



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

MBA PROFESSIONAL REPORT

**Commander Naval Air Forces (CNAF) Flight Hour Program:
Budgeting and Execution Response to the Implementation of the Fleet
Response Plan and OP-20 Pricing Model Changes**

**By: Walter H. Glenn, Jr.
Eric E. Otten
June 2005**

**Advisors: Lawrence R. Jones
Richard L. Dawe**

Approved for public release; distribution is unlimited.

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE June 2005	3. REPORT TYPE AND DATES COVERED MBA Professional Report	
4. TITLE AND SUBTITLE: Title (Mix case letters) Commander Naval Air Forces (CNAF) Flight Hour Program: Budgeting and Execution Response to the Implementation of the Fleet Response Plan and OP-20 Pricing Model Changes			5. FUNDING NUMBERS	
6. AUTHOR(S) Glenn, Walter H. and Otten, Eric E.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this report are those of the author(s) and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) Effectively managing the Navy Flight Hour Program (FHP) has historically posed unique challenges. Most notably, CNAF FHP managers have routinely faced a seemingly unavoidable shortfall in flight hour funding requiring the use of creative cash management practices and reliance on defense supplemental appropriations to continue flight operations to the end of each fiscal year. In an effort to reduce this disparity between budget forecasts and actual program execution requirements, significant changes were recently made to individual pricing models used in formulating OP-20 funding levels. In addition, the Navy's transition to the Fleet Readiness Training Plan (FRTTP) in support of the overall Fleet Response Plan (FRP) in July of 2003 resulted in a fundamental shift in funding level requirements and overall program execution. The purpose of this study is to analyze what effect the response to this fundamental shift in the Navy's overall readiness posture, in conjunction with the aforementioned OP-20 budgetary process enhancements, had on the matching of budgeted program dollars with execution requirements. The methodology for the study will entail an analysis into the specific changes to the budgeting models used in the formulation of OP-20 funding levels, along with a review of the resulting execution changes at COMNAVAIRPAC (CNAP) in support of the FRP.				
14. SUBJECT TERMS CNAP Flying Hour Program, Cash Management and Cost Estimation, Naval Aviation			15. NUMBER OF PAGES 87	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

**COMMANDER NAVAL AIR FORCES (CNAF) FLIGHT HOUR PROGRAM:
BUDGETING AND EXECUTION RESPONSE TO THE IMPLEMENTATION OF
THE FLEET RESPONSE PLAN AND OP-20 PRICING MODEL CHANGES**

Walter H. Glenn, Lieutenant Commander, United States Navy
Eric E. Otten, Lieutenant Commander, United States Navy Reserve

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

**NAVAL POSTGRADUATE SCHOOL
June 2005**

Authors:

Walter H. Glenn

Eric E. Otten

Approved by:

Lawrence R. Jones

Richard L. Dawe

Douglas A. Brook, Dean
Graduate School of Business and Public Policy

THIS PAGE INTENTIONALLY LEFT BLANK

**COMMANDER NAVAL AIR FORCES (CNAF) FLIGHT HOUR PROGRAM:
BUDGETING AND EXECUTION RESPONSE TO THE IMPLEMENTATION OF
THE FLEET RESPONSE PLAN AND OP-20 PRICING MODEL CHANGES**

ABSTRACT

Effectively managing the Navy Flight Hour Program (FHP) has historically posed unique challenges. Most notably, CNAF FHP managers have routinely faced a seemingly unavoidable shortfall in flight hour funding thus requiring the use of creative cash management practices and reliance on defense supplemental appropriations to continue flight operations to the end of each fiscal year. In an effort to reduce this disparity between budget forecasts and actual program execution requirements, significant changes were recently made to individual pricing models used in formulating OP-20 funding levels (Flying Hour Program Budget Exhibit). In addition, the Navy's transition to the Fleet Readiness Training Plan (FRTTP) in support of the overall Fleet Response Plan (FRP) in July of 2003 resulted in a fundamental shift in funding requirements and overall program execution.

The purpose of this research is twofold in nature. First, the authors' aim is to provide new FHP administrators a single-source document that summarizes the underlying build of each funding element contained in the OP-20. Second, is to analyze what effect the response to the fundamental shift in the Navy's overall readiness posture had on the ability of program administrators to match budgeted program dollars with execution requirements. The methodology for this research will entail an analysis into the specific changes to the OP-20 budgeting models and their effect on funding level accuracy and execution, along with a review of the resulting execution changes implemented at Commander Naval Air Forces Pacific (CNAF) in support of the new FRP. Additionally, the study utilizes a comparison of the budget formulation process and program execution in FY02 and FY05 to highlight any observed efficiencies or detrimental impacts resulting from the subsequent changes.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	BACKGROUND	1
B.	REASONS FOR CHANGE.....	2
C.	PURPOSE.....	5
D.	RESEARCH QUESTIONS.....	6
1.	Primary Research Question.....	6
2.	Secondary Research Questions.....	6
E.	SCOPE AND METHODOLOGY	6
F.	ORGANIZATION OF STUDY	7
II.	OP-20 FUNDING COMPOSITION.....	9
A.	INTRODUCTION.....	9
B.	(OFC-1) AIRCRAFT FLIGHT OPERATIONS (AFO).....	10
1.	(FF/fuel) 7B.....	10
2.	(Administrative and Flight Equipment) 7F.....	11
C.	(OFC-50) AIRCRAFT OPERATIONS MAINTENANCE (AOM)	11
1.	(FA/DLR) Aviation Depot Level Repairable (AVDLR).....	11
2.	(FM/maint) Consumables (AFM).....	11
3.	FW/Contract.....	12
D.	FO (FO/SUPPORT).....	12
III.	OP-20 BUDGETING PROCESS.....	15
A.	OVERVIEW	15
B.	GATHERING DATA	16
C.	FHP REQUIREMENTS MODEL.....	17
D.	PROJECTING HOURS FOR SCHEDULE A: TACAIR.....	20
1.	Current Process.....	20
2.	What Has Changed and Why	22
3.	Effectiveness of Changes	23
4.	Remaining Concerns.....	24
E.	(OFC-1) AIRCRAFT FLIGHT OPERATIONS (AFO).....	25
1.	7B (FF/fuel).....	25
a.	Current Process.....	25
b.	What Has Changed and Why	26
2.	7F (Administrative and Flight Equipment).....	26
F.	(OFC-50) AIRCRAFT OPERATIONS MAINTENANCE (AOM)	27
1.	(FA/DLR) Aviation Depot Level Repairable (AVDLR).....	27
a.	Current Process.....	27
b.	What Has Changed and Why	28
c.	Effectiveness of Changes	34
d.	Remaining Concerns.....	35
2.	(FM/maint) Consumables (AFM).....	37

a.	Current Process.....	37
b.	What Has Changed and Why	38
c.	Effectiveness of Changes	39
d.	Remaining Concerns.....	40
3.	FW/Contract.....	42
a.	Current Process.....	42
b.	What Has Changed and Why	43
c.	Effectiveness of Changes	43
d.	Remaining Concerns.....	44
G.	FO (FO/SUPPORT)	45
1.	Current Process.....	45
2.	Changes Underway	45
IV.	CNAP EXECUTION	47
A.	(OFC-1) AIRCRAFT FLIGHT OPERATIONS (AFO).....	47
1.	(FF/fuel) 7B.....	47
a.	Current Process.....	47
b.	What Has Changed and Why	47
c.	Effectiveness of Changes	48
d.	Remaining Concerns.....	48
B.	(OFC-50) AIRCRAFT OPERATIONS MAINTENANCE (AOM)	55
1.	(FA/DLR) Aviation Depot Level Repairable (AVDLR)	56
a.	What Has Changed and Why	56
b.	Remaining Concerns.....	58
C.	FO (FO/SUPPORT)	59
1.	Current Process.....	59
2.	Remaining Concerns.....	60
V.	CONCLUSION	61
A.	INTRODUCTION.....	61
B.	PRIMARY RESEARCH QUESTION.....	61
C.	SECONDARY RESEARCH QUESTIONS.....	62
D.	CONCLUSION	65
E.	RECOMMENDATIONS FOR FURTHER STUDY	65
	LIST OF REFERENCES	67
	INITIAL DISTRIBUTION LIST	71

LIST OF FIGURES

Figure 1.	Link Between Required Training Missions and War-fighting Policy	4
Figure 2.	FY2005 Execution OP-20.....	10
Figure 3.	Detailed Portion of FHPS Used to Calculate Hours	18
Figure 4.	Detailed Potion of FHPS Used to Calculate CPH	19
Figure 5.	Notional FRP IDRC Profile	21
Figure 6.	E-2C Hawkeye Cost Adjustment Sheet	30
Figure 7.	MH-53E Cost Adjustment Sheet	31
Figure 8.	CNAF BCM/FH vs. Aircraft Age	32
Figure 9.	CNAF FY93 to FY02 Consumable Cost Growth	41
Figure 10.	CNAF Consumable Issues vs. BCMs	42
Figure 11.	AFAST CNAP FHP Summary	58

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

Table 1.	Net Effect of T&R Matrices Changes and Readiness Goal Reduction	24
Table 2.	CNAF FA/DLR Cost per Hour Summary	35
Table 3.	CNAP F-14 AVDLR Execution Summary	36
Table 4.	CNAL F-14 AVDLR Execution Summary	37
Table 5.	CNAF FM/Consumables Cost per Hour Summary	39

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

We would like to thank our wives Shannon and Kim for their tremendous support during the writing of this MBA Project. We cannot extend enough appreciation to these two women for the patience and understanding they provided throughout the long hours dedicated to this report.

Additionally, we would like to thank the number of individuals at CNAP and OPNAV who took the time to answer our numerous questions during the conduct of our research, specifically Ms. Amy Fowler, Mr. “Fred” Lundgren, LCDR Mike “Angel” Angelopoulos, and Mr. Sal Rosas, Jr.

Finally, we would like to thank Professor Larry Jones and Assistant Professor Richard Dawe for their tremendous guidance, experience, and quick turn around. Without which, the timely completion of this project would not have been possible.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

A. BACKGROUND

The dawning of the 21st century witnessed one of the most dramatic transformations in U.S. military history. In line with the fundamental shift in military thinking following the fall of the Soviet Union, the realities of a new world order dominated by asymmetric threats and adversaries have forced a profound restructuring of America's armed forces. As a result, every service faces an increased challenge of demonstrating the value of each of its war-fighting components and ultimately validating their claim to a portion of the Defense Department's budget.

As one of these war-fighting components, Naval aviation now finds itself at a pivotal crossroads in reaffirming its vital contribution to America's war-fighting effort. The lack of an immediate peer competitor in the air-to-air arena along with the mere nature of recent operations, with their reduced reliance on Naval air support, creates a challenging environment that mandates a substantial and effective lobbying effort in highlighting where Naval aviation fits into a more streamlined force structure. The ability to demonstrate effectively and accurately the contribution Naval aviation brings to the fight is paramount to securing a fair share of valuable and limited defense dollars. In addition to adequately articulating the community's vital role in America's 21st century military, Naval leadership, specifically Commander Naval Air Forces (CNAF) and supporting Air Type Commanders (Commander Naval Air Forces Pacific, Commander Naval Air Forces Atlantic), faces an equally important task of effectively executing every last dollar of appropriated funds. Due to the realities of congressionally appropriated resources, accurate and justified expenditure of defense dollars today carries tremendous weight in the allocation of these same funding levels tomorrow. To achieve this goal, therefore, sound budgeting and subsequent execution of Naval aviation's monetary vehicle, the Flight Hour Program (FHP), is paramount to the sustained well-being of what this community's advocates believe to be an indispensable component of the U.S. military.

B. REASONS FOR CHANGE

“The current operational readiness of the U.S. military is dependant on the viability of the O&M account. This account is often the target for budget cuts in order to fund other programs.”¹ The reasons are primarily two-fold. First, the account is a more desirable target when facing current year fiscal challenges due to the fact the O&M funds are single-year funds, so a cut this year has an immediate dollar for dollar impact on any current fiscal challenges. Conversely, only a percentage of cuts to multiyear accounts such as R&D or procurement will have an effect on the fiscal challenges of the current year.²

Second, the O&M appropriation is an easy target because it is difficult to defend the full amount budgeted. The challenge arises from the fact that a significant portion of FHP dollars purchase readiness, which is a difficult end item to quantify. For example, what is the degradation to readiness caused by a \$5 million cut to the FHP? How do you connect a dollar reduction in the FHP budget to a specific degradation in readiness? These are just a few of the difficult questions routinely faced by Congress and FHP managers.

Additionally, there is little interest in Congress to defending the O&M account. If a reduction to the manpower account occurs, representatives in Congress from the district where the personnel reductions materialize rise to the defense. If an aircraft procurement account suffers a cut, representatives from the districts with businesses affected by the cut will rise to the defense. If CNAP’s FHP is cut by 5 percent, who in Congress will rise to the defense?

