVAIRSYSCOM IAW OPNAVINST 3960.16.

b. The ISSC is the COMNAVAIRSYSCOM Technical and Certification Authority for designated ATE and ATE TPS. The ISSC has the responsibility and accountability to establish, monitor, certify, and approve technical products and processes in conformance to higher authority policy, requirements, architectures, and standards including Test Workaround Procedures.

c. TPS Development is provided by COMNAVAIRSYSCOM. The TPSs provided by TPS Development are made up of hardware and software elements and all supporting documentation. The TPSs provide the Fleet and FRCs the capability to maintain and repair complex aircraft weapon and avionic systems using ATE. COMNAVAIRSYSCOM furnishes organic TPS Development teams to provide Fleet introductions and on site verifications of the TPSs.

d. Consolidated automated support system (CASS), electronic (eCASS) and reconfigurable transportable (RT) CASS Installation/Validation/Verification support is provided by COMNAVAIRSYSCOM in the form of effective, reliable CASS and RTCASS testing and support to the naval aviation warfighter on all aircraft carriers and amphibious assault ships (CVNs, LHAs, and LHDs), Naval Air Stations (NAS), and Marine Corps Air Stations (MCAS) per the requirements of PMA-260, COMNAVAIRSYSCOM, Patuxent River, MD.

12.1.3.8 Mobile Facility (MF)

COMNAVAIRSYSCOM is designated as the Technical and Certification Authority on MF used by the Navy and Marine Corps. The ISSC has the responsibility and accountability to establish, monitor, certify and approve technical products and processes in conformance to higher authority policy, requirements, architectures, and standards per NAVAIR M-13670.1.

12.1.3.9 Joint Deficiency Reporting System (JDRS)

a. JDRS is used to report deficiencies concerning aircraft, systems, and equipment. The system provides notification to appropriate stakeholders and their support teams responsible for investigating and correcting the discrepancy, guides responses, compiles data, helps resolve

problems, and serves as a historical resource to research prior occurrences. The goal is to resolve every safety deficiency promptly and to provide effective leading indicator metrics to prevent reoccurrence of safety, reliability, and maintainability issues.

b. For details of the reporting tools, methods and processes for NAMDRP deficiencies refer to paragraph 10.9.

c. The CIM module in JDRS is used to report and identify item criticality (critical safety item (CSI)/critical application item (CAI)). Details of the reporting methods and processes for CIM are in paragraph 12.1.3.12.

12.1.3.10 System Safety Program

a. The purpose of the System Safety Program is to identify, eliminate, or mitigate risks in the design of weapons systems to an acceptable level. This includes risks to hardware, software, and human systems interfaces and risks to the system, personnel and the environment.

b. DODINST 5000.02 requires program managers to establish a System Safety Program, regardless of ACAT category per the methodology in MIL-STD-882. The DODINST 5000.02 and SECNAVINST 5000.2 identify the risk acceptance authorities for System Safety Risks. COMNAVAIRSYSCOM Engineering is the Technical Warrant Holder for the NAVAIR Risk Assessment and Acceptance process per NAVAIR SWP 4160-001.

c. ISSCs will conduct analysis to determine the high priority projects that present the greatest cost mishaps through EI files, incident and mishap reports, and PQDRs. In addition, ISSCs will conduct initial risk assessments of hazards identified as a screening process to determine if the EI is safety critical and gather, track, and trend safety data from OPNAVINST 3750.6, HAZREPs, EIs, PQDRs, and MIL-STD-882D reports.

12.1.3.11 Central Technical Publications Library (CTPL)

NOTE: Fleet Readiness Center Western Pacific (FRCWP) will manage CTPL per Chapter 7. All other Depot FRCs will manage their CTPL per this chapter.

a. The CTPL serves two important functions. It provides a central source of up-to-date aeronautical reference material and is a ready reference source for personnel training and individual improvement. To perform these functions, the Central Technical Publications Librarian must manage and control the distribution of technical publications for every T/M/S aircraft and related equipment in the organization's physical custody consistent with the maintenance level of responsibility involved. Retention of master copies of publications in the CTPL is optional if the same publications are held by one or more dispersed libraries.

b. Management of the CTPL includes determining which technical publications are needed to support the organization, controlling receipt and distribution, and ensuring all publications are current and in good condition. Internal control and distribution of this instruction is a Central Technical Publications Librarian's responsibility.

c. Depot FRCs must adhere to NAVAIR 00-25-100, which contains detailed information about establishing and operating a CTPL. It also describes the requirements, functions, and responsibilities of personnel assigned to maintain aeronautical technical publications.

12.1.3.12 Critical Item Management (CIM)

a. FSTs are designated as the Engineering Support Activity (ESA) for each aircraft platform for which they are defined as the cognizant authority. The term ESA is synonymous with Design Control Activity. The ESA is responsible for CIM for their platform. CIM denotes the sourcing, manufacturing, and repairing of naval aviation CAIs and CSIs, collectively referred to herein as CIs. CIs are items the failure of which has been determined to result in MIL-STD-882 severity Category I or Category II consequences.

b. The authority to work technical issues related to CIs is categorized by technical discipline and is delegated by the applicable COMNAVAIRSYSCOM engineering competency. Engineers within an ESA that have authority to officially sign off on completed work related to CIs within their purview are designated as basic design engineers (BDE). BDE tasking includes but is not limited to:

(1) Item criticality determinations using Failure Modes and Effects Analysis (FMEA) and determination of critical characteristics for CSI items.

(2) Development and approval of manufacturing plans for local one-time manufacture of CIs.

