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OPNAVINST 13700.2A  
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20 Nov 2013

OPNAV INSTRUCTION 13700.2A

From: Chief of Naval Operations

Subj: PROPULSION, ENGINE AND ENGINE MODULE READINESS

Ref: (a) DoD Instruction 4140.01 of 14 December 2011  
(b) NAVAIRINST 13700.15E  
(c) OPNAVINST 4442.3C  
(d) OPNAVINST 3000.15  
(e) CNO letter Ser N880G10/6S663861 of 17 Apr 96 (NOTAL)  
(f) Naval Air Systems Command Standard Work Package 673.210, Current Sustainability Readiness Indicator (NOTAL)  
(g) Naval Air Systems Command Standard Work Package 673.211, Surge Sustainability Readiness Indicator (NOTAL)  
(h) Naval Air Systems Command Standard Work Package 673.208, Pool Requirement Readiness Indicator (NOTAL)  
(i) Naval Air Systems Command Standard Work Package 673.205, Reliability Readiness Indicator (NOTAL)  
(j) Naval Air Systems Command Standard Work Package 673.209, On-Time Delivery (OTD) Readiness Indicator (NOTAL)  
(k) Naval Air Systems Command Standard Work Package 673.207, Cost Readiness Indicator (NOTAL)  
(l) Naval Air Systems Command Standard Work Package 673.206, Measures of Effectiveness Formula Removal/Change (NOTAL)  
(m) Propulsion Management Board Charter of 16 Jul 2009 (NOTAL)

Encl: (1) Definitions  
(2) Readiness Indicators and MOEs  
(3) Readiness Responsibilities Map

1. Purpose. To establish policy, roles, and responsibilities for developing, validating, and updating whole engine and engine module requirements as the National Military Strategy (NMS) changes and as improved management processes become available.

2. Cancellation. OPNAVINST 13700.2.

3. Scope. This instruction applies to total inventory management of Navy and Marine Corps whole engines and modules. Total inventory should be interpreted to mean all engines and modules, whether installed or uninstalled. Additionally, those engines and modules supported via performance based logistics, contractor logistics support, or any other like-type of agreement are included in the interpretation of total inventory and, therefore, held accountable under the concepts of this instruction.

4. Materiel Management. Reference (a), prescribes procedures for the uniform management of the Department of Defense (DoD) materiel. The DoD components shall establish and pursue the goal of provisioning sufficient support items to meet end item readiness objectives. Reference (b), outlines the requirement and procedures for the use of Web-based Decision Knowledge Programming for Logistics Analysis and Technical Evaluation for engine and propulsion system module management.

5. Inventory Control. Primary authorized aircraft (PAA) and backup authorized aircraft inventories are governed by the aircraft inventory budget exhibit (A-II). Spare engine and module inventory procurement is calculated based on the retail inventory model for aviation (RIMAIR), as outlined in reference (c). Inventory deviations from the A-II and RIMAIR shall be adjusted by Chief of Naval Operations (CNO) direction via the Planning, Programming, Budgeting, and Execution process.

6. CNO Engine/Module Readiness Goals (ERG). Ready for issue (RFI) whole engines and modules must be available to execute the Fleet Response Plan (FRP), reference (d). Achievement of ERG should be in concert with current flying hour program and engine depot readiness assessment models. RFI spare pools sufficient to sustain a surge, as governed by planning guidance, must be maintained. The following elements sum to the total requirement for whole engines and modules:

a. RFI whole engines to fill 100 percent flight line entitlement (FLE) aircraft firewalls that support FRP and primary aircraft authorization for all other type/model/series (T/M/S) aircraft.

b. RFI spare whole engines to support aircraft depot production schedules.

c. RFI spare whole engines and modules at production and non-production pool sites shall be equal to peacetime demand placed on that site.

d. RFI spare whole engines and modules required to support wartime utilization derived from NMS and obtained from reference (e).