Focusing on an appropriation that is a prime target for raiding, the POM-04 Baseline Assessment Memorandum (BAM) for the FHP identified five important emerging issues in January of 2002:

1 Phillips, William E., Flying Hour Program Cash Management at Commander Naval Air Forces Pacific. Masters Thesis. Naval Postgraduate School, Monterey, California, June 2001. p. 6.

2 McCaffery, Jerry and Mutty, John E., “The Hidden Process of Budgeting: Execution,” Journal of Public Budgeting, Accounting and Financial Management, Summer 1999, p. 239.

“(a) The increasing cost of operating an aging fleet of aircraft is testing the limits of our ability to achieve desired readiness goals.”³

(b) OPNAV has an ongoing concern into the validity of the Joint TYCOM Training and Readiness Instruction on which the FHP bases training requirements.⁴

(c) A historically significant difficulty exists in articulating the readiness contribution provided by simulators.⁵

(d) The current balance of other resources may limit execution of the full flight hour requirement, which “. . . is the desired peacetime training posture that supports peacetime sustained operations and provides the surge capability to support the full intent of DPG.”⁶ [Defense Planning Guidance]

(e) The un-validated Navy Marine Corps Intranet (NMCI) submission is a significant portion of the Flying Hour Support (FO) account (approximately 26%). Failure to articulate true NMCI requirements may lead to under funding of the FO account.⁷

In addition to the emerging issues, the POM-04 BAM stated the following goals for improving specific areas of the FHP:

A. FLYING HOURS. The goal of the PR-03 FHP Working Group was to propose a methodology to determine a readiness based flying hour requirement; one in which Hours/Crew/Month (H/C/M) correlated to a specific T-rating (level of readiness) and in turn could be linked to support of Warfighting Policy.⁸ (Figure 1)

3 Memorandum from Commander Naval Air Forces (N43) to Director, Assessment Division (N81) of 15 Jan 02, Subject: Program Objective Memorandum (POM-04) Fleet Readiness Division Baseline Assessment Memorandum (BAM), p. 1.

⁴ Ibid., p. 2.

⁵ Ibid., p. 3.

⁶ Ibid., p. 3.

⁷ Ibid., p. 3.

⁸ Ibid., Enclosure (1) p. 5.

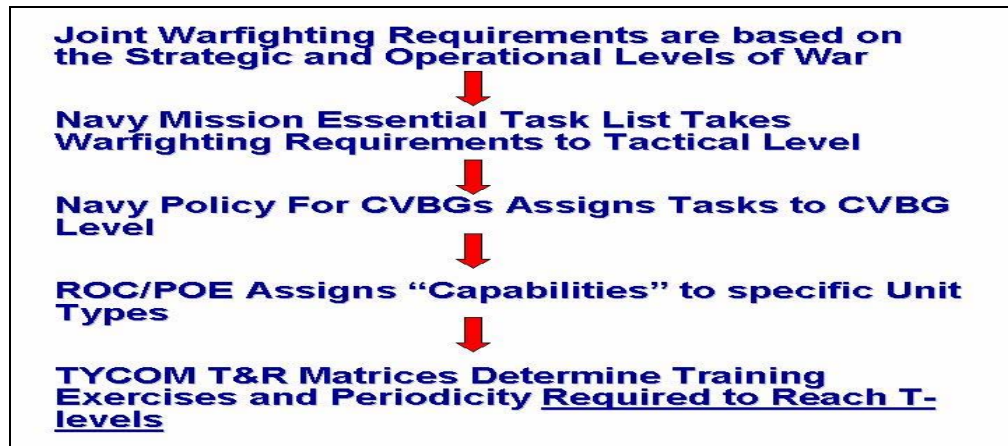


Figure 1. Link Between Required Training Missions and War-fighting Policy⁹

B. FLYING HOUR SUPPORT (FO). Another purpose of this BAM is to clearly and accurately capture future FO requirements. Clarity of what FO is "buying" will allow validation of the requirement and make it defensible throughout the PPBS process. A rigorous challenge was aimed at all major claimants to ensure thorough validity of requirement submissions.

C. FLIGHT HOUR COST. The increasing cost of operating our fleet of aircraft is testing the limit of our ability to achieve required readiness goals. A major goal of this BAM is to incorporate more advanced modeling into flight hour cost projections and provide increased visibility to the components of the cost per hour that are accelerating at unacceptable rates. The ultimate goal of the POM-04 process should be to enable Naval aviation leadership to identify and implement efficiency improvements that will control the escalating cost of readiness.

D. SIMULATOR CONTRIBUTION. There has been significant difficulty in articulating the readiness contribution provided by simulators. This BAM will discuss the current contribution of simulators, shortfalls that prohibit increased fleet utilization of current simulators, and potential benefits of the Fleet Advanced Simulation and Training (FAST) plan.

E. READINESS POSTURES. Support of promulgated Defense Planning Guidance . . . is the basis for the number of flight hours required in . . . this assessment.¹⁰

⁹ Ibid., Enclosure (1) p. 6.

In line with the aforementioned effort by CNAF to effectively address these emerging issues and ultimately fulfill the stated goals, significant changes to the budgeting and execution process of the program materialized. Both in terms of altering operational execution to better align itself with DOD's newly structured defense posture, to implementing improvements to specific budgeting elements, the FHP now represents a more accurate assessment of Naval aviation requirements. Though still in their infancy, these enhancements can only serve to improve the bargaining power of the program for future defense dollars.

C. PURPOSE

The purpose of this study is twofold in nature. First, the authors' aim is to provide new FHP administrators, active duty and civilian, a single-source document that summarizes the underlying build of each funding element contained in the OP-20. The authors' belief is that by raising awareness of funding level formulation and the interdependence existing between each office administering a particular segment of the FHP, an overall improvement in efficiency and budget execution may occur. Second, the research will provide an analysis of recent changes to the budgeting process and subsequent execution of program requirements. Specifically, the study entails a comparative examination of CNAF's FY02 and FY05 FHP to highlight program changes following the Navy's FY03 transition to the FRP and concurrent implementation of OP-20 pricing model changes. Through a comparison of the two fiscal years, insight into whether these changes resulted in an improvement in program efficiencies and execution comes into view. Furthermore, the intrinsically dynamic nature that exists in the overall budget formulation and execution of the FHP warrants a periodic resetting of the procedural baseline to assess the effectiveness of any follow-on changes.

10 Ibid., Enclosure (1) p. 6.

D. RESEARCH QUESTIONS

The body of the project addresses the following research questions:

1. Primary Research Question

Have the changes to the budgeting models, execution, and procedural methods of CNAF's annual FHP improved the overall efficiency and effectiveness of the program at CNAF?

2. Secondary Research Questions

- a. What specific changes did OPNAV make to the FHP budgeting models and execution methods?
- b. Have improvements in cost and readiness materialized due to these changes?
- c. From the view of stakeholders¹¹, have these changes proven beneficial, detrimental, ineffective, or a combination of the above?
- d. How has implementation of the Navy's FRP affected the budgeting and execution process of the FHP?
- e. Do further changes to the budgeting models or execution methods of the program warrant consideration?

E. SCOPE AND METHODOLOGY

The scope of this study primarily entails an analysis of the FHP as constructed for, and executed within CNAF; however, utilization of data from Naval Air Forces Atlantic facilitates drawing conclusions across all of CNAF. The two primary sources of research data came from personal interviews with FHP administrators and budget analysts at the Office of Chief of Naval Operations (OPNAV) N432D and CNAF, along with the review of various FHP publications and documents to include, but not limited to: FY02 and FY05 Execution OP-20s; CNAF Flight Hour Cost Reports (FHCRs); OPNAV FHP Data Call Memorandums; and data products from CNAF's Aviation Financial

¹¹ Stakeholders to include - OPNAV, CNAF, TYCOMS, individual squadrons and aircrew.

Analysis Tool (AFAST) and Cost Adjustment and Visibility Tracking System (CAVTS) website.

Three studies conducted by the Center for Naval Analysis (CNA) focusing on the escalating Aviation Depot Level Repairable (AVDLR) and Maintenance consumable (AFM) costs and associated drivers provided the majority of data for changes to the funding of program maintenance elements. Additionally, information from the Naval Air Systems Command (NAVAIR) CAVTS website in conjunction with AFAST data highlighted program cost drivers, trends and actual execution of the FY02 and FY05 FHP.

F. ORGANIZATION OF STUDY

The study contains five chapters.

Chapter I provides an introduction to the study that includes a section on background, purpose, scope and methodology and a statement of primary and secondary research questions.

Chapter II provides an overview of the funding composition of the OP-20. Specific sections include discussion of the Aircraft Flight Operations (AFO or OFC-01) expense account and the Aircraft Operations Maintenance (AOM or OFC-50) account. Each account is further broken down into its individual Special Interest Category as reported in the OP-20 (FF/fuel, FA/DLR, FM/maintenance, FW/Contract, and FO/Support).

Chapter III provides an examination of the FHP budgetary process. This chapter discusses the budgetary process as of FY05, the changes that transpired with the program since FY02, the effectiveness of these changes, and any remaining concerns. As with Chapter II, the study examines the two primary cost accounts and individual funding categories as presented in the OP-20.

Chapter IV provides an examination of the FHP execution process. This chapter discusses the execution of the program as of FY05, the changes that transpired with the

program since FY02, the effectiveness of these changes, and any remaining concerns. This chapter looks primarily at the impact of the Navy's transition to the Fleet Readiness Training Plan in support of the overall Fleet Response Plan.

Chapter V provides conclusions, a summary of answers to the primary and secondary research questions, and recommendations for future areas of study.

II. OP-20 FUNDING COMPOSITION

A. INTRODUCTION

The OP-20 is a Department of the Navy (DON) planning document published by OPNAV N432D¹² that serves as the primary budgeting and execution guidance for the Navy's FHP. The document establishes budgeted funding levels for individual program elements on a cost per hour and total annual expenditure basis for each of the supporting Budget Submitting Offices (BSO): Commander Atlantic Fleet, Commander Pacific Fleet, Commander Naval Forces Europe, and Commander Naval Reserve Forces. The document is further broken down into the three primary mission areas comprising Naval aviation: Tactical Air/Anti-Submarine Warfare (TACAIR/ASW); Fleet Air Support (FAS); and Fleet Air Training (FAT). The separate program funding elements provided in the OP-20 represent each of the individual funding codes contained in the corresponding AFO and AOM expense accounts. The OP-20 then assigns a Special Interest Category (SIC) designation to each funding code as follows:

<u>Funding Code</u>	<u>Special Interest Category</u>
7B	FF/Fuel
9S	FA/DLR
7L/7F ¹³	FM/Maint
	FW/Contracts
	FO/Support

OPNAV utilizes the Fleet Readiness Division (N43) to formulate dollar amounts for each program SIC by means of the FHP requirements and pricing models. The document provides both cost per hour and annual cost figures (in millions). Figure 2 presents an illustrative portion of an execution OP-20 with associated headings and funding level

¹² Chief of Naval Operations, Fleet Readiness Division.

¹³ 7F funding is provided under the OP-20 SIC "FM" which falls under the AOM (OFC-50) expense account. For TYCOM accounting purposes, 7F funds fall under the AFO (OFC-01) expense account.

elements for all F-14Ds assigned to CNAP. Chapter III will provide discussion into the funding formulation for each of the individual SICs.

UNCLASSIFIED

Page 13 of 28
10/18/2004

U. S. PACIFIC FLEET

Department of the Navy OP-20
Analysis of Navy Flying Budget BackUp Exhibit

FY: 2005

Version: 1664 05- -82 -EX (EXECUTION OP-20)

GEN PURPOSE FORCES

----- Cost Per Hour -----

----- Annual Cost, in Millions -----

Program													Hrly Fuel
Element	TMS	Forces	Util	Hours	FF/Fuel	FA/DLR	FM/Maint	FW/Contract	FO/Other	ADJ	Total	Cons	Rate
02 06134 M FA-18D	36.0	29.461	12727	1577.14	2726.93	940.66	157.24	0.00	0.00	5401.97	27.611		
				20.072	34.706	11.972	2.001	0.000	0.000	68.751			

Figure 2. FY2005 Execution OP-20¹⁴

B. (OFC-1) AIRCRAFT FLIGHT OPERATIONS (AFO)

The AFO cost account is one of two squadron Operating Targets (OPTARS) expense accounts. The AFO funding consists of two funding codes 7B (fuel) and 7F (administrative and flight equipment).