(3) Technical review of DLA 339 (Request for Engineering Support) and provide engineering guidance.

(4) Participation in the resolution of CIM policy issues related to the BDEs platform and area of competence.

(5) Participation in the resolution of conflicting initial capabilities documents (ICD) for items that are used on multiple platforms.

(6) Participation in the resolution of issues related to alternate sources for CIs.

(7) Review of Source Approval Requests (SAR).

(8) Development of Quality Assurance Provisions (QAP) for alternate source qualification.

(9) Approving sources of supply, technical data packages and site surveys as applicable for CSI.

c. Each FRC has a Critical Items Management Coordinator (CIMCO). The CIMCO duties fall into the following categories:

(1) CIM Oversight. The CIMCO is the local site process owner and functions as a liaison for COMNAVAIRSYSCOM Engineering, NAVSUP WSS, and DLA for emergency or problem issues with specific vendors. The CIMCO is a member of the Navy CIM Policy Team, and manages

CIM funding and metrics for their FRC. The CIMCO maintains the CIM database inputs for their FRC.

(2) Engineering Request Coordination. The CIMCO or their delegated representative provides overarching guidance and ownership of DLA/NAVSUP WSS engineering requests to the ESAs at their FRC. This includes tracking and assigning tasks to the appropriate engineering teams, tracking and recording all engineering responses, and expediting turn-around times, questions, etc.

(3) Source Approval Request (SAR) Package Review Coordination. SAR packages are formal proposals from vendors seeking to become alternate sources for items procured by or repaired for the Government. The CIMCO receives all SAR packages from DLA and NAVSUP WSS that are sent to ESAs at their site. The CIMCO then verifies item criticality, FMEA, any relevant Product Quality Deficiency Reports (PQDR), and Hazardous Materials Reports (HMR)/Engineering Investigations (EI) for the SAR packages received and then performs an in-depth review of the SAR package using the SAR checklist. Once the SAR package has any discrepancies corrected the CIMCO routes the SAR packages to the appropriate ESA. Once completed, the CIMCO will review and add relevant QAP and Contract Data Requirement List (CDRL) forms or templates then closes out the SAR packages per the SAR review process.

(4) First Article Test and Production Lot Test Process. Each FRC performs First Article Testing and Production Lot Testing for items procured from alternate sources. Testing is performed as required by the contract, and typically includes some combination of dimensional validation, material property validation, and form/fit/function testing. Upon completion of testing, the FRC notifies the customer (NAVSUP WSS or DLA) of test results (pass, fail, or conditional acceptance).

(5) Item Criticality Database (ICD) System. The Navy has developed and implemented an ICD module into the JDRS (<http://www.jdrs.mil/home.html>). JDRS is the official database for item criticality determinations. In addition to an item's criticality, the database also contains information on an item's critical characteristics, its national stock number (if any), and approved sources. CIMCOs can provide assistance with the JDRS ICD to engineering on an as needed basis. CIMCO will review and research all ICDs including FMEA. CIMCO will verify approved source entry, attachment of SAR packages, and verify critical characteristics entry for CSI items for any approved alternate sources of supply and repair.

12.1.3.13 Material Engineering Disposition Program (MEDP)

a. The MEDP is used to systematically evaluate whether material that does not conform to specification can be scrapped, reclaimed and used "as is", reworked, or repaired without compromising the end product's quality.

NOTE: Material disposition is performed by the cognizant Engineering Group.

b. The MEDP applies to all aeronautical material, including SE, when authorized repair has not been established. The MEDP may apply to material determined to be in critical supply. The MEDP does not apply to deficient material reported per paragraph 10.9.

c. Depot FRC-caused discrepancies that affect the conformity of material will be annotated as an ER/AR in ePower. Engineering will provide Temporary Engineering Instructions (TEIs) for the disposition of the material.

d. When material is found to be in nonconformance of specifications or procedural requirements and cannot be processed normally, the material will be identified by being appropriately tagged, segregated, and stored in a designated MEDP holding area.

e. The Depot QMS must include a control system for retaining MEDP data on file for a minimum of 1 year.

f. The MEDP Request for Engineering Information (REI) form must be prepared prior to submission of the material to the MEDP.

g. MEDP action must commence within 10 workdays of discovery. The ISSC will decide if the material will be used "as is", reworked, or scrapped. Decisions regarding acceptance of recurring discrepancies must consider corrective action, number of items involved, and frequency of recurrences. If material can be made acceptable by rework or repair, it will be reworked or repaired by specific procedures designated or provided by the MEDP and reviewed by Quality Control for all necessary work instructions and needed verification lines.

h. Material identified for scrap must be mutilated to prevent reuse, intermingling with conforming material, or future reclamation. Depot FRCs must develop disposition procedures.

12.1.3.14 Nondestructive Testing and Inspection (NDT/I) Program

12.1.3.14.1 Purpose

The purpose of the NDT/I Program is to establish and maintain an NDT/I Program that responds to the needs of naval aviation. The specific objectives of the Depot FRC NDT/I Program are to:

a. Determine serviceability of new and used parts by using NDI techniques to check them for hidden defects.

b. Provide training.

c. Provide technical services.

d. Maintain periodicity in all NDI disciplines.

12.1.3.14.2 Responsibilities

The following duties and responsibilities are defined and assigned.

a. COMNAVAIRSYSCOM is responsible for managing a program of research, development, training, and application of NDI techniques and equipment.

(1) A program manager must be designated to provide overall management direction.

(2) NAVAIRINST 13070.1 assigns responsibilities within COMNAVAIRSYSCOM.

