UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BOX 99100
YUMA, ARIZONA 85369-9100

StaO 4790.2A
3SAR
19 JUL 2000

STATION ORDER 4790.2A

From: Commanding Officer
To: Distribution List

Subj: UH/HH-1N FUNCTION CHECK PILOT (FCP) TRAINING SYLLABUS

Ref: (a) OPNAVINST 4790.2G
(b) NAVAIR 01-110HCE-1 (HH/UH-1N NATOPS)
(c) OPNAVINST 3710.7Q
(d) NAVAIR 01-110HCE-1F (HH/UH-1N FCF CHECKLIST)

Encl: (1) Functional Check Pilot Designation Letter Format
(2) Functional Check Pilot Syllabus
(3) (Search and Rescue) Functional Check Flight Aviation Training Form

1. Purpose. To establish the requirements for training and designation of UH/HH-1N Functional Check Pilots (FCP).

2. Cancellation. StaO 4790.2

3. Background. Functional check pilots play a critical role in safe mission accomplishment. Reference (a) defines the conditions requiring a functional check flight (FCF). This order will standardize the MCAS Yuma HH/UH-1N FCP training and designation program, which shall be conducted in strict compliance with references (b) through (d).

4. Action

a. Based on the Aviation Maintenance Officer's (AMO) recommendations, the standardization board shall nominate pilots to the Commanding Officer for FCP training.

b. FCP candidates must meet the minimum designation requirements per reference (b) and, prior to designation as a FCP (enclosure (1)), complete all of the syllabus requirements in enclosure (2).

c. Previously designated HH/UH-1N FCPs joining H&HS, MCAS Yuma from other units shall at a minimum review the reading list, complete the open book exam, and complete a FCF standardization flight with a senior FCP (enclosure (3)).

d. Functional Check Pilots who have not performed a functional ground turn (FGT) or functional check flight (FCF) in the previous six months shall complete a refresher FCF with a designated FCP.

e. The AMO may recommend additional refresher flights, as deemed necessary, for paragraphs 4(c) and (d) above.

f. Functional check pilots under instruction (FCPUI) must complete the required reading list before the 2nd FCF training flight, and must complete the open book exam and turn it in to the Quality Assurance Officer before the FCF check ride.

g. FCF training flights will be conducted in conjunction with actual functional check flights to the maximum extent possible. If actual functional check flights are not available, then full mission capable aircraft may be utilized.

h. The Commanding Officer is the designation authority for FCP.

i. The Quality Assurance Officer (QAO) shall maintain FCP training jackets on all designated FCP and FCPUI, including any history from previous commands. The QAO will ensure each FCP is given his training jacket upon transfer.

j. The QAO will monitor the training of all FCPUI and prepare and forward completed syllabus and designation letters to the Commanding Officer via the appropriate chain of command.

k. The QAO will maintain up-to-date references and required reading material and is responsible for updating this order as required.

l. Only FCPs who are also SAR instructors may conduct instructional FCP syllabus flights. Only the AMO or QAO will conduct the FCF check ride.

5. Recommendations. Recommendations for revision to any portion of this Order shall be made to the MCAS Yuma QAO. If conflicts arise between this Order and directives of higher authority, the directive of higher authority shall take precedence. Immediately notify the AMO or QAO when conflicts arise.

6. Certification. Reviewed and approved this date.

MARK E. CONDRA

DISTRIBUTION: Station Operations
+20 SAR

From: Commanding Officer, Marine Corps Air Station, Yuma
To: Captain I. B. Good 123 45 6789/USMC

Subj: DESIGNATION OF UH/HH-1N FUNCTIONAL CHECK PILOT

Ref: (a) OPNAVINST 3710.7R
(b) NAVAIR 01-110CHE-1, (UH-1N Manual)

1. References (a) through (b) set forth the requirements to be met by Naval Aviators to qualify as a Functional Check Pilot (FCP) in the UH/HH-1N aircraft.

2. Having completed the requirements and having demonstrated to an advanced degree the knowledge and skill, you are hereby designated FCP "Full Systems" within this command.

3. This designation is cancelled upon transfer from this activity.

I. B. INCHARGE

Copy to:
NATOPS
Individual

ENCLOSURE (1)

HH/UH-1N

FUNCTIONAL CHECK PILOT SYLLABUS

RECORD

1. _____ began the functional test flight pilot syllabus for the UH/HH-1N aircraft on _____.

2. FCPUI requirements:

	Completed	Signature
Required Reading	_____	_____
Open Book Exam	_____	_____
FCF-1	_____	_____
FCF-2	_____	_____
FCF-3	_____	_____
FCF-4	_____	_____
FCF-5	_____	_____
FCF-6	_____	_____

ENCLOSURE (2)

FUNCTIONAL CHECK PILOT GROUND SYLLABUS

REQUIRED READING OVERVIEW

1. The UH/HH-1N required reading syllabus is not intended to turn prospective Functional Check Pilots (FCPs) into wrench-turners, but rather serve these three purposes:

a. Familiarize the FCP with the publications that govern how check flights are conducted and aircraft maintenance is performed.

b. Highlight facts or procedures that will aid the FCP in inspection, troubleshooting and performance of check flights.

c. Increase the FCP general knowledge of aircraft systems.