1. (FF/fuel) 7B

The 7B account primarily pays for fuel and petroleum, oil and lubricants (POL) consumed during flight operations. 7B funds only comprise approximately 17% of the FHP.¹⁵ The amount of 7B funds directly tie to the number of flight hours budgeted. The OP-20 accounts for these funds under the FF/Fuel SIC. The squadron reports expenses using monthly FHCRs and Budget OPTAR Reports (BORs).

¹⁴ FY05 Department of the Navy OP-20, Version 1664 05-82 Execution OP-20, 18 October 2004, p. 13.

¹⁵ Commander Naval Forces Pacific Flying Hour Program staff member, "FHP Brief + FHP 101" E-mail, 07 February 2005.

2. (Administrative and Flight Equipment) 7F

The 7F account pays for administrative items and flight equipment used in the operations of aircraft. This includes items such as authorized flight clothing and operational equipment, consumable office supplies, liquid and gaseous oxygen, and special identification clothing and personal protection equipment used by personnel for the launch and recovery of aircraft. The squadron reports expenses against this account in the monthly BOR.

C. (OFC-50) AIRCRAFT OPERATIONS MAINTENANCE (AOM)

1. (FA/DLR) Aviation Depot Level Repairable (AVDLR)

AVDLRs are typically high cost items that require repair at the depot level or at the original equipment manufacturer (OEM) once determined to be Beyond the Capability of Maintenance (BCM) at an Intermediate Maintenance Activity (IMA). The Navy Working Capital Fund (NWCF) finances AVDLRs where the end user (squadron) finances the depot level repair and procurement to replace the BCM, lost, or missing components. The squadron monthly BOR submissions list AVDLR expenses under fund code 9S. Though squadrons usually initiate AVDLR demands, the local IMA determines whether the transaction will result in an AVDLR NWCF charge. Consequently, the air station or local IMA retains control of the AVDLR funds and corresponding accounting responsibilities. The OP-20 reflects AVDLRs under Special Interest Category “FA” and is part of the total FHP cost per hour calculation.¹⁶

2. (FM/maint) Consumables (AFM)

Aviation Fleet Maintenance (AFM) funding, or “consumables,” finances less expensive items used in the support of flight operations. Used for both organizational and intermediate level maintenance functions, funding occurs for the procurement of consumable parts, materials, tools, lubricants and services to repair aircraft, support equipment, or aeronautical components. Similar to AVDLR reporting, monthly BOR

¹⁶ Marine Corps Order (MCO) 3125.1A, <http://hqinet001.hqmc.usmc.mil/AVN/MCO31251A/FHP%20encl%209%20Glossary%20V2.0.doc>, 15 March 2005, p. 9-2.

submissions report AFM expenses for each squadron under fund code 7L. The OP-20 reflects AFM costs under the SIC “FM” and is part of the total FHP cost per hour calculation. In addition to funding for maintenance consumable items, the OP-20 incorporates 7F expenditures into the “FM” category. For accounting purposes at the TYCOM level, 7F funding falls under the AFO (OFC-01) account.¹⁷

3. FW/Contract

Contract maintenance involves the outsourcing of aircraft maintenance and support services to civilian or NWCF activities to support squadron operations when military personnel or equipment are not available or determined not to be as economical as a Contract Field Team (CFT). Both fleet commands and NAVAIR have the authority to write and approve contracts while TYCOMs maintain financial management responsibility. Total costs include fixed and variable cost estimates. Program fixed costs obligate funds regardless of hours flown, while projected squadron flight hours determine variable costs. Contract maintenance is seen as SIC “FW” on the OP-20 and is part of the cost per hour calculation.¹⁸

D. FO (FO/SUPPORT)

The Funding Support, also known as Funding Other, category primarily represents outlays for indirect expenses supporting aircraft operations and training. At CNAP, the accounts that fall under this category include:

- Squadron/Staff TAD
- Individual Material Readiness List (IMRL)
- Transportation of Things (TOT)
- Operational Staffs (Wing/Staff civilian labor/materials)
- Staff/Fleet Automated Data Processing (ADP) support
- Commercial Air Services (CAS)
- Fleet Aviation Specialized Operational Training Group (FASOTRAGRU)
- Fleet Simulators Support
- Air Traffic Control Squadrons (MATCALs/ATC)
- Fleet Area Control and Surveillance Facility (FACSFAC)

¹⁷ Ibid., p. 9-2.

¹⁸ Ibid., p. 9-3.

- TACAMO ("Take Charge And Move Out") - COMSTRATCOMM WING ONE Tinker AFB OK
- Miscellaneous Support¹⁹

The FO expenses are not specifically squadron expenses but are an integral part of the overall cost of the FHP. However, the OPNAV N432D programs no funds into the OP-20 for FO requirements.

¹⁹ Commander Naval Forces Pacific Flying Hour Program staff member, "FO Accounts" E-mail, 14 April 2005.

THIS PAGE INTENTIONALLY LEFT BLANK

III. OP-20 BUDGETING PROCESS

A. OVERVIEW

The formulation of the FY05 FHP budget maintains much of the same underlying construction as that of FY02. However, in an effort to improve matching budgeted funding levels with execution requirements, OPNAV implemented a number of key enhancements in FY03. Specifically, the program witnessed changes to the existing pricing models used in the formulation of OP-20 funding levels along with the maturation of the web-based cost adjustment and tracking system. The need for these changes surfaced primarily due to two factors. First, in response to the transformational initiatives mandated by the Secretary of Defense, a more accurate and justifiable program budget was essential in order for CNAF to better align itself with the military's new streamlined and cost efficient force structure. Furthermore, the Navy's recently mandated shift in its readiness posture resulted in a fundamental shift in the operational execution and subsequent funding of Naval aviation requirements. Second, CNAF's continual, yet unavoidable, over-execution of program funding due to non-recurring expenses in support of current operations (Operations Enduring Freedom/Iraqi Freedom), along with escalating maintenance-related costs, necessitates closer scrutiny of the budgeting process. Both in the areas of flight operations and aircraft maintenance, historic budget shortfalls required creative cash management practices to support operations adequately. The necessity to fulfill operational requirements despite an inadequate funding level resulted frequently in program managers ignoring long-term ramifications²⁰ to satisfy current needs. This practice merely exacerbated the budgeting and execution problems experienced by the program in follow-on fiscal years. Consequently, improvements to the process became essential.

²⁰ Self-imposed program over execution in first quarter of each subsequent fiscal year and an inability to accurately justify future funding requirements to OPNAV.

B. GATHERING DATA

CNO, Fleet Readiness Division gathers data used to formulate the FHP budget by sending out a data call message in October of each FY. This message requests data from various sources involved in the FHP, including CNAP. The various sources send the requested data in a specific format by a specific date. The specific data requested from CNAF for development of the PR-07 FHP included the following:

TACAIR

- The 100% static T&R matrix sortie requirement for each TACAIR TMS, on an annual basis. Additionally, provide an electronic version of the most recent T&R Instruction that reflects this data.
- The FRP IDRC profile average (not considering simulator utilization) for each of the FYDP (GNFPP) for FY06-07, notional FRP for FY08-11) for CVW, FDNF, HSL, Expeditionary VAQ, Expeditionary VFA, and VP.
- The Equivalent Sortie Length (ESL) for each TACAIR TMS.
- The percentage of the total sortie requirements that are projected to be completed in simulators for each TMS for FY06 through FY11.
- The number of staff aviators, by TMS, and the sorties/crew/month (as a percentage of T&R) for which to budget for those aviators.
- The support sortie/flight hour requirement for each TACAIR TMS as a percentage of the training sortie/flight hour requirement.²¹

Fleet Air Training

- Naval Strike and Air Warfare Center (NSAWC) sortie/flight hour requirements by TMS and Mission Category. Justification and explanation of each mission category. If STRIKE requirements still exist, a detailed explanation of the purpose of those requirements, along with an

²¹ Memorandum from Chief of Naval Operations, Fleet Readiness Division (N43) of 8 Oct 2004, Subject: Data Call in Support of the Flying Hour Program (FHP) Capabilities Plan (CP) Development for PR-07, p. 2-4.

explanation of the accounting process used to report the execution of those hours.²²

Fleet Air Support

- Comments regarding any specific discrepancies of the most recent FY's executed FAS aircraft utilization rates.²³

All Schedules

- Certified FHCR.
- Additional data regarding non-recurring FM costs.
- New and updated cost adjustment sheets.
- Contract maintenance requirements.
- Reviewed FO requirements with associated justification.²⁴

Upon receipt of all requested data, the Fleet Readiness Division incorporates the information into the FHP Requirements Model to establish program-funding levels. The primary source of information used in the following sections comes from the FHP Model Pricing Validation Team at CNO Fleet Readiness Division (N43).

C. FHP REQUIREMENTS MODEL

The FHP Requirements Model, shown in Figure 3, is the method OPNAV N432 developed to project future year flight hour requirements. The heart of the FHP Requirements Model requires “. . . specific validated data input elements to generate a valid flying hour requirement for input into the Flying Hour Projection System (FHPS). The FHPS combines this data with cost data to produce a Flying Hour Program Budget Exhibit (OP-20). The FHPS develops the requirement in four distinct schedules (modules): Schedule A (TACAIR); Schedule B (Fleet Air Training); Schedule C (Fleet

²² Ibid., p. 5.

²³ Ibid., p. 5.

²⁴ Ibid., p. 6-9.

Air Support); and Schedule D (Reserves).”²⁵ Analysts enter data gathered from the data call message and monthly FHCRs into the FHPS to forecast future funding requirements.

FHP Requirements Model

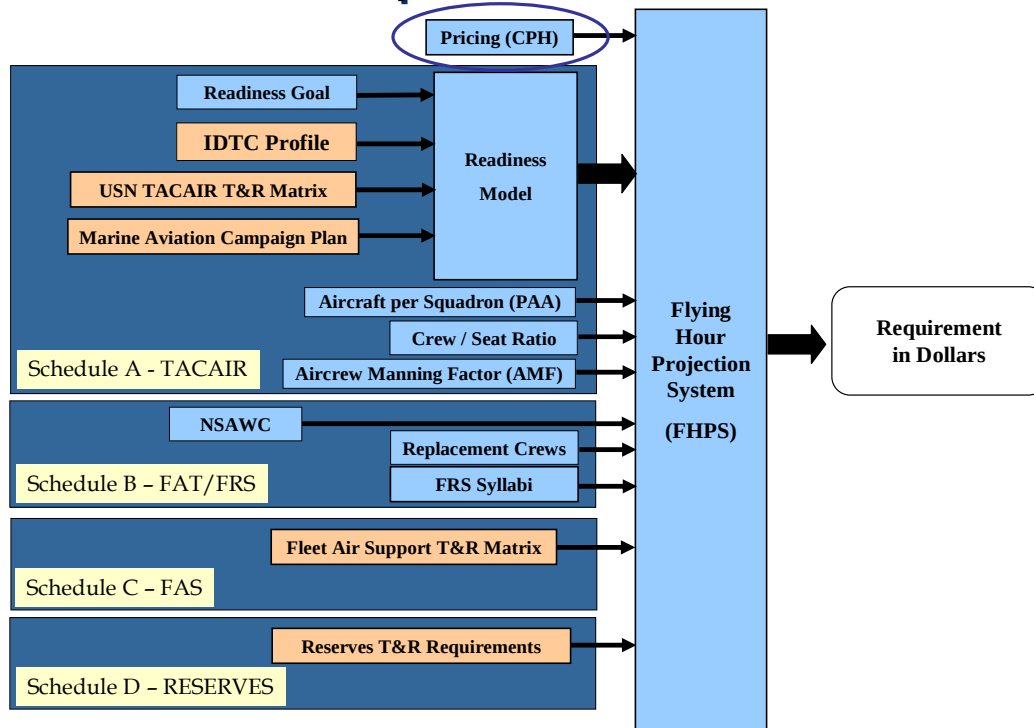


Figure 3. Detailed Portion of FHPS Used to Calculate Hours²⁶

The FHPS has two major parts. One part, detailed in Figure 3, determines the flight hours required by schedule for any aviation unit. The second part, represented by the circled box in Figure 3 and shown in detail in Figure 4, calculates the total cost per hour for any TMS by summing the results of the individual TMS costs per hour for AVDLR, maintenance and consumables, fuel, and contract maintenance. Multiplying the hours from part one by the total cost per hour from part two yields the funding requirement for each unit. Calculating and summing the results for every aviation unit results in the total FHP requirement in dollars.

²⁵ Ibid., p. 1.

²⁶ Darling, Robert, LtCol. (N432D), Chief of Naval Operations, Fleet Readiness Division (N43) Brief, "Model Pricing Validation Team: Flying Hour Program," 16 March 2005, slide 3.