7. Definitions. Please see enclosure (1) for definitions related with engine and engine module readiness.

8. Readiness Indicators. The primary metrics used to track and monitor propulsion, engine, and engine module readiness shall be the readiness indicators. These indicators are intended to be used in conjunction with each other to give a complete picture of the health of the individual engine T/M/S.

a. The individual readiness indicators are current sustainability, surge sustainability, pool requirement, reliability, on-time delivery (OTD), and cost. The formulas used to compute the indicators' level of readiness, as well as the sources of the necessary data, can be found in each readiness indicators' standard work package per references (f) through (k).

b. Measure of effectiveness (MOE), listed in enclosure (2), reflect the efficiency of the individual readiness indicators. Structured to be consistent with the Defense Readiness Reporting System - Navy (DRRS-N), the MOE is based on the historical norms for the individual readiness indicators. The MOE shall be reviewed annually, and reference (1), outlines the procedures for recommending the removal of, or change to, an individual MOE.

c. Risk thresholds should be documented in readiness indicators and FRP requirements. The readiness indicators shall be consistent with the DRRS-N architecture. The MOE risk thresholds shall be reviewed annually and adjusted as required to target appropriate performance levels.

9. Responsibilities

a. The Propulsion Readiness Steering Committee (PRSC) shall:

(1) Be chaired by Office of the Chief of Naval Operations (OPNAV) Aviation Readiness Branch (OPNAV (N432)) with established membership from OPNAV Air Warfare Division (OPNAV (N98)); Headquarters Marine Corps Aviation Logistics Support Branch; Commander, Naval Air Forces (COMNAVAIRFOR) Aircraft Propulsion and Fleet Support (CNAF N421)); Naval Air Systems Command (NAVAIRSYSCOM) Propulsion and Power Engineering Department (AIR-4.4), NAVAIRSYSCOM Industrial and Logistics Maintenance Planning/Sustainment Department (AIR-6.7); NAVAIRSYSCOM Aviation Readiness and Resourcing Analysis Department (AIR-6.8)); Commander, Fleet Readiness Centers; and Naval Supply Systems Command Weapon Systems Support.

(2) Annually review the NMS and new management concepts, and update the engine and module requirements and processes (as illustrated in enclosure (3)) used to compute goals.

b. OPNAV (N432) shall:

(1) Validate and resource repair requirements via the operations and maintenance, Navy (OMN) and operations and maintenance, Navy Reserve (OMNR) accounts.

(2) Annually review and update readiness indicators and MOEs in conjunction with the type commander (TYCOM) engine class desk. The results of the annual review shall be briefed to the PRSC.

c. OPNAV (N98) shall validate and resource research, development, test and evaluation (RDT&E) and aircraft procurement, Navy (APN) 5, 6, and 7 accounts.

d. NAVAIRSYSCOM shall:

(1) Per reference (m), establish and maintain a propulsion management board that produces and executes a readiness-based propulsion management system.

(2) Develop and maintain an engine and module readiness risk assessment tool.

(3) Establish and document processes to quantify, measure, and maintain goals (i.e., AIRSpeed, global engine management (GEM), etc.).

(4) Annually, each propulsion system team must document and update a propulsion systems management plan, which includes a type model specific value stream map, mean engine flight hours between removal goals, and identifies technical as well as programmatic risks.

e. TYCOMs shall:

(1) Apply risk management practices to RFI and not ready for issue (NRFI) whole engines and modules to achieve readiness goals.

(2) Plan and manage execution year and out-year depot maintenance requirements.

(3) Determine location and size of pools.

(4) Establish and manage RFI pools for operational commanders to maintain readiness in support of NMS in peace and war.

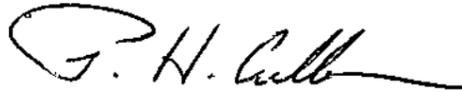
(5) Solicit and assess operational commander inputs of impact for wartime scenarios on engine readiness goals.

(6) Manage NRFI retrograde return to ensure timely repair.

f. Operational Commands shall evaluate wartime scenarios compared to the readiness goals and provide inputs and or concerns to COMNAVAIRFOR Requirements Cell (N8) and COMNAVAIRFOR Engine Class Desk (N421M).

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10. Records Management. Records created as a result of this instruction, regardless of media and format, shall be managed per Secretary of the Navy Manual 5210.1 of January 2012.