(3) Designating an NDI Program coordinator responsible for monitoring, evaluating and standardizing the Depot FRC NDT/I application and training program elements, including scheduling and conducting periodic NDI Program review.

b. Each Depot FRC that maintains NDI capability is responsible for assigning an NDT/I Program Manager within the ISSC Research and Engineering Group to direct and implement the internal NDT/I Program. The Program Manager must:

- (1) Act as the primary NDI point of contact for fleet activities and all external NDI matters.
- (2) Provide technical coordination of all NDT/I functions.
- (3) Develop and approve NDI procedures for dissemination both in-house and to the fleet activities.
- (4) Review and approve all outgoing directives involving NDI procedures.
- (5) Ensure properly manned, equipped, qualified, and certified NDI personnel are maintained at all Depot FRCs.
- (6) Provide technical assistance to I-level and O-level activities on NDI matters related to supported weapons systems.
- (7) Coordinate with ACC or TYCOM prior to issuing NDI directives and techniques for fleet implementation.
- (8) Maintain a documented NDI training, qualification, certification, and recertification program for assigned personnel.
- (9) Maintain communication with lead NDI Program personnel at COMNAVAIRSYSCOM and all FRCs/ISSCs.
- (10) Provide technical support to the Fleet NDI training program as requested by COMNAVAIRSYSCOM, CNATT, or COMNAVAIRFOR.

c. Each Depot FRC must have a radiation safety program sufficient to ensure safe X-ray operations. Program requirements include, but are not limited to, compliance with all X-ray radiation safety requirements per NAVSEA S0420-AA-RAD-010. A Radiation Safety Officer and an Assistant Radiation Safety Officer must be assigned to monitor this program.

NOTE: RAD 010 takes precedence over radiation safety procedures contained in NAVAIR 01-1A-16.

d. Written procedures for NDI directives for fleet implementation must be explicit and verified by the ACC or TYCOM. When references are used they must be those normally available to the maintenance level involved. Whenever possible, equipment and material required must be those listed in NAEC-MISC 52-0385. When this is not practical, the ISSC will identify required equipment and materials, for example, transducers, wedges, fixtures, probes, standards, and provide such items to fleet activities concurrently with inspection directives. If the directed inspection is of

a continuing or repetitive nature, a support equipment recommendation data form must be submitted by the originating ISSC per MIL-HDBK-2097A. Each NDI directive must indicate an NDI point of contact.

NOTE: When deemed necessary by the ISSC NDI Program Manager, TDs requiring complex NDI inspection techniques or where the area of interest and nonrelevant indications may be misinterpreted must be supplemented by drawings, photographs, or video tape for clarity. This supplemental material must be dated, serialized, and controlled by the CTPL as part of the TD.

e. Depot FRCs must ensure the focus of the NDI Program is to provide a quality product not to be compromised by production expediency.

12.1.3.14.3 Fleet Training Program

a. Depot FRCs must provide NDI training examination and qualification per NAVAIRINST 1500.2 and as identified in the CANTRAC (NAVEDTRA 10500).

b. COMNAVAIRSYSCOM must:

(1) Provide Depot FRCs with current, complete training courses.

(2) Monitor and update the CANTRAC.

(3) Coordinate training requests for military and civilian NDI personnel with the cognizant Depot FRC. Quota control authority for military personnel is normally delegated to the Depot FRC that teaches the course. A requesting activity, in receipt of ACC or TYCOM approval to obtain a course quota, will normally contact that D-level directly. In emergency situations where course quota conflicts cannot be resolved between the requestor's chain of command and the Depot FRC, COMNAVAIRSYSCOM will be contacted to arbitrate a solution.

c. Depot FRCs must:

(1) Provide NDI operator training.

(2) Provide NDI Technician recertification training.

(3) Submit proposed NDI course changes.

(4) Administer standardized practical and written examinations to fleet personnel. One retake of the examination will be permitted. Repeated failure will be reported to the individual's CO and TYCOM for appropriate action.

12.2 Depot Special Process Certification

12.2.1 General

a. Various skills or processes performed at Depot FRCs are not readily verifiable or are of such a critical nature as to preclude the use of normal certification requirements. For these reasons,

special certification is required to ensure that artisans performing these processes meet acceptable levels of competence. The Director of Safety, Quality & Regulatory Compliance establishes the local program requirements with engineering, production, and career development assistance and determines those operations and processes which require special certification.

b. Depot FRCs must ensure a comprehensive special certification/licensing program is developed, implemented, and administered. These requirements will be used as minimum guidelines for the establishment of a special certification program. To that end, Safety, Quality & Regulatory Compliance is designated as the final approving authority in all areas concerning special certification. Special Process certification/qualification training requirements are contained in COMFRC M-4855.6, Advanced Skills Management (ASM)/Job Qualification Requirements (JQR), and national local process specifications/local engineering specifications (LPS/LES).

c. Critical processes performed at Depot FRCs must be controlled by the special process certification program. The following are engineering special processes mandated by other governing authority:

- (1) Miniature/Microminiature (2M) and Basic Soldering.
- (2) Nondestructive Testing and Inspection (NDT/I).
- (3) Aeronautical Equipment Welding.
- (4) Composites.
- (5) Hole Quality.
- (6) Bearings, General and Instrument.
- (7) Heat Treat.
- (8) Shot Peening & Rotary Peening.
- (9) Low Observable (LO) Coatings (MAG RAM).
- (10) Plastic Media Blast (PMB).
- (11) Electroplating and Surface Finishing.
- (12) Thermal Spray.

d. These operations or functions are designated as non-engineering special processes due to requiring special licensing or certification:

- (1) Aircraft Taxi.
- (2) Aircraft Turn-up.
- (3) Aviation Life Support Systems (ALSS).
- (4) Engine Test Cell.