FHP Pricing Model

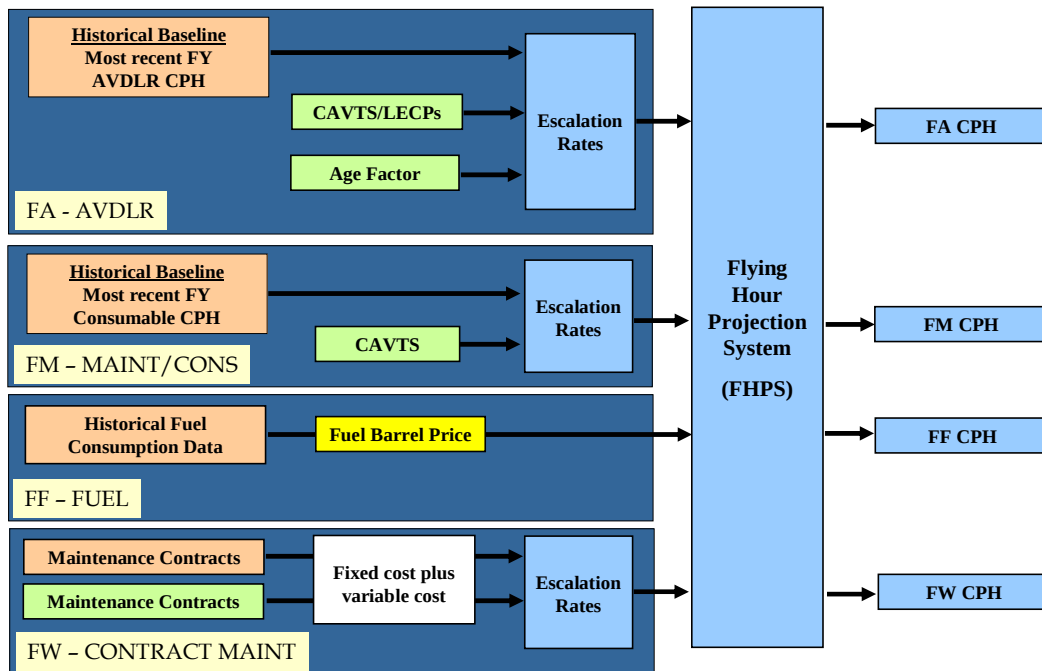


Figure 4. Detailed Portion of FHPS Used to Calculate CPH²⁷

Units funded by the FHP fall under four schedules shown in Figure 3, the first three of which apply to CNAP: A) TACAIR (approximately 70 percent), B) FAT/FRS (approximately 20 percent), C) FAS (approximately six percent), and D) the Reserves (approximately four percent). Schedule A uses a Readiness Model driven by the Readiness Goal, IDRC Profile, and T&R matrix to project flight hour requirements. The Integrated Production Plan (IPP) drives most of the requirements for Schedule B. Although a similar Readiness Model based on T&R matrices and deployment plans is in development for Schedule C, it currently uses aircraft utilization rates consistent with historical execution rates as the baseline for flight hour requirements. A similar T&R matrix based Active/Reserve Integrated plan is in development for Schedule D; however,

²⁷ Ibid., slide 4.

current inputs utilize the most recent information available on the anticipated outcome of the integration plan.

D. PROJECTING HOURS FOR SCHEDULE A: TACAIR

1. Current Process

Navy TACAIR includes all CVW squadrons (except VRC) plus HSL, VP, and VFA/VAQ Expeditionary squadrons. Marine Corps TACAIR includes all MAG squadrons with the exception of Fleet Replacement Squadrons (FRS).²⁸

The Training and Readiness (T&R) matrices, defined in CNAF 3500.1 series instruction, establish the flight hour requirements for each Navy TACAIR type/model/series (TMS) to achieve specified readiness levels. The model input for Navy TACAIR is one hundred percent of the static T&R matrix sorties for each TMS, on an annual basis. This value is then multiplied by the Inter-Deployment Readiness Cycle (IDRC) profile average, which uses a twelve-month fiscal year Global Naval Forces Presence Policy (GNFPP) snapshot to provide an annualized average for the first two fiscal years and the notional FRP profile average for the remaining years in the FYDP. This result then allows for the determination of total sortie requirements for each TACAIR TMS, which when multiplied by the equivalent sortie length (ESL), derives the total flight hours per TMS.²⁹ Figure 5 shows a notional FRP IDRC profile.

²⁸ Ibid. p. 2.

²⁹ Ibid. p. 2.

Notional FRP IDRC Profile

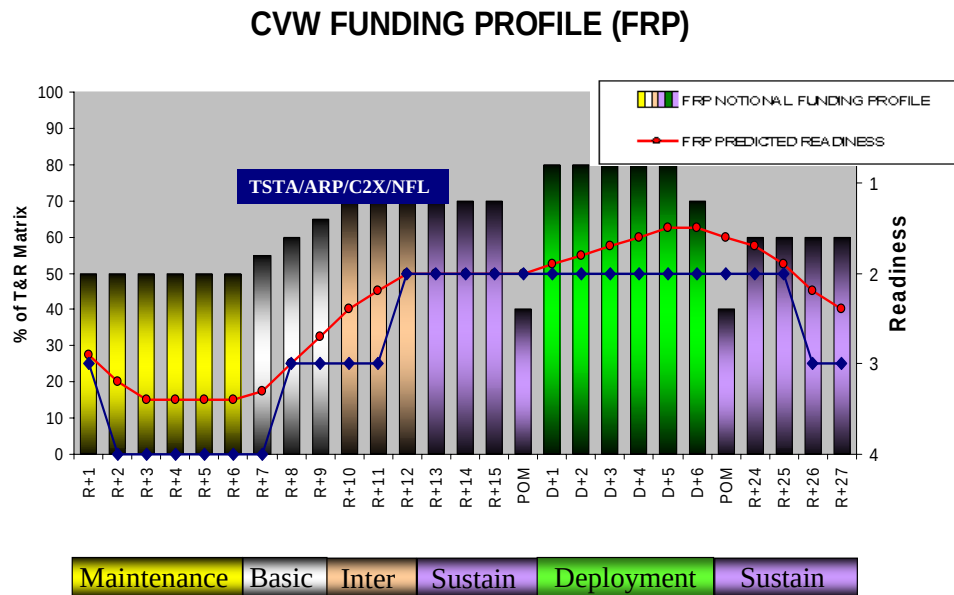


Figure 5. Notional FRP IDRC Profile³⁰

One factor used toward deriving the total number of crews for which to budget flight hours is the wartime crew/seat ratio (CSR). The wartime CSR is the result of wartime manning levels divided by Primary Aircraft Authorized (PAA). The Aircrew Manning Factor (AMF) is the peacetime manning level divided by the wartime manning requirement. The result of these inputs is the Authorized Crews on Board (ACOB), which is multiplied by the derived total flight hours per TMS output of the Readiness Model to achieve the projected training hours requirements for the each TMS.

In addition to the projected training hours for each of ACOB, the FHPS adds a Mission Essential Support Hours (MESH) factor for each TMS. MESH funding covers the cost of tanker flights, functional check flights, logistics flights, and other non-training flights. The amount of MESH depends on the TMS, the deployed status, and period in

³⁰ Commander Naval Forces Pacific Flying Hour Program staff member, "FHP Brief + FHP 101" E-mail, 07 February 2005.

the Fleet Readiness Training Plan. Some units such as HC, and VAW when deployed, spend a significant portion of hours supporting other units. Whereas, VF and VFA units currently receive very little MESH because they do not provide support necessary for other units.

The projected training hours and MESH hours comprise the total budgeted flight hour requirements for each TMS, however, the budget does not support cost of war (COW) funding needs. The total budgeted flight hour requirements for each TMS multiplied by the various costs per hour of the FHP Pricing Model for FA, FM, FF, and FW yields the projections for the OP-20.

2. What Has Changed and Why

As previously stated, one of the significant changes to the budgeting process for the FHP is the method used to determine the number of flight hours required in the first part of the FHPS. Subsequent sections will discuss changes to the second part of the FHPS as they pertain to the formulation of program costs per hour.

In 2002, the T&R matrices changed from task-based matrices to primarily sortie-based matrices. This created a direct relationship from sorties to hours to dollars, where sorties flown is the main contributing factor to determining readiness. It acknowledged the value of not just the various types of missions flown, but also the inherent readiness value derived from every hour of every flight event. The sortie-based matrices “. . . significantly improve the ability to quantify the training requirements.”³¹

The current system treats almost every aspect of the FHP as a variable cost driven by flight hours, therefore, one of the most significant changes to the program is the method of determining the hours requirement. In the past, aircraft utilization rates consistent with historical execution rates established the baseline from which to validate flight hour requirements. The creation of a performance model through the FHPS is an attempt to validate the hour requirements for each TMS.

³¹ Memorandum from Commander Naval Air Forces (N43) to Director, Assessment Division (N81) of 15 Jan 02, Enclosure (1) p. 26.

Not only have the T&R matrices changed by reducing the number of hours to achieve a certain readiness level, but also the system now incorporates lower readiness goals over the entire IDRC. The FY05 budget lowers the average IDRC readiness goal from 1.75³² in FY03 to 2.50³³ in FY05.

3. Effectiveness of Changes

Changing to a sortie-based readiness measurement system does create a strong and direct tie to the FHP requirements. This tie creates a strong defense for requested funds and shows specific and direct effects of funding shortfalls on readiness. Accepting the validity of the T&R matrices foundation creates an almost direct relationship between dollars required and readiness received. The FHP now buys a specific level of readiness. It moves the haggling over the budget out of the analysts' expertise in cost management and into the aviators' expertise in accessing readiness.

Now, any manipulation in readiness metrics or goals directly affects FHP funding. The combined effect of lowering the readiness goal and reducing the hours required to achieve 100 percent readiness is significant. Table 1 is a comparison of the T&R matrices requirements for TACAIR. The table compiles values taken from the Squadron Training and Readiness instructions³⁴ for the appropriate period and the readiness goals as stated above. The net effect of the T&R matrices changes and the readiness goals reduction reduces the median training hours for a TACAIR squadron to achieve the average IDRC goal from 20.4 to 15.8 hours—a 21 percent reduction. The changes to the T&R matrices do not affect MESH hours. Hence, the FY05 budget only reflects an overall reduction of 13 percent, from 22.1 to 19.2 hours³⁵, of flight hours per crew per month over the entire FHP.

32 Highlights of the Department of the Navy Fiscal Year 2003 Budget, https://dbweb.secnave.navy.mil/budbrief/Highlights_Book.html, 24 May 2005, p. 2-11.

33 Highlights of the Department of the Navy Fiscal Year 2005 Budget, https://dbweb.secnave.navy.mil/budbrief/Highlights_Book.html, 24 May 2005, p. 2-9.

34 COMNAVAIRFOR INSTRUCTION 3500.1 and COMNAVAIRFOR INSTRUCTION 3500.1B.

35 Highlights of the Department of the Navy Fiscal Year 2005 Budget, Table 8 p. 2-11.

Comparison of TACAIR T&R Matrix Requirements

Average IDRC Goal	FY2003		FY2005		Change from FY03 to FY05			
	1.75		2.50		Percentage		Hours	
TMS (CREW/MONTH)	To Achieve 100% Goal		To Achieve 100% Goal		To Achieve 100% Goal		To Achieve 100% Goal	
VF VFA								
Sorties	18.7		18.0		-3.7%		-0.7	
Hours	28.0	20.7	27.0	16.9	-3.6%	-18.3%	-1.0	-3.8
VAQ								
Sorties	14.0		15.0		7.1%		1.0	
Hours	24.0	17.7	22.5	14.1	-6.3%	-20.6%	-1.5	-3.6
VAW								
Sorties	21.6		18.3		-15.1%		-3.3	
Hours	32.4	23.9	27.5	17.2	-15.1%	-28.1%	-4.9	-6.7
VS								
Sorties	18.0		16.7		-7.4%		-1.3	
Hours	27.1	20.0	25.0	15.6	-7.7%	-21.8%	-2.1	-4.4
HS								
Sorties	9.0		12.7		40.7%		3.7	
Hours	27.0	19.9	25.3	15.8	-6.2%	-20.5%	-1.7	-4.1
HSL								
Sorties	12.6		12.7		0.5%		0.1	
Hours	27.7	20.4	25.3	15.8	-8.5%	-22.5%	-2.4	-4.6
VP								
Sorties	8.3		8.0		-3.0%		-0.3	
Hours	35.8	26.4	34.4	21.5	-3.9%	-18.6%	-1.4	-4.9
Median Values for TACAIR								
Sorties	14.0		15.0		-3%		-0.3	
Hours	27.7	20.4	25.3	15.8	-6%	-21%	-1.7	-4.4

Table 1. Net Effect of T&R Matrices Changes and Readiness Goal Reduction

4. Remaining Concerns

Reducing requirements to achieve a certain level of readiness or reducing the readiness goal has limited use as a method for managing budget constraints. At a certain point, the reductions will have a noticeable affect on actual performance.