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DEFINITIONS

1. Engine Readiness Goal. Refers to the CNO's goal for the number of RFI whole engines that must be available to execute the FRP.
2. Fleet Response Plan (FRP). An operational framework, established by the CNO, with four phases (maintenance, basic, integrated, and sustainment), designed to optimize the return on training and maintenance investments and ensure units and forces are trained and certified in defined, progressive levels of employable and deployable capability.
3. Fleet Readiness Training Program (F RTP). Program which delineates the aircraft readiness requirements by TMS per month during the planned training and deployment cycle.
4. Flight Line Entitlement (FLE). Total number of aircraft authorized during the F RTP to meet FRP. Marine Corp PAA will be their FLE.
5. Module Readiness Goal. Refers to the CNO's goal for the number of RFI engine modules that must be available to support engine production in the execution of the FRP.
6. National Military Strategy (NMS). The overarching requirements for war, surge, or contingency operations will be found in the defense planning guidance, strategic planning guidance and joint planning guidance.
7. Net Bare Firewalls (BFW). Not having enough engines to fill engine cavities of FLE and percent backup aircraft inventory aircraft from a total inventory perspective. Example: North Island has one BFW in an FLE aircraft, but Cherry Point has a spare engine of the same T/M/S, therefore there is not a net BFW situation. Conversely, Lemoore has one BFW in a non-FLE aircraft and there are no RFI spares available; there is not a net BFW situation.
8. Non-production Site Pool. A quantity of RFI whole engines at a location that does not have engine and or module repair capability.

9. Budgeted Flying Hours (OP20). Budget exhibit which provides peacetime flight hours for the Future Year Defense Plan.

10. Percent Backup Aircraft Inventory. The term used to represent the count of engines required at the depot to support the aircraft depot events. This number is dependent upon standard maintenance plans, expected induction schedule, and maintenance event duration. The count is sufficient to support aircraft as needed and may not exceed the number of firewalls at the depot.

11. Production Site Pool. A quantity of RFI whole engines at a repair location that institutionalizes enhanced surge capability.

12. RFI Whole Engines and Modules. Those whole engines and modules in a material condition (installed or uninstalled) that are available for operational use.

13. Repair Turn Around Time. The period that commences with the time an asset is inducted into work at a repair site and terminates when the work is completed upon RFI of the asset. It is the maintenance subset of the turn around time (TAT).

14. Surge. Unplanned increase in demand caused by significant changes in flight operations, industrial capabilities, and or propulsion reliability.

15. Time to Reliably Replenish (TRR). The time in which, with 90 percent confidence, an asset can be restored to RFI condition (from induction to RFI). TRRs are site specific and are developed using a process-flow review.

a. The TRR for a repair site may be called  $TRR_t$ , with the subscript letter t signifying the TRR is measured from RFI issue from the source to receipt at the pool site. These transportation times are given in the Uniform Material Movement and Issue Priority System (UMMIPS) standard as 7 days continental United States (CONUS) and 14 days outside continental United States (OCONUS).

b. The TRR for a non-production pool site may be called  $TRR_t$ , with the subscript letter "t" signifying the TRR is measured

from RFI issue from the source to receipt at the pool site. These transportation times are given in the UMMIPS standard as 7 days CONUS and 14 days OCONUS.

16. Turn Around Time (TAT) - Engine and Module Depot Negotiated. Standard (depot) TATs for each engine and module T/M/S which has been negotiated (agreed upon) by the individual depots. The time is measured based on the number of days between removal from shipping container non-RFI, repaired, and returned to the shipping container RFI.

17. Value Stream Map. Identifies inefficiencies and constraints in the propulsion system repair process.

READINESS INDICATORS AND MOEs

**Current Sustainability** - A measure of production to demand during any snapshot in time. Cited as the number of days remaining until the global RFI pool is exhausted even though production and replenishment or resupply of the pool continues. All T/M/S engines or modules with a daily production that is greater than or equal to the daily demand shall be assigned a rating of one. This MOE is developed per reference (f).

**Surge Sustainability** - A measure of production to demand during any snapshot in time. Cited as the number of days remaining until the surge RFI pool is exhausted even though production and replenishment or resupply of the pool continues. All TMS engines or modules with a daily production that is greater than or equal to the daily demand shall be assigned a rating of one. This MOE is developed per reference (g).