(5) Plane Captain.

e. Additional special process certification programs may be identified based on the following criteria:

- (1) Processes which cannot readily be verified.
- (2) Processes which jeopardize personal safety.
- (3) Processes critical to end use, safety of flight, or critical safety items.
- (4) Processes which require special training.
- (5) Processes which have state-of-the-art technology and operator proficiency requirements.

12.2.2 Responsibilities

a. Safety, Quality & Regulatory Compliance must:

(1) Coordinate local special process program requirements. Any changes in processes or functions will be forwarded to the model manager for that special process certification or licensing program. Model manager will finalize and implement those procedures by changing ASM/JQR to ensure effectiveness of the program. Model managers for each special process are defined in the COMFRC M-4855.6.

(2) Ensure all elements necessary for qualifying an individual are established and complied with.

(3) Maintain and provide to management and other departments (as appropriate) records and statistics which indicate effectiveness.

b. Aviation Maintenance/Production must:

(1) Assist in the development and implementation of a comprehensive special process certification and licensing program and provide instructors, facilities, and equipment for training. Additionally, determine skill competency (as appropriate).

(2) Ensure requirements for qualifying or requalifying in the program are met and all supportive documentation, for example, individual qualification records, results of training, medical evaluations (if applicable) written and practical examinations, are provided to Safety, Quality & Regulatory Compliance prior to the qualification or requalification.

(3) Assist in providing corrective and preventive action in cases of questionable performance. Assists in suspension or revocation actions when requested by Aviation Maintenance/Production, Safety, Quality & Regulatory Compliance or Engineering. In each case of suspension or revocation, stamps (if applicable) must be immediately delivered to Safety, Quality & Regulatory Compliance. When special process or special licensing certificates are revoked they must be immediately documented in the appropriate system of record.

(4) Notify Safety, Quality & Regulatory Compliance of any changes in certifier status, for example, retirement, promotion, transfer (permanent or temporary) or other conditions that would preclude the continuation of special skill certification.

(5) Maintain qualification records and ensure timely renewal of qualifications. Ensure the upkeep and accuracy of training, task and special process certification, licensing requirements, and ASM for artisans assigned to all FRC sites.

c. Engineering must:

(1) Provide specification requirements and other technical expertise required for training, examinations, and criteria for development of qualification criteria.

(2) Provide laboratory analysis support, evaluation of practical and written examination, and their respective results. Additionally, determine skill category when appropriate.

d. Career Development Division must:

(1) Provide trained, qualified personnel to support Aviation Maintenance/Production's special processes.

(2) Coordinate input for developing training and examination requirements.

(3) Maintain training record database (ASM).

e. Occupational Safety and Health Office must:

(1) Administer and monitor the occupational medical surveillance program for special process certification.

(2) Perform audits and surveillance on safety programs in accordance with OPNAVINST 5100.23.

e. Management Controls must provide information resources support.

f. All departments must provide assistance in the development and implementation of program requirements per this chapter to include providing for training, instructors, facilities, and examinations.

12.2.3 Requirements

12.2.3.1 Miniature/Microminiature (2M) and Basic Soldering

a. The complexity of electronic assemblies and the sensitivity of their components to physical and electrical overstress requires repairs be performed by formally trained and certified 2M Repair Technicians at designated 2M activities. NAVAIR SE-004-PQS-000 contains the 2M certification and recertification requirements, and provides guidance for managing and monitoring 2M repair facilities and technicians.

b. Basic Soldering is currently not covered by NAVAIR SE-004-PQS-000 and will be covered under ASM. Basic Soldering Technicians are only authorized to work on wiring, soldering of terminals, and connectors with wires AWG 26 and larger that are not enclosed in electronic assemblies.

c. The following are Basic Soldering certification requirements:

(1) Completion of Basic Soldering Course, (COMFRC-70000-0013).

NOTE: Basic soldering will be entered into ASM or equivalent database upon completion of the initial course and upon completion of each recertification.

(2) Basic Soldering technicians must recertify every 18 months.

(3) Basic Soldering Technicians must be recertified with Basic Soldering Proficiency Test provided by a Depot 2M Instructor or a certified 2M Technician Recertifier.

d. Use of specialized 2M Equipment. Due to the complex nature of certain electronic systems and the advancement of new technologies, specialized 2M equipment may be used, if the following requirements are met:

(1) All manual or automated soldering equipment must meet the guidelines of J-STD-001E, Appendix A, "Guidelines for Soldering Tools and Equipment." This guideline sets limits for leakage current, tip to ground resistance, temperature control, and equipment maintenance. The equipment should also be ESD safe to equipment and personnel. Hand-held hot air tools will not be used to remove SMT or through-hole components unless specifically designed to do so and supported by an approved process.

(2) All automated soldering equipment should have process control capability and the ability to duplicate the reflow process used in manufacturing. Specifically, automated equipment should have the ability to control the ramp rates of the preheat, soak, dwell and cool-down cycles of the rework profile. Equipment should have the ability to store known good reflow profiles. Engineering should develop and approve profiles for each circuit card to be reworked. All rework equipment should be used in accordance with the documented and approved processes.

(3) Initial equipment training for automated systems should be provided by the OEM with follow-on training conducted by qualified depot personnel. Safety, Quality & Regulatory Compliance should be involved to the extent necessary to ensure training, process and profile development, equipment maintenance requirements and personnel equipment qualifications are properly conducted, documented and maintained.