Since the basic budget equation is hours required multiplied by CPH equals FHP funds required, any net reduction in the hour requirement will have a direct and significant effect on the funding needs of the program. The concern, however, is have the readiness goals been lowered too far? Unfortunately, the only true way to find out is in actual combat. Just as in sports where the coaches must decide if their team is ready for game day, experienced Naval Aviators must determine whether a unit is ready for combat. Also similar to sports, the necessary level of readiness varies relative to the opponent. Success in actual combat against a poorly trained and equipped opponent will not ensure success when faced with confronting a more formidable opponent more equal

in size, resources, and technology. The readiness goals must be set to prepare for combat against the nation's greatest perceived threats.

As mentioned above, only actual combat truly tests readiness levels. Discovering poor performance due to readiness level reductions during combat is too late and can have serious consequences to our national security. With the bar currently set at 2.50, a squadron at the average IDRC goal would be "operationally safe" but not "operationally (combat) ready" as defined by enclosure 4 of the Squadron Training and Readiness instruction. Consequently, is the bar set too low?

E. (OFC-1) AIRCRAFT FLIGHT OPERATIONS (AFO)

1. 7B (FF/fuel)

a. Current Process

For each TMS, OPNAV calculates the fuel costs per hour (CPH) by multiplying the most recent fiscal years certified fuel consumption rates times the projected barrel prices published by OSD to determine fuel costs per hour (CPH). The FHPS multiplies each TMS CPH by its projected hour requirement from the FHP Requirements Model to determine a total fuel budget in dollars.

Certified fuel consumption data (most recent FY barrels per hour)

X

Projected Hours + MESH

X

Published barrel prices (OSD)

=

Projected fuel cost

Of course, the accuracy of the model is only as good as the accuracy of the inputs to the model. The projected flight hours are really the only "discretionary" variable in the equation. The certified fuel consumption data and published barrel prices are non-controllable variables taken from other sources. Granted one could argue the

accuracy of the certified fuel consumption data by attacking the accuracy of the method to log flight hours. Almost all Navy aircraft have no mechanical or digital method of recording flight time or engine time, such as a Hobbs meter³⁶. The accurate recording of flight time lies solely with the aircrew entering the flight record data and is therefore subject to his or her judgment in recording such data. Although separate entries are available on official flight records for individual engine times, the engine time is always assumed to equal the flight time, even though the engines are routinely run for longer periods of time during normal preflight, postflight, and maintenance procedures, which could result in extensive engine use without any documentation.

b. What Has Changed and Why

Other than the common change of the method used to determine required flight hours, OPNAV has not changed nor will likely change the method for budgeting fuel costs. Unlike other aviation costs, fuel costs are almost a direct linear function of hours flown. While one could argue that by using Hobbs meters on the engines or at least manually tracking engine times separately would provide more accurate fuel CPH rates for each TMS, the relatively small variation in historical fuel CPH rates shows that this is probably not cost effective for the specific purpose of projecting fuel costs. The only other way of improving this area of the budgeting process would be to improve the accuracy of the projected costs per barrel. Unless the government acquires a crystal ball or starts buying oil futures like some airlines, the likelihood of improving the accuracy of projected costs per barrel is unlikely.

2. 7F (Administrative and Flight Equipment)

As stated earlier, the current process of budgeting for 7F expenses lumps the amount into the FM SIC. The funding for 7F related items is insignificant in comparison to the overall FHP and the researchers did not investigate the details of this aspect of the program.

³⁶ Hobbs, now a division of Honeywell, is the preeminent manufacturer of elapsed time measurement devices used for logging engine time on private aircraft. Because of their prominence in the market, any meter on an aircraft used to measure elapsed time is commonly referred to as a Hobbs meter even though it may be manufactured by another company similar to a facial tissue being referred to as a Kleenex even though it may be manufactured by Puffs.

F. (OFC-50) AIRCRAFT OPERATIONS MAINTENANCE (AOM)

The OFC-50 expense account encompasses over 80 percent of the direct flight hour costs of the FHP.³⁷ Consequently, the need to assess accurately the funding requirement for this particular program element has traditionally been at the forefront of program manager's efforts. The inherent uncertainty of maintenance costs, however, has prevented an accurate estimation of projected costs, which resulted in recurring funding shortfalls and the need for creative cash management practices. In an effort to improve the process, certain program pricing models experienced significant changes to allow for a more accurate matching of budgeted program dollars with actual fleet requirements.

1. (FA/DLR) Aviation Depot Level Repairable (AVDLR)

a. Current Process

The FA/DLR pricing model utilizes four input variables in calculating the AVDLR cost per hour (by TMS) as presented in the OP-20. The four variables include a Certified Actual Expenditure Cost per Hour, a CNA Demand Factor, any Forecasted Programmatic Adjustments as submitted through the Cost Adjustment and Visibility Tracking System (CAVTS), and a baseline Escalation Factor/Rate Adjustment. OPNAV N432D uses the following equation to project AVDLR costs per hour:

$$\begin{array}{c} \textit{Certified Actual Expenditures (Most recent FY cost per hour)} \\ \\ X \\ \\ \textit{Demand Factor (CNA)} \\ \\ +/- \\ \\ \textit{Forecast Programmatic Adjustments/Cost Adjustment and Visibility Tracking System} \\ \textit{(CAVTS)} \\ \\ X \\ \\ \textit{Escalation Factor/Rate Adjustment} \end{array}$$

³⁷ CNAF Commander Naval Air Forces N422 Plans & Policy, "Squadron CO Cost-wise Guide", 2005, p. 10.

$$\begin{array}{c}
 \div \\
 \text{Projected flight hours} \\
 = \\
 \text{Projected AVDLR cost per hour (by TMS)}
 \end{array}$$

The Certified Actual Expenditure variable serves as a baseline for determining funding requirements and comes from the respective TYCOMs most recent Certified FHCR. The requirement for a certified figure results in the use of two year old data since the prior years execution numbers do not get certified in time for incorporation into the subsequent OP-20 calculation (FY05 AVDLR funding calculation uses FY03 cost per hour data as its baseline). This utilization of two-year old data, and its usage as a baseline figure for future funding levels, has proven to be a point of contention for some program managers. The CNA demand factor is a multiplier that takes into account the Department's aging aircraft inventory and the resulting increase in failure rates of major components. The Forecast Programmatic Adjustment allows for adjustments to funding levels based on inputs from NAVAIR's CAVTS web tool. The Escalation Factor/Rate Adjustment is a cumulative Defense and Navy Working Capital Fund (NWCF) composite rate change used to adjust the cost per hour baseline. Prior years accumulated operating results at individual NWCF activities drive the annual rate adjustments.

b. What Has Changed and Why

The AVDLR funding element has been the recipient of much attention by FHP budget analysts resulting from the overall escalating costs experienced by the FHP. As a result, OPNAV instituted two specific improvements aimed at more accurately identifying resource requirements. First, NAVAIR created the Cost Adjustment and Visibility Tracking System (CAVTS) to help formalize the FHP budgeting process. Second, the aforementioned change to the AVDLR pricing estimation model evolved due to ongoing difficulties in accurately estimating FA funding requirements for each TMS.

The introduction of CAVTS in December 2001 was the result of several CNO Executive Boards aimed at improving the FHP budgeting process. The system is a NAVAIR sponsored web site tool that allows established program teams to input issues that may either positively or negatively impact future FA/DLR, FM, FW or FO costs. The design of the system attempts to more effectively identify future Flying Hour Program (FHP) cost drivers, track actual execution, and improve the feedback mechanisms to better prepare and forecast future Flying Hour Program budgets.³⁸ Additionally, due to the ability of the system to provide a wide array of historical, current execution year and future year OP-20 budget and flight hour data, program managers can more effectively perform program trend analysis and subsequently provide more accurate budget requirement submissions.

One key element contributing to the recognized success of the CAVTS web tool is through the use of Cost Adjustment Sheets. Cost Adjustment Sheets serve two distinct purposes. First, they highlight any unanticipated changes to Fleet expenses that have not been budgeted for due in part to the use of two-year old flight hour data as a budgetary baseline. Prior to the CAVTS web tool, FHP budgets routinely neglected to account for many of these unforeseen cost increases or cost savings, which resulted in an inaccurate assessment of funding requirements. Second, the submission of Cost Adjustment Sheets provides a forum for ongoing dialogue relating to the effects of programmatic changes occurring at the TMS level. Examples of input submissions include Engine Reliability Initiatives, warranty expirations, maintenance process change, “Sunset” Plans, and unusual component or system degradation. Though still a work in progress, the utilization of fleet initiated inputs is critical to incorporating key stakeholders into the budgeting process and ultimately allowing FHP budgeters to more realistically price each TMS cost per flight hour.

Figures 6 and 7 are sample CAS submissions. Both actions originated because of respective Fleet Class Desk program teams recognizing the potential for significant effects on FHP funding requirements. Figure 6 illustrates the effects on FA

³⁸ Naval Air Systems Command CAVTS Homepage, <http://logistics.navair.navy.mil/cavts/index.cfm>, 24 May 2005.

funding levels resulting from a community wide E-2C Hawkeye generator replacement program. As reflected in the Overall FHP Funding Impact (Delta) line, the E-2C Class Desk anticipates a projected \$4.9 million cost savings through FY11.

Flying Hour Program Cost Adjustment Sheet								Version 4.1
T/MIS: E-2C / C-2A Submitting PMA: PMA 231		APLM Name/Code/Phone: Jeff Lewis / (301)757-7202 IWST Name/Code/Phone: Steve McFadden / (215)697-5460 Fleet Class Desk Name/Code/Phone: Mark Stoops (LANT) / Peter Olep (PAC)		☒ APPROVED ☒ APPROVED				
Adjustment Category: Reliability degradation System: 60 KVA Generator NIIN(s): 01-140-2298 (old), 01-241-0539 (neW)		WUC(s): 42111 Material Support Date: 1-Oct-02						
Invest Status: ☒ FUNDED ☐ NOT FUNDED		Primary Investment Type: ☐ Other		Cost Estimating Basis: ☐ FIXED COST ☒ VARIABLE COST (USAGE BASED)		Affected Claimants: ☒ ACTIVE ☐ RESERVES ☐ BOTH		
Issue Timing: ☒ EXECUTION YEAR ISSUE ☐ OUTYEAR ISSUE								
Issue Description: FY2003SK EPG 0020 & 0021 replace high risk "tired-iron" generators from the fleet, with new increased MTBF generator. 300 DERF funded generators began delivery in June 2003. Aircraft projected to be equipped with updated generator: FY04=53, FY05=81, FY								
Input Costs Below in Thousands of FY2003 Budget Year Dollars. Do NOT Inflate.								
O&M \$ (in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Positive delta values equate to additional cost, negative deltas equate to cost avoidance.								
Flight Hour Basis for Estimates:	8,659	20,698	28,301	29,990	29,990	29,990	29,990	29,990
AVDLR (FA) As Is Cost:	\$251.1	\$600.2	\$820.7	\$869.7	\$869.7	\$869.7	\$869.7	\$869.7
AVDLR (FA) To Be Cost:	\$43.3	\$103.5	\$141.5	\$150.0	\$150.0	\$150.0	\$150.0	\$150.0
AVDLR Funding Impact (Delta):	(\$207.8)	(\$496.7)	(\$679.2)	(\$719.8)	(\$719.8)	(\$719.8)	(\$719.8)	(\$719.8)
Consumables (FM) As Is Cost								
Consumables (FM) To Be Cost								
Consumables Funding Impact (Delta):	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
FHP Contract (FW) As Is Cost								
FHP Contract (FW) To Be Cost								
FHP Contract Funding Impact (Delta):	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
FHP Support (FO) As Is Cost								
FHP Support (FO) To Be Cost								
FHP Support Funding Impact (Delta):	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Overall FHP Funding Impact (Delta)	(\$207.8)	(\$496.7)	(\$679.2)	(\$719.8)	(\$719.8)	(\$719.8)	(\$719.8)	(\$719.8)
"As Is" FHP Requirement Basis (Reliability, Repair Cost Assumptions, ...):								
The generator current AVDLR cost is \$29 / AC FHR, with a MFHB BCM of 553 flight hours.								
"To Be" FHP Requirement Basis (Reliability, Repair Cost Assumptions, Implementation Cost Funding & Source...):								
The new generator AVDLR cost is estimated at \$5 / AC FHR, with a MFHB BCM of 2000 flight hours.								

Figure 6. E-2C Hawkeye Cost Adjustment Sheet

Figure 7 illustrates a MH-53E maintenance process change submission that reflects the need for an additional \$1.4 million in near term funding followed by a projected \$5.8 million in cost savings in the out years. As illustrated with this CAS, the capability to breakout cost effects on individual SICs (FA and FM) enhances the systems ability to provide a further level of accuracy in developing OP-20 funding levels.