<b>Current Sustainability</b> (although replenishment is considered, the number of days until pool assets reach zero)	
Rating	MOE
1	90+ days
2	60-89 days
3	40-59 days
4	20-39 days
5	0-19 days

<b>Surge Sustainability</b> (although replenishment is considered, the number of days until pool assets reach zero)	
Rating	MOE
1	90+ days
2	60-89 days
3	40-59 days
4	20-39 days
5	0-19 days

**Pool Requirement** - A measure of the total number of installed and uninstalled RFI whole engines available as compared to the number of pool RFI whole engines necessary to support the NMS required. This MOE is developed per reference (h).

**Reliability** - Each T/M/S shall be measured as a percent deviation of the actual mean engine flight hour between repair (MEFHBR) achieved (MEFHBR<sub>a</sub>) from the PMB approved goal MEFHBR (MEFHBR<sub>g</sub>). This MOE is developed per reference (i).

<b>Pool Requirement</b> (spare pools, as set by GEM model)	
Rating	MOE
1	100% pools
2	80%-99% pools
3	50%-79% pools
4	20%-49% pools
5	Net BFW-19% pools

<b>Reliability</b> (% deviation between MEFHBR achieved and PMB approved MEFHBR goal)	
Rating	MOE
1	- 0%-5%
2	- 6%-15%
3	- 16%-25%
4	- 26%-35%
5	- 36+%

**OTD** - Each TMS shall be measured as the percent OTD. OTD is the ratio of the number of repair events completed within the negotiated maintenance action time as compared to the total number of repair events completed. Completion of the repair event occurs upon placing the engine or module in an RFI status at the repair facility. Maintenance action time for the depot is the engine or module negotiated TAT. Maintenance action time for the intermediate level repair activity is the same as the AIRSpeed TRR. TAT is measured per COMNAVAIRFORINST 4790.2A. This MOE is developed per reference (j).

<b>OTD</b> (% of repairs completed within negotiated time as compared to total number of repairs completed)	
Rating	MOE
1	80% - 100%
2	60% - 79%
3	40% - 59%
4	20% - 39%
5	0% - 19%

**Cost** - Each TMS shall be measured as a percent deviation from the actual cost per engine flight hour incurred as compared to the engine cost per flight hour (CPFH) goal. The engine CPFH goal is a percentage of historical engine CPFH compared to historical aircraft CPFH, multiplied by the annual COMNAVAIRFOR approved CPFH goal. Only O- and I-level costs are considered in computing the CPFH goal for this MOE, however, depot costs shall be included in the engine TMS CPFH charts, as reference, and shall not influence that specific engine CPFH. This MOE is used to evaluate the actual engine cost to planned engine cost, and is developed per reference (k).

<b>Cost</b> (% deviation of actual engine costs per flight hour incurred from the COMNAVAIRFOR established planned costs per flight hour)	
Rating	MOE
1	0% - 5%
2	6% - 15%
3	16% - 25%
4	26% - 35%
5	36+%

READINESS RESPONSIBILITIES MAP

Requirement Elements (Generators)	
Inventory (Primary Authorized Aircraft, Backup Authorized Aircraft)	FRMP
Cost	
Replenishment (Transportation Times, Containers, Retrograde Mgmt)	Readiness Reserves
Martime Scenario or Surge Plans	
Operational Tempo (OP20)	BFW Management
Defense Planning Guidance	
<b>Quantifiable Metrics</b>	
Repair Schedule	Pipeline (NRFI)
TAT/TRR	
Cost	
<b>Metric + Goal Determination</b>	
I & D Level Repair Allocations	Inventory Model (RIMAIR, Readiness Based Forecasting Model)
TAT/TRR Goals	Cost Goals
<b>Planning, Programming, and Budgeting - Program Definition</b>	
Program Related Logistics (OMN, OMNR)	Component Improvement Program (RDT&E)
Powerplant Changes (APN-5)	
Aviation Depot Maintenance (IA5A)	OP20 (Flying Hour Program Maintenance \$)
<b>Program Execution - RFI &amp; NRFI Asset Management</b>	
I-Level TRR	D-Level TRR
Spares Pools	Pack-Up Kits
Push/Pull	Motor Board
OPNAV 13700	OPNAV 13700
OPNAV 13700	
<b>Squadron Maintenance</b>	
Engine Delivery	NRFI Transportation
Actual Flight Hours	