12.2.3.2 Nondestructive Testing and Inspection (NDT/I)

a. Minimum qualifications for an instructor to provide training qualification or requalification for NDI personnel are:

(1) Two years of experience as an industrial NDI inspector Level II (or equivalent) working in the methods being taught.

(2) A thorough understanding of the applications and limitations of all five basic NDI methods.

(3) NDI instructor certification per local directives.

(4) For classroom instruction the individual must be a graduate of instructor training school.

b. Depot FRCs must ensure all candidates for the Navy NDI school at NATTC Pensacola, FL are thoroughly screened and capable of meeting the equivalent requirements per the CANTRAC. Special attention must be given to English comprehension and mathematical abilities.

c. Each Depot FRC must follow the COMFRC M-4855.6, ASM/NDI JQR and local LPS defining qualification requirements and certification procedures for establishing NDI personnel as levels I, II, III, and instructor. This procedure must be consistent with the framework of NAS 410.

12.2.3.3 Aeronautical Equipment Welding

a. Depot FRCs must provide welding training, examinations, and qualifications for civilian welders per NAVAIR 01-1A-34 and the process defined by local written requirements. Welding certification or recertification training is provided by qualified, certified instructors. Examination will be performed by designated personnel. Each Depot FRC must have local written welding qualification procedures consistent with NAVAIR 01-1A-34 defining the qualification process, documentation and acceptance criteria. Group(s) of metal(s) that require separate and distinct certification are specified in NAVAIR 01-1A-34. Separate certification is also required for oxy-fuel silver brazing process. Welder training is documented by the Welding Certification JQR. Upon completion of welding qualification training:

(1) Shop supervisor recommends special skills certification.

(2) Safety, Quality & Regulatory Compliance approves special skills certification.

b. Minimum qualification for a welding instructor to provide training qualification or requalification for welding personnel are:

(1) Must maintain certification to instruct, perform, and meet recertification requirements in welding processes and positions for which instruction is provided, on metal groups specified in NAVAIR 01-1A-34. The welding instructor qualification is processed and documented with the COMFRC Welding Certification JQR in ASM and recertify every two years.

(2) Must be fully qualified in all elements of the welding trade, including experience as an aeronautical welder in excess of the minimum required of a journey level welder.

(3) Must have a thorough knowledge of aircraft and maintenance welding skills and processes.

c. D-level welders must requalify every two years and documented per ASM/JQR. If applicable, D-level welders may complete equivalent non-Navy training per NAVAIR 01-1A-34,

satisfactory completion of recertification testing, and documented by JQR. Fulfilling this requirement must have local Materials Engineer approval.

d. Contractor (I or D-level) aeronautical welder's certification, recertification periodicity must comply with NAVAIR 01-1A-34. Contractor welder's certification processes, materials, position, and periodicity are per contract.

e. All certified aeronautical welders must weld on equipment, components, and items manufactured from the group(s) of metal(s) for which they are currently certified and which weld repairs are authorized by applicable maintenance technical manuals or directives. Welders must maintain work record documentation.

f. NAVAIR 01-1A-34 contains additional information and guidance relative to qualification, certification, recertification, periodicity, and employment of aeronautical welders. However, it is a general series technical manual intended to be used with this instruction and with specific maintenance, repair, overhaul manuals, and engineering documents. In cases of conflict between certification or recertification policy of this instruction and NAVAIR 01-1A-34, this instruction will take precedence.

12.2.3.4 Aircraft Taxi

a. Only personnel licensed and designated in writing by the CO may perform aircraft taxi. COs must issue Aircraft Taxi License (OPNAV 4790/191) or ASM equivalent to civilian maintenance personnel. Designated personnel must be thoroughly knowledgeable and proficient in:

(1) Applicable portions of the Naval Air Training and Operating Procedures Standardization (NATOPS) Manual.

(2) Capabilities, limitations, and safety precautions of the system requiring the ground functional check and authorization to perform and certify those tasks.

b. Initial certification and periodic recertification must require a visual screening, medical examination, written, and practical examinations that include turnaround, start, turn-up, shut down, and emergency procedures.

c. Prior to initial certification, and annually thereafter, each candidate must pass a written and operational test developed by a T/M/S NATOPS Officer and administered by a T/M/S Pilot NATOPS instructor. QAS may administer written examinations.

d. Licensed Aircraft Taxi personnel must perform a taxi evolution every 90 days for the T/M/S aircraft for which they are certified.

WARNING: DUE TO THE INHERENT DANGERS ASSOCIATED WITH TAXIING OPERATIONS, AIRCRAFT SHOULD ONLY BE TAXIED TO FACILITATE MAINTENANCE, IF NO OTHER MEANS ARE AVAILABLE TO POSITION AIRCRAFT.

NOTES: 1. The CO may not delegate the authority to sign an Aircraft Taxi License.

2. Only individuals authorized to fly helicopters may be permitted to taxi helicopters (CNAF M-3710.7).

3. Only individuals authorized to fly tilt rotor aircraft may be permitted to taxi tilt rotor aircraft (CNAF M-3710.7).

12.2.3.5 Aircraft Turn-up

a. Only personnel licensed and designated in writing by the CO may perform aircraft turn-up. COs must issue Aircraft Engine or APU Turn-up License (OPNAV 4790/192) or ASM equivalent to civilian maintenance personnel. Designated personnel must be thoroughly knowledgeable and proficient in:

(1) Applicable portions of the Naval Air Training and Operating Procedures Standardization (NATOPS) Manual.