Version 4.3

PR07 Flying Hour Program Cost Adjustment Sheet (CAS)

T/M/S: MH-53E

Submitting PMA: PMA-261

Adjustment Category: Other - Describe in 'Issue Description Box' below.

System: T64-GE-419

NIIN(s):

APML Name/Code/Phone: LTCOL GOLD

IWST Name/Code/Phone: PAT GALLAGHER

Fleet Class Desk Name/Code/Phone:

WUC(s):

Material Support Date:

☒ APPROVED

☒ APPROVED

Invest Status:

☒ FUNDED

☐ NOT FUNDED

Primary Investment Type:

Engine CIP

Cost Estimating Basis:

☐ FIXED COST

☒ VARIABLE COST (USAGE BASED)

Affected Claimants:

☐ ACTIVE

☐ RESERVES

☒ BOTH

Issue Timing:

☒ EXECUTION YEAR ISSUE

☐ OUTYEAR ISSUE

Issue Description:

T64 Engine Time-On-Wing (TOW) has severely degraded due to outdated build specifications, compressor erosion, oil leakage, inadequate repair procedures, sand ingestion, test cell data acquisition/analysis inadequacies, and support equipment deficiencies.

FY04 should contain actual costs (put them in the "AS IS" & leave the "TO BE" blank). FY05-11 should contain projected "AS IS" & "TO BE" costs in Constant Year 2004 Dollars. Do NOT Inflate. Positive delta values equate to additional cost; negative delt

O&M \$ (in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Flight Hour Basis for Estimates:	10,857	10,087	8,474	8,474	8,474	8,474	8,474	8,474
AVDLR (FA) As Is Cost:		\$6,486.5	\$5,449.3	\$5,449.3	\$5,449.3	\$5,449.3	\$5,449.3	\$5,449.3
AVDLR (FA) To Be Cost:		\$6,115.8	\$6,046.3	\$5,424.5	\$4,892.3	\$4,449.7	\$4,126.8	\$3,744.7
AVDLR Funding Impact (Delta):	\$0.0	(\$370.7)	\$597.0	(\$24.7)	(\$557.0)	(\$999.5)	(\$1,322.4)	(\$1,704.5)
Consumables (FM) As Is Cost		\$2,427.5	\$2,039.3	\$2,039.3	\$2,039.3	\$2,039.3	\$2,039.3	\$2,039.3
Consumables (FM) To Be Cost		\$3,125.3	\$2,442.4	\$2,191.2	\$1,976.2	\$1,797.4	\$1,667.0	\$1,512.6
Consumables Funding Impact (Delta):	\$0.0	\$697.8	\$403.0	\$151.9	(\$63.1)	(\$241.9)	(\$372.3)	(\$526.7)
FHP Contract (FW) As Is Cost:								
FHP Contract (FW) To Be Cost:								
FHP Contract Funding Impact (Delta):	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
FHP Support (FO) As Is Cost								
FHP Support (FO) To Be Cost								
FHP Support Funding Impact (Delta):	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Overall FHP Funding Impact (Delta)	\$0.0	\$327.1	\$1,000.1	\$127.2	(\$620.1)	(\$1,241.4)	(\$1,694.7)	(\$2,231.2)

"AS IS" Methodology (Reliability, Repair Cost Assumptions, ...)

All figures for the "AS IS" and "TO BE" cost are present on the individual worksheet for each TMS engine.

"TO BE" Methodology & Analysis (Reliability, Repair Cost Assumptions, ...)

FY05 Delta Breakout: BSR = \$826K, ERF III = \$1,600K

Figure 7. MH-53E Cost Adjustment Sheet

The second enhancement to the AVDLR budgeting process lies with the incorporation of the CNA Demand Factor into the FA pricing model. This factor materialized due to the need to address more accurately the issues surrounding the Navy's aging aircraft inventory and corresponding increase in failure rates on major system components. Following an extensive study by the Center for Naval Analysis (CNA) into the causes of rapidly escalating AVDLR costs, OPNAV revamped the existing pricing model in FY03 and subsequently incorporated the changes into the Department's formulation of its annual budget submissions.

The Demand Factor multiplier represents a percentage change in BCMs per flight hour, which translates into a change in AVDLR (FA) cost per flight hour for incorporation into the OP-20. The drive behind the multipliers implementation was the

result of a threefold increase in AVDLR costs between 1992 and 2001³⁹ and OPNAV's inability to account adequately for this increase in subsequent budget submissions. A significant contributor to this increase in AVDLR costs is due to the increasing number of BCMs per flight hour experienced in recent years, which is a direct manifestation of the Navy's aging aircraft fleet.

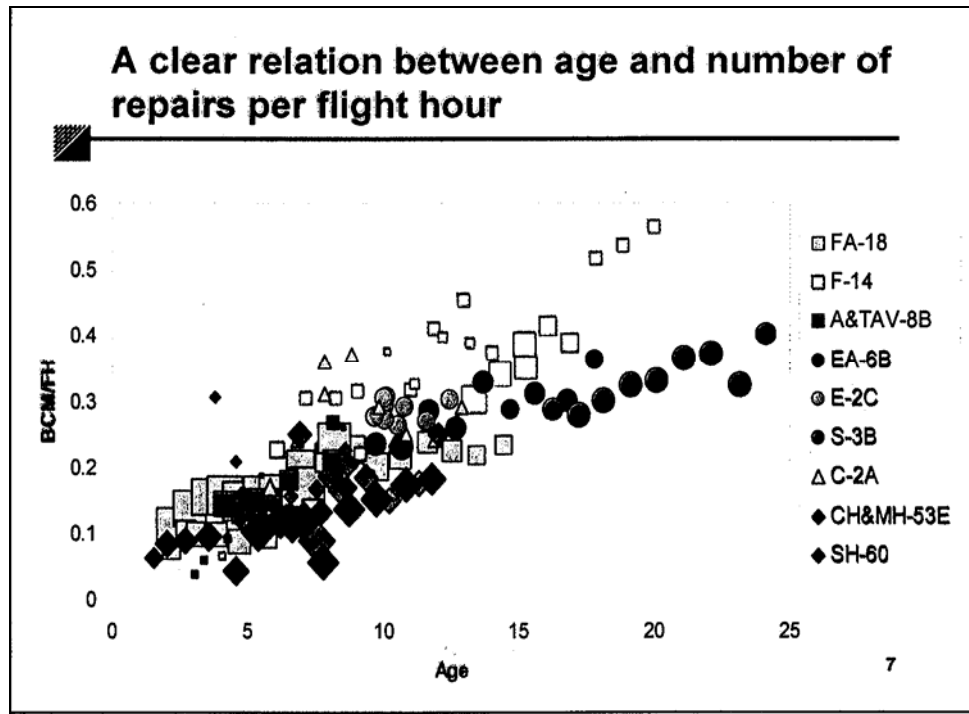


Figure 8. CNAF BCM/FH vs. Aircraft Age⁴⁰

Provided below are the estimating equations for calculating the AVDLR Demand Factor. The unique flight profiles and airframe stresses experienced by the respective categories of aircraft requires the use of three separate equations.

Carrier/extra complex (CEC)

$$BCM \text{ per Flight Hour} = A_{CEC} age^{.6612} h^{-.2236}$$

39 Center for Naval Analysis (CNA Sept) Study, "Results on the Cost of the Naval Flight Hour Program," September 2003, p. 4.

40 Ibid., p. 7.

Carrier/extra complex (CEC): This aircraft grouping includes carrier aircraft, antisubmarine warfare fixed-wing and rotary, and helicopters with substantial avionics components that are subject to carrier based operations.

Land-based fixed wing (LBFW)

$$BCM \text{ per Flight Hour} = A_{LBFW}age^{.3265}h^{-.2236}$$

Land-based fixed wing (LBFW): Included in this group are the individual C-130, P-3 and E-6 TMS aircraft.

Helicopters (HELO)

$$BCM \text{ per Flight Hour} = A_{HELO}age^{.4363}h^{-.2236}$$

*Carrier/extra complex estimating equation in the forecasting of changes to BCMs per flight hour for the F/A-18C.

The following scenario illustrates the utilization and resulting output of the Carrier/extra complex equation. The data used is purely for illustrative purposes and does not represent actual or forecasted data.

TMS: F/A-18Cs

FY03 average age: 14.2 years

FY04 average age: 15.2 years

FY03 flight hours: 1,650

FY04 flight hours (projected): 1,568 (5% drop from prior year)

BCM per Flight Hour in FY04/BCM per Flight Hour in FY03

$$= (15.2/14.2)^{.6612}(.95)^{-.2236} = 1.05809$$

The equation allows for a projection of follow-on year BCM rates based on ratios of current year to projected follow on year average inventory ages (*age*) and year-to-year changes in funded flight hour (*h*) levels. The "age elasticity of BCM/FH" (.6612 for CEC aircraft) gives the percentage change in BCMs/FH for a one percent change in the average age of the particular TMS. The "relative flight hour elasticity" (-.2236 for CEC

aircraft) is constant for all three aircraft categories and means that for every one percent increase in flight hours, the number of BCMs/FH will decrease by .2236 percent.

This example forecasts a 5.809% increase in BCMs per flight hour resulting from an increase in the average age of the F/A-18C inventory of one year and a five percent decrease in budgeted flight hours from FY03 to FY04. The AVDLR pricing model then incorporates this percentage change into the categories cost per hour calculation. The appendix to the corresponding CNA study provides a detailed mathematical decomposition of the BCM per flight hour equations.⁴¹

c. Effectiveness of Changes

The incorporation of CAVTS and the CNA Demand factor into the FA pricing model has garnered substantial support from FHP budget analysts at OPNAV, as well as, program managers at CNAP. First, accurately identifying the fleets aging aircraft inventory as a significant cost driver should allow for a more accurate assessment and projection of present and future funding needs. Second, CAVTS provides improved visibility and understanding of cause and effect relationships within the FHP by providing a forum to express projected programmatic changes at the TMS level. NAVAIR envisions even further benefits from the system as the database continues to mature over the POM-06 process.

The following table provides a comparison of budgeted dollars to actual execution over the years FY02 through FY05 year to date. As seen by the FY04 figures, the budgeted calculation of \$2,359 per hour matched very closely with the \$2,354 per hour execution rate. Though the CNA Demand factor and CAVTS were available for FY03 OP-20 cost projections, the FY04 FHP budget was the first to recognize any significant benefits. A true measure of effectiveness, however, will require the execution of additional budget cycles to allow for a more accurate quantitative analysis of OPNAV's ability to match OP-20 budgeted dollars with actual fleet execution.

⁴¹ Center for Naval Analysis (CNA) Study, "The Effect of Aging Equipment on Depot-Level Repair of Aircraft Components," March 2002, pp. 21-23.

CNAF FA/DLR Cost per Hour Summary				
	<u>FY02</u>	<u>FY03</u>	<u>FY04</u>	<u>FY05 ytd</u>
Presidential Budget (PB) Cost per Hour	\$1,854	\$2,085	\$2,359	\$2,397
Actual Cost per Hour	\$1,901	\$2,210	\$2,354	\$2,110

Table 2. CNAF FA/DLR Cost per Hour Summary⁴²

d. Remaining Concerns

An area of the FA budgeting process still in need of improvement lies with more accurately identifying expected AVDLR requirements of retiring aircraft. As evidenced during the final years leading to the retirement of the A-6 Intruder in the mid-1990's, and now with the accelerated retirement of the F-14 Tomcat and S-3 Viking, FHP facilitators must justify a substantial under-execution of appropriated funds. This over-estimation of AVDLR funding requirements resulted in the improper allocation of scarce program dollars and provides an opportunity for a heightened level of skepticism on the part of budget analysts on the true needs of specific FHP SICs.

In conjunction with a study on the rising support costs associated with the aging of the navy's aircraft inventory, researchers at the Center for Naval Analysis discovered that as a TMS nears retirement, there is often a period of extremely high readiness. This increase in readiness is attributable to three findings: 1) Aircraft are selectively decommissioned; 2) The number of spare parts does not drop in proportion to number of retired aircraft, therefore, there are more spare parts per aircraft; 3) The number of maintenance personnel and resources available do not normally drop in proportion to the number of aircraft retired.⁴³

The recent retirement of the F-14 Tomcat from CNAP squadrons in FY04 and the projected FY06 retirement of all CNAL F-14s provides continued evidence to the inability by OPNAV to accurately account for the reduction in funding requirements of

⁴² Chief of Naval Operations, Fleet Readiness Division (N432D) budget analyst E-mail, 9 May 2005.