The accompanying open-book test provides a vehicle for the FCP under instruction (FCPUI) to reinforce points found in the required reading material.

The required reading list is not comprehensive and it would be in the best interest of any FCP to read additional sections of the Maintenance Instructions Manuals (MIMS) that cover principles of operation, testing, and trouble-shooting of various systems not covered in the required reading list.

REQUIRED READING LIST

MANUAL	DATE	INITIALS
1. NAVAIR 01-110HCE-1 (NATOPS)		
a. Functional Check Flight		
1. Procedures: chapter 11	_____	_____
2. Qualifications: page 5-2	_____	_____
3. Aircrew Coordination: page 18-7	_____	_____
4. Operating Limits: chapter 4	_____	_____
5. Emergency Procedures: chapter 14	_____	_____

2. OPNAVINST 3710.7Q
   a. Functional Check Flights: page 3-10 _____ _____

3. OPNAVINST 4790.2G
   a. Functional Check Flights, page 12-4 _____ _____

4. Station Order 3710.4G
   (Airfield Operations Manual) _____ _____

5. NAVAIR 01-110HCE-2-1 thru 01-110HCE-2-13
   (Maintenance Instruction Manuals) _____ _____

   a. Conditional Inspections _____ _____
   b. Power Plant Trouble Shooting _____ _____
   c. Engine Rig & Adjustments, Motoring Runs and Compressor Wash _____ _____
   d. Metal particles Contamination Chart _____ _____
   e. Trouble Shooting Non-AFCS Flight Controls _____ _____
   f. Operational Check of Main Rotor _____ _____
   g. Dynamic Tracking & Balancing Main & Tail Rotor Assemblies _____ _____
   h. Trouble Shooting Main Rotor _____ _____
   i. Auto RPM adjustment of Main Rotor _____ _____
   j. Trouble Shooting Tail Rotor _____ _____
   k. Operational Check of Hydraulic System _____ _____
   l. Trouble Shooting Flight Control Hydraulic System _____ _____
   m. Trouble Shooting Rotor Brake System _____ _____
   n. Rigging Droop Compensator Controls _____ _____
   o. Hover & In flight tracking of Main Rotor _____ _____

6. NAVAIR 01-110HCE-6-4 (Phase Deck Cards) _____ _____

7. NAVAIRINST 13400.2 WITH CHAPTER 2 _____ _____

FUNCTIONAL CHECK PILOT FLIGHT SYLLABUS

Pilots undergoing Functional Check Pilot training are selected based on experience, aeronautical skills and demonstrated sound judgement. During the course of training, emphasis will be placed on test procedures, limitations, and flight characteristics peculiar to test flights. The following FCP syllabus flights are established.

FCF-1: A qualified FCP will demonstrate all FCF procedures, to include interaction with QA personnel, ADB Screening requirements, preflight/postflight inspections, and all ground/airborne functional checks (full card).

FCF-2: The FCPUI will perform a full card FCF. Emphasis will be on limitations, aircraft control, and special techniques used during functional checks. Brief and discuss part power (setting max NG stop), ground power assurance, topping/max power, flight control checks, and jammed flight controls.

FCF-3: The FCPUI will perform a full card FCF. Special attention will be placed on proper techniques and compliance with the FCF checklist. Brief and discuss torque splits, governor matching, overspeed system, and the air management system.

FCF-4: The FCPUI will perform a full card FCF. Brief and discuss engine rigging.

FCF-5: The FCPUI will perform a tail rotor (T/R) and main rotor (M/R) vibrex. During the T/R vibrex, the FCPUI will observe the tracking procedures. During the M/R vibrex, the FCPUI will observe the operation of the test equipment (brain box and camera) and observe all adjustments to the main rotor head. Brief and discuss airborne parameters and common errors during adjustments.

Note: FCF-5 may be conducted out of sequence and/or in conjunction with another FCF.

FCF-6: The FCF Standardization flight. The FCPUI will demonstrate all FCF procedures.

FUNCTIONAL CHECK PILOT OPEN BOOK EXAM

Name: _____ Date: _____

QAR: _____ Grade: _____

References:		
	OPNAV 4790.2G	(NAMP)
	OPNAV 3710.7Q	(NATOPS)
	STAO 3710.7G	(Airfield Ops Manual)
	STAO 4790.2A	(FCP Training syllabus)
	NA 01-110HCE-1	(UH/HH-1N NATOPS)
	NA 01-110HCE-2	(MIMS Sections 1-12)
	NA 01-110HCE-3	(Structural Repair Manual)
	NA 01-110HCE-4	(IPM)

List the reference and corresponding page number with your answer:

1. Personnel authorized to fly on aircraft during functional check flights are:

   a. All passengers assigned on the FRAG.
   b. Any squadron personnel that need flight time.
   c. The minimum crew required to safely complete the flight.
   d. All of the above.

Ref: _____ **Page:** _____

2. What are the minimum weather conditions for functional check flights and can a functional check **flight** ever be conducted at night?