(2) Capabilities, limitations, and safety precautions of the system requiring the ground functional check and authorization to perform and certify those tasks.

b. Initial certification and periodic recertification must require a visual screening, medical examination, written, and practical examinations that include start, turn-up, shut down, and emergency procedures.

c. Prior to initial certification, and annually thereafter, each candidate must pass a written and operational test developed by a T/M/S NATOPS Officer and administered by a T/M/S Pilot NATOPS instructor or qualified functional check flight (FCF) pilot. QASs may administer written examinations. For activities that have flight engineers or crew chiefs, the flight engineer or crew chief NATOPS evaluator or instructor, under the direction of the NATOPS Officer, may administer the written and operational examinations. NATOPS qualified flight engineers and crew chiefs must complete the written and operational examination to be certified by the CO to turn-up aircraft.

WARNINGS:

1. ALL T/M/S AIRCRAFT SHALL BE PROPERLY SECURED PER T/M/S MAINTENANCE TECHNICAL MANUALS/NATOPS PRIOR TO ANY MAINTENANCE TURNS.

2. ONLY NATOPS QUALIFIED NAVAL AVIATORS AND DEPOT FRC CO AUTHORIZED PERSONNEL ARE AUTHORIZED TO ENGAGE HELICOPTER ROTORS DURING ENGINE TURNS.

NOTES: 1. Depot FRC COs may designate qualified Aircraft Systems Inspector (ASI) in T/M/S to administer specific written and operational examinations to engine/APU turn-up nominees. Prior to designation, ASIs must satisfactorily pass T/M/S specific

written and operational examinations administered by a T/M/S Pilot NATOPS instructor or qualified Functional Check Flight (FCF) pilot. Only one ASI per T/M/S will be recommended for designation as ASI Engine/APU turn-up instructor and allowed to administer the written and operational examinations.

2. ASI Engine/APU turn-up licenses are valid only for engine/APU operation at the issuing FRC activity.

3. Depot FRC COs may authorize personnel to start engines and engage rotors or props for ground system checks (CNAF M-3710.7).

4. The CO may not delegate the authority to sign an Aircraft Engine/APU Turn-up License.

5. Activities operating Aircraft Mounted Gas Turbine Starters must comply with APU turn-up qualification and licensing requirements.

12.2.3.6 Engine Test Cell Operators

a. Accessories, components, and engines reworked, repaired, or overhauled normally require an operational test or functional check in a test cell to determine performance parameters and characteristics. Only qualified and licensed test cell operators must be authorized to perform test cell operations.

b. Employees certifying test cell operations that determine performance after rework, repair, modification, or overhaul and those employees certifying the Serviceable Tag-Material (DD-1574), must be thoroughly familiar with and demonstrate a practical proficiency of the test cell capabilities, limitations, safety precautions, and the procedure to adequately measure or determine performance parameters and characteristics of the item being evaluated.

c. The initial certification and subsequent recertification(s) will require a written and practical examination that includes test cell pre-start, start, turn-up, shutdown, and emergency procedures.

12.2.3.7 Aviation Life Support Systems (ALSS)

a. The ALSS Program establishes the policy and requirements for determining acceptable civilian personnel certification qualifications for maintaining personnel parachute assemblies, ejection seat drogues, and related egress equipment.

b. Only qualified, certified personnel must be permitted to pack, repair, and/or inspect personnel parachutes, drogue chutes (excluding drogue chutes with non-removable head boxes), inflatable survival equipment, and seat survival kits. Personnel must be graduates of Navy Aircrew Survival Equipmentman (PR) Class A School (or equivalent school from other service).

(1) Initial examination, certification requires completion of local classroom instruction **or** OJT, and a written and a practical examination for specific ALSS equipment.

(2) Recertification is required annually and will be accomplished through a written and a practical examination.

c. Only qualified personnel who are certified by PMA-202/AECS ISSC are permitted to sign-off both the corrected by and inspected by blocks in OOMA for Flight Test/PR work center.

(1) Once a qualified artisan receives their certification stamp, they will receive the necessary SMQs in OOMA to sign-off the corrected by block and/or the inspected by block.

(2) Qualified artisans are not authorized to sign-off any documents which require verification by QAS.

d. Only qualified, certified personnel must be permitted to maintain, service, and/or inspect egress systems. Personnel must be graduates of Navy Aviation Structural Mechanic - (Safety Equipment) (AME) Class A School (or equivalent school from other service) and one of the following: CNATTU for specific T/M/S egress systems, original equipment manufacturer (OEM) training, or approved Depot FRC training curriculum. Depot FRCs must submit their training curriculums to COMNAVAIRSYSCOM (PMA-202 or AECS ISSC) via COMFLTREADCEN for initial approval and subsequent approval every 2 years.

(1) Initial certification will require completion of local classroom or OJT, and a written and a practical examination.

(2) Recertification is required annually and will be accomplished through a written and a practical examination.

NOTES: 1. AME or civilian personnel who have completed the CNATTU course for the F/A-18E/F aircraft SJU-17 Navy Aircrew Common Ejection Seat (NACES) are also qualified to perform work on SJU-17 NACES installed in F/A-18A-D and E/A-18G aircraft. Completion of the CNATTU F/A-18E/F SJU-17 NACES course does not qualify personnel to perform work on SJU-5A/6A ejection seat(s) installed in the F/A-18A-D.

2. Personnel certified under the Depot FRC's Personnel Explosives Handling Qualification and Certification Program in accordance with OPNAVINST 8023.24, may perform stand-alone work involving airframe fire bottle cartridges not physically attached to ejection seats or their components.