⁴³ Center for Naval Analysis (CNA) Study, "Support Costs and Aging Aircraft: Implications for Budgeting and Procurement," January 2002, p. 30.

retiring aircraft. Tables 2 and 3 provide actual execution and expected (Target Should Cost) direct cost expenditure data for both CNAP and CNAL F-14 Tomcats from FY02 through year to date FY05.

CNAP F-14 FHP AVDLR SUMMARY				
FY	Execution	Target Should Cost	Target Execution Delta \$	% Variation To Should Cost
2002	\$24,103,608	\$18,805,548	(\$5,298,060)	(28.2)%
2003	\$25,606,741	\$30,785,958	\$5,179,217	16.8%
2004	\$1,999,603	\$3,564,682	\$1,565,079	43.9%
2005 YTD thru 31 Mar	NA	NA	NA	NA

Table 3. CNAP F-14 AVDLR Execution Summary⁴⁴

As depicted in Table 3, CNAP F-14s saw a more traditional over execution of AVDLR costs in FY02 of 28.2 percent. Within two years of the complete decommissioning of CNAP assets, however, AVDLR spending experienced an under execution of 16.8 percent and 43.9 percent in FY03 and FY04 respectively. These figures compared to a CNAP wide variation of 0 percent and 13.6 percent over execution in the same years.⁴⁵

In line with CNAP F-14 data, CNAL F-14s appear to be following a similar pattern of under execution within two years of expected full scale decommissioning. FY03 saw a 21.1 percent over execution in line with the fleet wide over execution for the year. Both F-14s and the fleet as a whole experienced an under execution of 10.6 percent in FY04. FY05 year to date data reflects a 52.0 percent level of under execution for the F-14 compared to a 23.4 percent level for all CNAL assets. As with the CNAP data, CNAL summary data includes F-14 AVDLR under execution data.

⁴⁴ All figures obtained from CNAF sponsored AFAST website. Dollar amounts reflect direct FHP costs only and is exclusive of Reserve squadron data. (AFAST captures approximately 90% of total FHP costs)

⁴⁵ The FY03 zero percent deviation from expected execution by CNAP as a whole is inclusive of F-14 under execution data. Recalculation of FY03 CNAP summary net of F-14's data would result in a fleet wide over execution for the fiscal year.

Therefore, the 23.4 percent CNAL wide under execution figure exaggerates actual execution due to incorporation of the TYCOMs F-14 under execution data into the summary calculation.

CNAL F-14 FHP AVDLR SUMMARY				
FY	Execution	Target Should Cost	Target Execution Delta \$	% Variation To Should Cost
2002	\$192,781,749	\$153,521,685	(\$39,260,064)	(25.6)%
2003	\$197,967,965	\$163,428,546	(\$34,539,419)	(21.1)%
2004	\$157,570,336	\$176,189,098	\$18,618,762	10.6%
YTD 2005 thru 31 Mar	\$28,080,161	\$58,527,141	\$30,446,979	52.0%

Table 4. CNAL F-14 AVDLR Execution Summary⁴⁶

2. (FM/maint) Consumables (AFM)

a. Current Process

The FM/maint pricing model utilizes three input variables in calculating the SIC's cost per hour (by TMS). The three variables include the Certified Actual Expenditure Cost per Hour, any Forecasted Programmatic Adjustments as submitted through CAVTS, and the WCF baseline Escalation Factor/Rate Adjustment. The following equation provides a derivation of the projected FM cost per hour.

⁴⁶ All figures obtained from CNAF sponsored AFAST website. Dollar amounts reflect direct FHP costs only and is exclusive of Reserve squadron data. (AFAST captures approximately 90% of total FHP costs.)

$$\begin{array}{c}
\text{Certified Actual Expenditures (Most recent FY cost per hour)} \\
\times \\
\text{Demand Factor (CNA)} \\
+/- \\
\text{Forecast Programmatic Adjustments/Cost Adjustment and Visibility Tracking System} \\
\text{(CAVTS)} \\
\times \\
\text{Escalation Factor/Rate Adjustment} \\
\div \\
\text{Projected flight hours} \\
= \\
\text{Projected FM cost per hour (by TMS)}
\end{array}$$

The Consumable (FM) pricing methodology is identical to the FA pricing model less the CNA Demand Factor.

b. What Has Changed and Why

There have been two primary changes in determining the funding requirement for consumables. As with the AVDLR pricing model, the calculation of the FM cost per hour incorporates CAVTS inputs to determine the level of OP-20 funding. The second change involves the removal of non-recurring costs from the actual expenditure baseline. OPNAV incorporated these changes in an effort to reduce the growing level of over execution within the FM funding element and to align more accurately funding requirements in support of the new FRTP.

CAVTS serves the same purpose for FM cost per hour formulation as with the AVDLR (FA) funding element. The system allows for an expanded awareness of potential issues that may result in significant changes to proposed OP-20 cost per hour calculations. Additionally, through the Cost Adjustment Sheet submission and review

process, the OPNAV resource sponsor can not only assess out year budget requirements more effectively, but identify the emergence of any unforeseen current year unfunded requirements as well.

The second enhancement to the FM budgeting process entails the removal of non-recurring costs prior to the formulation of OP-20 requirements. This change to the pricing model is in an attempt to better align OP-20 funding levels with the Navy's implementation of the FRTP. This new Navy wide training plan receives funding to support basic T&R requirements only, and does not account for non-recurring cost of war (COW) augments or mission essential support hours required by specific TMS. As a result, all FM costs receive a bottom up review to determine the level of non-recurring costs directly associated with fleet operations (OEF/OIF, etc). Once identified, OPNAV removes these costs from the certified expenditure baseline prior to application of the WCF escalation factor/rate adjustment.

c. *Effectiveness of Changes*

As with the enhancements to the FA budgeting process, FHP managers acknowledge a perceived improvement in the ability of the program to match budgeted dollars with actual fleet execution. The aforementioned benefits of CAVTS, with its initial focus on AVDLR issues, since expanded its reach to allow further refinement of the FM pricing model. The following table provides a comparison of budgeted dollars to actual execution over the years FY02 through FY05 year to date. As with FA SIC, additional budget cycles will be necessary to draw definitive conclusions.

CNAF FM/Consumables Cost per Hour Summary				
	<u>FY02</u>	<u>FY03</u>	<u>FY04</u>	<u>FY05 ytd</u>
Presidential Budget (PB) Cost per Hour	\$783	\$825	\$804	\$989
Actual Cost per Hour	\$918	\$1,078	\$1,070	\$979

Table 5. CNAF FM/Consumables Cost per Hour Summary⁴⁷

⁴⁷ Chief of Naval Operations, Fleet Readiness Division (N432D) budget analyst E-mail, 9 May 2005.

d. Remaining Concerns

The continuous escalation in aviation consumable funding requirements has failed to garner the interest afforded the rapid growth in AVDLR costs during recent years. However, in conjunction with the fleets accelerating rate of depot level repairs and the fact that consumable material makes up a significant percent of the cost of these repairs, FM funding requirements warrant comparable attention. This direct link with increased AVDLR costs has been on top of steadily increasing acquisition costs. Based on a NAVAIR Cost Department/Aging Aircraft IPT study⁴⁸, consumable acquisition costs are growing at eight to ten percent per year. Accounting for this growth, 1.3 percent has been due to normal inflation, one percent resulting from the introduction of new items into the inventory system, and two to three percent due to the historical ramp up of demand of newly introduced items. The net growth trend across all consumables, therefore, has seen an increase in acquisition cost of three percent per year above inflation.⁴⁹

⁴⁸ Stoll, Laurence W., Naval Air Systems Command briefing for Aging Aircraft Forum, "Analysis of Operations and Support Cost Trends or Why do Aging Aircraft Cost so Much," 6-8 October 2004, http://www.washingtonscea.com/Presentations/SCEA_Nov_23_2004_Navy_Flying_Hr_Program.pdf, slide 40.

⁴⁹ Ibid., slide 40.

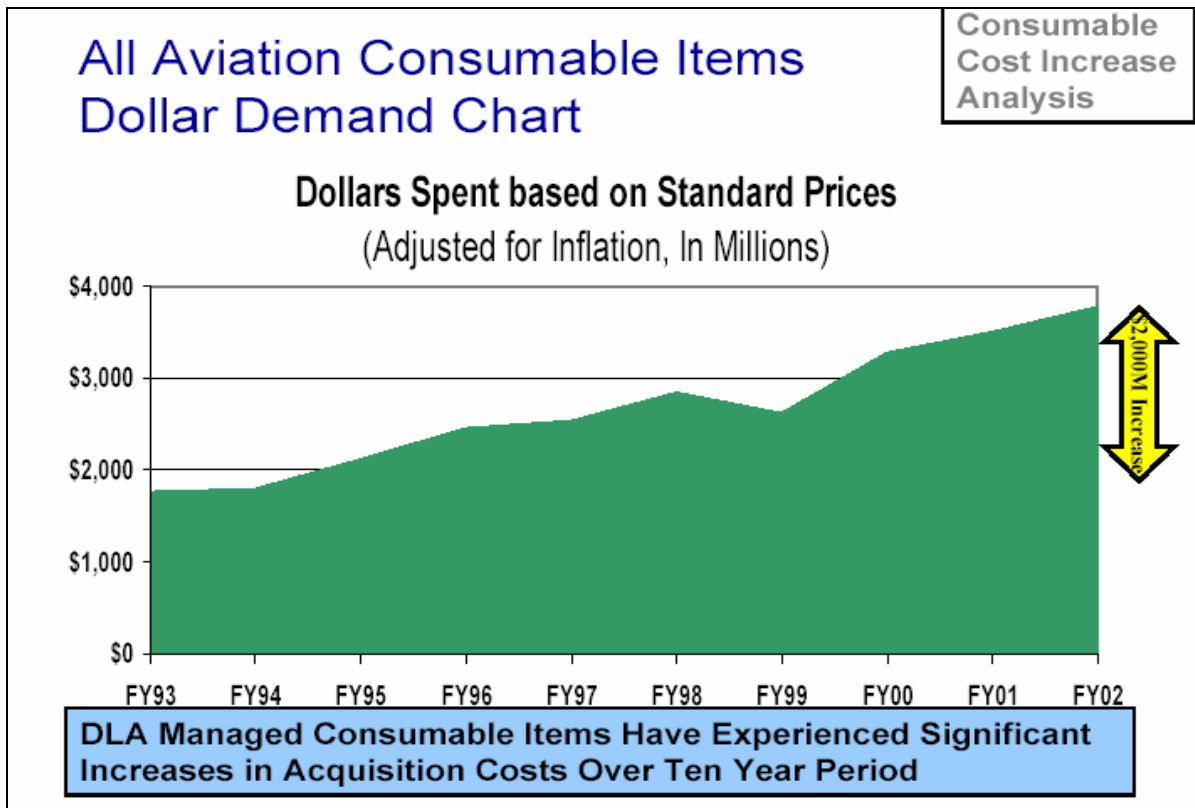


Figure 9. CNAF FY93 to FY02 Consumable Cost Growth⁵⁰

Recognizing this significant increase in annual acquisition costs, in conjunction with existing empirical data supporting one of the contributing causal factors, continued efforts should focus on developing an additional "demand factor" variable in the FM pricing model. The importance of a demand factor comparable to that used in the FA pricing model emerged from an affiliated study on rising AVDLR costs. The Center for Naval Analysis found a positive correlation between consumable rate usage and number of BCMs per year. In line with the previously discussed rise in BCM rates, this finding suggests that there should be a corresponding increase in consumable costs. Currently, no "multiplier" accounts for this cost driver and its associated effect on funding level requirements. Though important in helping formulate any future budget requirements, this factor represents merely one element of an invariably complex cost

⁵⁰ Ibid., slide 35.

estimating equation, therefore, further detailed analysis is necessary to uncover the additional cost drivers affecting consumable rate usage.