Ref: _____ **Page:** _____

3. The _____ is authorized to grant deviations for a functional check flight and/or functional ground turn in conditions other than day VFR.

Ref: _____ **Page:** _____

4. Functional check flights may be flown in conjunction with operational flights only after all checklist items are completed on the functional check flight, and at the discretion of the:

a. AMO
b. CO
c. Operations Officer
d. Both b and c.

Ref: _____ **Page:** _____

5. A brief by _____ must be given prior to any functional ground turn or functional check flight.

Ref: _____ **Page:** _____

6. Normal generator voltage is _____.

Ref: _____ **Page:** _____

7. Linear actuator travel from full increase to full decrease should take a maximum of _____, within a range of _____.

Ref: _____ **Page:** _____

8. (T or F) During the ground power assurance check the fuel boost circuit breakers should be pulled and the cross-feed should be on.

Ref: _____ **Page:** _____

9. Nf is set at ____ for ground power assurance.

Ref: _____ **Page:** _____

10. The barometric altimeter with the correct setting should read within _____ of field elevation and the maximum difference between pilot and copilot altimeters is _____.

Ref: _____ **Page:** _____

11. Flat pitch torque should fall within _____ % torque at _____ % Nr.

Ref: _____ **Page:** _____

12. Single engine Nf beep range should fall within _____ and dual engine Nf beep range should fall within _____.

Ref: _____ **Page:** _____

13. During manual fuel crossover, the Ng change should be within _____ from high-side flight idle.

Ref: _____ **Page:** _____

14. During the ITT bias trim check, observed rise in ITT should be withing +/- ____ degrees Celsius of the trim value plate.

Ref: _____ **Page:** _____

15. When performing the control rigging check at 100 knots, the tail rotor pedals should be within _____ of each other.

Ref: _____ **Page:** _____

16. The stabilizer bar check is performed at _____ knots, with force trim ____ and _____ Nr.

Ref: _____ **Page:** _____

17. During the topping check an altimeter setting of _____ shall be used.

Ref: _____ **Page:** _____

18. Can an engine be topped in manual fuel? _____

Ref: _____ **Page:** _____

19. During trouble shooting for air leaks and/or torque splits various components may be capped off which render the AUTOMATIC MODE of the fuel control unit inoperative. In this case it becomes extremely easy to overspeed ___ and ___, and to exceed ____.

Ref: _____ **Page:** _____

20. Are there any circumstances where a passenger may ride on a functional check flight? (Think about this one!)

Ref: _____ **Page:** _____

21. Where can hover work be performed at MCAS Yuma?

Ref: _____ **Page:** _____

22. The _____ and _____ are the most important aspects of a functional check flight.

Ref: _____ **Page:** _____

23. During the acceleration check, the engine should accelerate from ____% Ng to ____% Ng within ___ seconds.

Ref: _____ **Page:** _____

24. (T or F) Tail rotor hanger bearing mount bolts and nuts do not require slip-marks.

Ref: _____ **Page:** _____

25. When is the only time that a compressor stall is normal for T-400-CP400?

Ref: _____ **Page:** _____

26. What is the first step in troubleshooting for a steady state torque split?

Ref: _____ **Page:** _____

27. What is the probable cause of a cyclic stick "creeping" when the AFCS is engaged?

Ref: _____ **Page:** _____

28. On the outboard ____ feet of the main rotor blade any dent that does not tear skin or produce a void detected by tapping is acceptable.

Ref: _____ **Page:** _____

29. Aircraft experiencing a control malfunction during ground operations will be immediately inspected by _____ prior to further flight operations or continued turn-up or maintenance action.

Ref: _____ **Page:** _____

30. If engine oil temperature reaches 120 degrees in excess of five minutes, what maintenance action is required?

Ref: _____ **Page:** _____

SEARCH AND RESCUE

FUNCTIONAL CHECK FLIGHT ATF

Flight #_____ INITIAL/COMPLETION/RE-FLY/REFRESHER

COMPLETE/INCOMPLETE

	SAT	UNSAT
GENERAL		
Brief	___	___
Preflight/Postflight	___	___
Headwork	___	___
Emergency Procedures	___	___
A/C Systems Knowledge	___	___
GROUND CHECKS		
Parallel Generators	___	___
T-5 Bias	___	___
Penalty Runs	___	___
Beep Range	___	___
Flight Idle Adjust	___	___
Linear Actuator	___	___
Fuel/Oil/Air Leaks	___	___
Part Power	___	___
Ground Power	___	___

QUALIFIED/UNQUALIFIED

	SAT	UNSAT
HOVER CHECKS		
Control Checks	___	___
Pylon Mount Check	___	___
Droop Check	___	___
IN FLIGHT CHECKS		
Rigging Check	___	___
Stab Bar Check	___	___
Collective Balance	___	___
Level Flight Check	___	___
T/R Rigging	___	___
S.E. Load Assump.	___	___
Auto Turns	___	___
Track & Vibration	___	___
S.E. Topping	___	___
Torque Limit Check	___	___
Shutdown	___	___

****

Instructor Comments:

****

FCPUI:_____ DATE:_____

IP: _____

ENCLOSURE (3)