12.2.3.8 Plane Captain Basic Duties and Qualifications

a. Modern naval aircraft are inherently complex. This complexity usually prohibits an individual from having sufficient technical knowledge of all systems. Therefore, other technicians must perform those portions of the daily and turnaround inspections which are beyond the plane captain's technical qualifications. However, this assistance does not relieve the plane captains of their overall responsibilities. Because this assignment carries a high degree of responsibility, care must be exercised in the selection of plane captains to ensure they possess the mechanical aptitude, personal integrity, and motivation to accept this responsibility. The individual must possess the

technical competence and sense of responsibility to ensure the aircraft is properly inspected and serviced before flight. Comprehensive formal and OJT programs are necessary to ensure only the most qualified individuals are designated as plane captains.

b. To highlight the technical training required and to standardize the degree of excellence desired, the minimum duties and basic qualifications for formal designation and assignment follow. The Plane Captain must meet the following requirements:

(1) Possess the qualities of personal integrity, maturity, judgment, and aptitude which are vital to the success of assigned tasks.

(2) Be familiar with and demonstrate practical knowledge of the particular type of aircraft and its systems.

(3) Perform daily and turnaround inspections in conjunction with assisting personnel.

(4) Assist pilots in flight preparation and be capable of advising them of the material condition of the aircraft.

(5) Be responsible for the cleanliness and prevention of corrosion on the aircraft, by pursuing an effective and continual preventive maintenance program.

(6) Be thoroughly familiar with and demonstrate knowledge of the aircraft cockpit, ejection seats, controls, and systems, as well as starting and ground turn-up procedures.

NOTE: Perform starting and ground turn-up functions only when authorized in writing by higher authority. Refer to paragraph 12.2.3.5 for additional details.

(7) Demonstrate knowledge of the ordnance and aircraft armament systems (AAS) installed in or on the aircraft to the extent necessary to ensure during daily and turnaround inspections, ordnance (to include CADs), AAS, and, ejection seat are in a safe and ready condition.

(8) Be thoroughly familiar with fueling and defueling procedures, have a complete knowledge of applicable safety instructions, and demonstrate the ability to understand and comply with them.

(9) Show knowledge of the content and be able to use the technical publications necessary for proper servicing and maintenance of the aircraft. All personnel taking oil samples, servicing, and performing maintenance on engine/gearbox systems must be fully aware of the importance of correctly documenting oil consumption and procedures to be followed when high oil consumption is suspected.

(10) Know how and when to use the methods of aircraft security required for various weather conditions and demonstrate such knowledge. Particular attention should be given to the security of control surfaces and the correct points for attaching aircraft tie-downs.

(11) Demonstrate, in writing or by practical examination, a complete knowledge of the procedure for riding brakes and any peculiarities of the braking system of the assigned aircraft.

(12) Demonstrate, in writing and by practical application, a complete knowledge of the standard hand and wand signals, including those signals used for controlling aircraft ashore.

NOTE: A certified plane captain, or a flight engineer or crew chief qualified to perform plane captain functions, will be present and supervise all launches and recoveries of aircraft.

c. Plane Captain, Crew Chief, and Flight Engineer Qualification. To ensure personnel designated as plane captains, crew chiefs, and flight engineers are fully qualified, COs will initiate comprehensive instructions and establish indoctrination and training programs. Upon initial qualification each candidate must receive a thorough written and practical examination. Although requalification is not required, semi-annual proficiency monitoring by a QAS is required to verify competency.

(1) A Plane Captain Selection and Examining Board will be established by each activity. During their training cycle, trainees must not be given full or final responsibility for inspection of the aircraft. This responsibility rests with designated plane captains. When trainees have demonstrated their knowledge of the aircraft to the extent that they can satisfactorily complete the plane captain's examination and are approved by the Plane Captain Selection Board, they should be so designated. The Plane Captain Designation (OPNAV 4790/158) must be signed by the CO or Production Officer. The form must be completed when the individual is initially qualified. Documentation of the initial plane captain designation must be entered in the individual's training record. Personnel qualified in aircraft T/M/S by one command must be screened, qualified, and designated by the new command. Plane captains must be designated using OPNAV 4790/158 or using ASM equivalent.

(2) In commands where flight engineers or crew chiefs perform the functions of a plane captain, completion of the training curriculum and the designation as a flight engineer or crew chief by the CO must qualify the aircrewman for plane captain duties. In such cases, the flight engineer or the crew chief training syllabus must include all plane captain qualifications/requirements. Flight engineers and crew chiefs, qualified as plane captains per this paragraph, are not required to take a separate plane captain examination or appear before the Plane Captain Selection and Examining Board. In those commands where the flight engineer or crew chief training syllabus does not include plane captain qualification requirements, personnel must qualify as plane captains per the paragraph above.

NOTE: The designation of plane captain in no way nullifies the requirement for designating aircrewmembers under current NATOPS instructions.

12.3 Naval Air Technical Data and Engineering Service Center (NATEC) Engineering Technical Services (ETS)

a. NATEC ETS representatives provide advanced fault isolation and troubleshooting support; technical information research and advice; assistance in resolving complex problems; and training (on-the-job) in conjunction with the installation, operation, maintenance, modification, and repair of

applicable aircraft weapon systems. This includes both ashore and afloat activities. Services are planned, managed, and provided by NATEC, San Diego, CA. NATEC can provide formal training in the absence of available alternatives, e.g. courses offered by Center for Naval Aviation Technical Training detachments and mobile training teams. ETS are comprised of both organic Navy ETS (NETS) and Contractor ETS (CETS). NETS personnel are federal government civilian employees, and CETS personnel are commercial or industrial contractor employees, who perform ETS under a contract managed by NATEC. NATEC ETS personnel have the authority to provide on-site training and technical advice but do not inherently possess the technical authority to make engineering judgments that affect the safety or flight worthiness of a weapon system. Those decisions must be deferred to the designated FST or other appropriate technical authority for the weapons system, unless NATEC ETS personnel are granted this authority by name and position.

b. ETS is a logistics element required to:

(1) Assist Naval Air Systems Command in performing the initial transfer of knowledge from equipment manufacturer to organic Navy during equipment introduction.

(2) Provide OJT and technical assistance to Navy and Marine Corps technicians for the sustainment of weapons systems and associated support equipment.

(3) Provide assistance for resolution of unusual or difficult maintenance problems.

(4) Maintain technical information channels and liaison between the FST and the Navy.

c. When required, ETS will be used to complement CENNAVAVNTECHTRAU and CNATTMARU shore-based turnaround training through mentoring, advanced troubleshooting, and on-the-job training. They are not intended to be a corrective measure for inadequate ILS planning, funding, or execution. ETS will not be used to augment maintenance manning. Use of ETS aboard ship during routine CV and CVN work-up training periods and short term assists is an ACC and TYCOM management option. Normally, ETS will not be embarked for extended deployment.

d. In those instances where actual, unavoidable logistics or personnel training deficiencies exist, ACCs/TYCOMs may continue to deploy ETS on a limited basis. Such support will be handled on a case by case basis where that option is the most logical cost effective alternative. Use will be closely controlled, limited to finite periods, and kept to an absolute and justifiable minimum. In each case, the logistic deficiency or training objective necessitating the use of embarked ETS must be identified to the ACC/TYCOM and NATEC by the requesting activity.

e. NETS are the primary source of ETS for equipment operators and maintainers. CETS are authorized only when the required support is not available from NETS resources.

f. NETS duties and responsibilities include but are not limited to:

(1) Provide technical advice, assistance, and training on the installation, maintenance, repair, and operation of weapon systems and equipment.

(2) Evaluate and advise on technical deficiencies in the maintenance and operation of weapon systems or equipment and recommend methods to eliminate these deficiencies.

(3) When requested by proper authority, provide subject matter expertise inputs to investigation team on accidents and incidents due to system or equipment failures.

(4) Maintain close liaison with ISSCs, COMNAVAIRSYSCOM, and contractor personnel and provide technical advice and assistance to resolve maintenance problems/design deficiencies.

(5) Provide technical advice and training to maintenance personnel in resolving difficult maintenance problems.

(6) Relay training and equipment deficiencies to the MO and propose solutions for correction.

(7) Prepare and submit technical reports as required.

(8) Assist in the installation of aircraft equipment, shipboard and ashore, and provide OJT to appropriate military and civilian personnel.

(9) Perform emergency maintenance (direct assistance) on equipment to resolve technically difficult problems when temporary skill or manning shortages prevent accomplishment by assigned personnel. NETS will not perform routine maintenance except under unusual circumstances and never for prolonged periods of time.

(10) Provide technical advice and assistance in connection with operational evaluation/technical evaluation.

(11) Participate in technical publication reviews, ILS Management Teams, MTRRs, and NTSP conferences.

g. NETS personnel will not routinely be used for:

(1) Inspections, installation of engineering changes, evaluation of new equipment performance, or arranging for shipment of defective ACC/units.

(2) Performance of tasks considered organic to the user activity, for example, nonspecialized training, standing duties, and performing military administrative functions.

h. Civilian NETS positions are designated as Emergency-Essential per 10 U.S.C. § 1580.

i. CETS scope of duties is identified or outlined in the terms and conditions of the contract.

(1) CETS contracts are developed by NATEC based on the requirement. CETS are provided to augment the NETS staffing and are intended to be completely interchangeable.

(2) Point of contact for CETS is the Contracting Officer Representative, who is assigned to the NATEC ETS Business Operations Division.

(3) Perform emergency maintenance (direct assistance) on equipment to resolve technically difficult problems when temporary skill or manning shortages prevent accomplishment by assigned personnel. CETS will not perform routine maintenance except under unusual circumstances and never for prolonged periods of time.

j. CETS personnel will not:

(1) Be appointed, employed, or placed under the supervision or direction of Navy personnel.

(2) Be placed in a policy making position.

(3) Be placed in a position of command, supervision, administration, or control over military or civilian personnel or personnel of another contractor.

(4) Be used to avoid manpower ceilings or other personnel rules and regulations of OPM, DOD, or DON.

(5) Become a part of the government organization or use government facilities for normal day-to-day CETS activities with the exception of shipboard deployments and field sites.

(6) Represent any government activity at meetings or conferences. (This does not prevent CETS from serving as a technical advisor to the activity representative, but NETS will be used for this function when available.)

(7) Perform tasks that are considered organic to the user activity, for example, nonspecialized training, standing duties, and performing military administrative functions.

k. Initial ETS requirements will be included in appropriate ILS and phased support plans. From these, long-term programmatic ETS support plans will be developed by NATEC in conjunction with individual Fleet customers, ACCs, TYCOMs, and APMLs. These programmatic plans will document requirements by site/billet and will be used to justify budget requests and allocate available resources. Additional ETS guidance and information is in NATECINST 5400.1 and other ACC or TYCOM directives (as applicable).

NOTE: For ETS support of airborne weapons release and control, stores management systems, expendable targets, UAS Groups 1 and 2 not governed by this instruction, and related equipment refer to OPNAVINST 8000.16.

l. Contractor maintenance services, including logistic support representative services, are procured through Logistics and Management Department but do not fall under the definition of ETS. Policies and responsibilities concerning other contractor maintenance are in [Chapter 11](#).