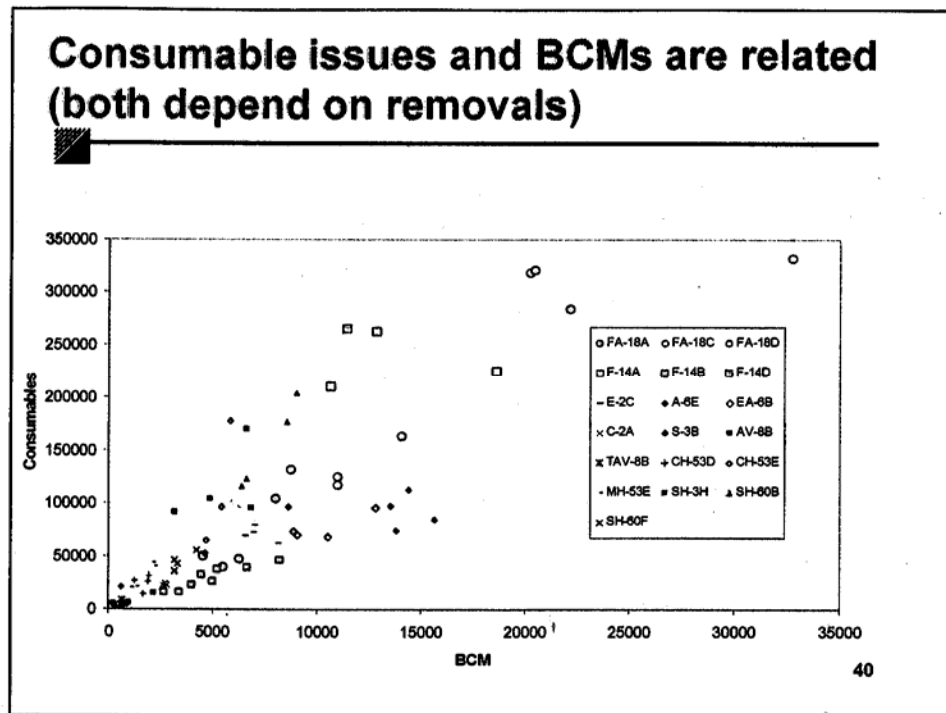


Figure 10. *CNAF Consumable Issues vs. BCMs⁵¹*

3. FW/Contract

a. *Current Process*

The FW/Contract utilizes two input variables in calculating the SICs projected contract cost per hour. The two variables are comprised of NAVAIR-sponsored and Fleet-sponsored maintenance contracts. The following equation calculates the projected FW cost per hour.

⁵¹ Center for Naval Analysis (CNA) Study, "Results on the Cost of the Naval Flight Hour Program", September 2003, p. 40.

NAVAIR-sponsored maintenance contracts

+

Fleet-sponsored maintenance contracts

÷

Projected flight hours

=

Projected FW cost per hour (by TMS)

As with the establishment of the FM baseline, OPNAV removed all non-recurring FW costs from the OP-20 budgeting process. The failure to accurately identify and remove these non-recurring costs significantly hindered OPNAV's ability to project realistic future program funding requirements for peacetime operations. This "scrubbed" baseline figure then takes into account any new NAVAIR or Fleet awarded contracts and incorporates them into the overall budget requirement.

b. What Has Changed and Why

The creation of the FW SIC was a result of OPNAV's continued efforts in specifically identifying what actions are driving the particular funding requirements within the FHP. In the construction of previous OP-20s, the FM (consumables) SIC absorbed all contract (FW) costs. As a result, the FW SIC routinely received an inadvertent WCF escalation factor/rate adjustment. This inadvertent and unwanted application of the escalation factor led to the creation of a separate FW SIC and current cost estimation equation.

c. Effectiveness of Changes

The need exists for more historical data to draw any definitive conclusions on how accurately OPNAV now budgets for the contract requirements of the FHP; however, the development of the "FW" SIC clearly improves the ability to match performed activities with associated costs. With CNAP FW outlays totaling \$81.5 in FY04, the former practice of incorporating all contract expenditures within the FM SIC

would have resulted in a 16 percent overstatement of actual FM requirements.⁵² By disaggregating contract and consumable costs, TYCOMs now have the ability to assess more accurately their year-to-date execution of OP-20 funding. Additionally, OPNAV can more easily capture the benefits of category specific cost savings and recapitalize them within Naval aviation.

d. Remaining Concerns

The operational requirements and associated funding levels needed to prosecute the Global War on Terror (GWOT) have had a significant impact on Marine Forces Pacific (MARFORPAC) aviation squadrons. The drastically increased operating tempo above normal peacetime operations sheds light on an existing problem with the new budgeting process. Because the current program only supports funding levels needed to satisfy peacetime training requirements, over-execution and the need for supplemental cost of war funding is essential. With Marine squadrons currently carrying a significant portion of the Department's GWOT aviation requirements, CNAP must quickly identify scarce funds from under-executing SICs to satisfy Marine squadron spending rates. CNAP then faces the familiar dilemma of redirecting funds from one requirement to the next early in the fiscal year in anticipation of receiving relief in later quarters from subsequent defense supplemental appropriations. Despite becoming commonplace in recent FY budget cycles, the uncertainty of emergency supplementals in the future may mandate a shift in this practice.

The expeditionary nature of Marine aviation lends itself more to contract maintenance than its navy air counterparts. The requirement for quick response in forward deployed locations frequently leads to the unavailability of military personnel or equipment in sufficient quantities to fulfill all of the squadron's maintenance needs. The aggressive use of Contract Field Teams therefore has had a pronounced impact on FW cost per hour figures. From FY03 through second quarter FY05, MARFORPAC squadrons witnessed a corresponding 25 percent, 39 percent and 22 percent FW cost per

⁵² Commander Naval Air Forces Pacific FY04 Certified Flight Hour Cost Report, September 2004.

hour over-execution rate.⁵³ This necessary and unavoidable increase to cost per hour figures is forcing CNAP program managers to adjust current quarter spending rates in other areas of the FHP to accommodate a wartime scenario with a peacetime budget. The recent passage of the \$82 billion defense supplemental will undoubtedly help satisfy this increase, but the shuffling of budgeted funds in the interim poses difficult challenges for all parties involved.

G. FO (FO/SUPPORT)

1. Current Process

The Chief of Naval Operations, Fleet Readiness Division (N43) puts out a request in early October for FO requirements from all Budget Submitting Offices. The Budget Submitting Office ensures a sufficient review of all submitted FO requirements by the appropriate program managers, as well as, a mandate for input submissions with associated justification to CNO N432D no later than December 1st.

CNAP requests FO requirements, broken into separate accounts, from its subordinate units. Upon receipt, analysts review requirements against historic costs and make an inflation adjustment, usually about 3%. Next, the analysts summarize similar costs from each unit into different account line items discussed earlier and submits this information to N432D with justification.

2. Changes Underway

The FO budgeting process has not changed during the period reviewed by these researchers, but—it is in the process of changing. CNAP presently has integrated process teams (IPTs) for each category of FO, which are attempting to develop models that will enable a better prediction of FO funding requirements. The IPTs have a difficult job. After all, as *Other* in the name accurately describes, this category comprises all the support and miscellaneous costs that do not fit into any other category.

⁵³ Naval Air Systems Command CAVTS Report, POM06 E-2C C-2A 60KVA Generator.xls, <https://qtrdeck.nalda.navy.mil/cavts/fhilib01.nsf>, 07 April 2005.

One of the most difficult costs in the FO budget to model is Transportation of Things (TOT), which includes everything from transporting a damaged aircraft to an IMA or aviation depot facility to shipping aircraft parts via FedEx to units deployed in Iraq. These costs are extremely difficult, if not impossible, to project and difficult to control. The difficulty arises from the fact that the costs are reactionary to events that transpire, as in the case of unplanned damage to an aircraft. Additionally, a unit deployed to Iraq who frequently ships parts via FedEx in an effort to reduce shipping time, when cheaper but potentially slower government transportation is available, will have an adverse effect on the original budget forecast. Complicating the issue further, the significant time delay between the obligation of funds by the squadron and the eventual recognition of the transaction in CNAP's flight hour account, exacerbates the difficulty in accurately forecasting FO requirements.

IV. CNAP EXECUTION

A. (OFC-1) AIRCRAFT FLIGHT OPERATIONS (AFO)

1. (FF/fuel) 7B

a. *Current Process*

As in the past, the few echelons above CNAP still withhold a small portion of the FHP funds. CNAP determines the amount of a TACAIR unit's quarterly Operational Target Functional Categories Funds (OFCs) commonly known as Operating Targets (OPTARS) using four factors: 1) the unit's period in the 27-month Fleet Readiness Training Plan (FRTTP); 2) its deployed status; 3) its authorized crews on board (ACOB); and 4) its cost per hour (CPH) for TMS aircraft flown. CNAP separately funds any approved cost of war (COW) augment requested by Fleet or Theater Commanders.

CNAP's FHP Manager calculates the quarterly OPTAR for each squadron or detachment using the following method. For each month of the quarter, the manager calculates the baseline T&R funding by multiplying the 100 percent T&R hours for TMS by the readiness percentage for the specific month of the IDRC. Next, the manager adds the appropriate MESH factor based on TMS, deployment status, and period in the IDRC. Finally, the manager multiplies this sum by the ACOB for the unit and the CPH for the TMS to determine the OPTAR for that month. The equation below illustrates the calculation for one month.

$$\text{Monthly OPTAR} = (\text{fraction of 100\% T\&R} + \text{MESH factor}) \times \text{ACOB} \times \text{CPH}$$

Since the federal government distributes funds quarterly, CNAP funds OPTAR quarterly. Hence, CNAP distributes the sum of appropriate quarterly OPTAR to each carrier air wing (CVW) and Type Wing for further distribution according to their subordinate commands. CNAP charges the CVWs and Type Wings with managing and balancing distribution among their subordinate units.

b. *What Has Changed and Why*

The readiness-based distribution of OPTAR using the method described above is new. Until FY2003, CNAP used historical data to determine the distribution of

FHP funds. While CNAP has always expected units to meet readiness goals throughout a deployment cycle, CNAP based its budgeting decisions on historic funding for similar periods in the deployment cycle. CNAP still funds to achieve a desired readiness profile across the deployment cycle, but now determines those funds based on the T&R model verses historical execution.

Another change is the focus on what is measured in terms of funding. The CNAF/CNAP FHP Manager states “. . . hour execution is the metric—not dollars.” Although OPTAR is defined in dollars, funding is considered to be in terms of hours—not dollars or percentage of PMR. “CNAF relies on execution of HOURS to attain the readiness levels required by FRTP.” The manager monitors the hours flown and readiness reported by each unit. “If additional funding is required to meet the flying hours granted for the quarter, coordination with CNAL/CNAP FHP managers will provide the means for a dollar augment to ensure hours execution. Conversely, if at the end of a quarter a squadron has 7B money remaining—this money will be recouped by the FHP manager and is not to be executed in hours over the funding profile.”

c. Effectiveness of Changes

CNAP’s execution methodology of the T&R based FHP substantially reduces funding across the Fleet Readiness Plan (FRP). Just as the budgeting based on T&R matrices reduced the hour requirement by 13 percent, the execution method based on T&R matrices also causes a reduction in hours allotted due to the reductions made in the T&R matrices previously discussed.

d. Remaining Concerns

The inherent problems of taxes or “withholds”, timeliness, spending rates and management information systems, color of money, and limited flexibility in budget execution discussed by Philips in his June 2001 thesis still remain and probably always will.⁵⁴ Accurately described as inherent, it is the design of the federal funding process and size of the organization that cause these problems. Although the Navy cannot change

⁵⁴ Phillips, pp. 7-9.

these inherent problems, the Navy can still make significant improvements to the execution process.

CNAF recognizes and states this need for improvement:

We produce readiness and warfighting capability, and our successful pursuits have been without a careful eye to the costs. We must now generate readiness with a sharper eye toward cost to ensure that we are firmly in control of our future.

The CNO said it best in his 2003 Sea Power policy statement: ‘A key ingredient to sustaining both our readiness today and our investment for the future is ensuring we produce current readiness from every dollar. This requires involved and energetic leadership, innovative thinking, calculated risk taking and willingness to change [in order] to strengthen our combat effectiveness.’

We are applying those principles in Naval Aviation as we move from “readiness at any cost” to “cost-wise readiness.” Our goals are to build and continue to maintain the premier power projection force for peace, to continue the War on Terror, and to institutionalize the surge capability of the FRP.

We have set a steady course to find efficiencies in achieving that readiness. To do that, we must know and understand how our business works and how our business processes function. It requires rigorous and unbiased introspection and self-assessment. It requires soliciting and listening to outside perspectives and evaluations.

We need to measure our processes against today’s best business practices in other disciplines, across other professions, including government and industry. We must know our business, the business of Naval Aviation and the business of producing readiness, in order to make it as efficient as possible.⁵⁵

In his article in Hook Magazine, VADM Malone goes on to discuss the concept and process of AIRSpeed and the improvements it will make to reducing the costs of maintaining aircraft and achieving cost-wise readiness. However, AIRSpeed

⁵⁵ VADM Mallon, http://www.tailhook.org/Brf_Su04.htm, 22 May 2005.

only addresses the second part of the cost equation—what drives the CPH. It does not address the first part of the cost equation—hours flown.

The changes to the T&R matrices address the hours portion of the equation, but from a budget planning perspective. As McCaffery and Muttu point out, “. . . budget execution is a management process.”⁵⁶ Unfortunately, as Phillips states, “. . . little attention is paid to budget execution.”⁵⁷ Efficient budget execution is a vital part, perhaps the most important part, of “. . . ensuring we produce current readiness from every dollar.”⁵⁸ Budget execution is, after all, the entire reason that OPNAV prepares and justifies the FHP.⁵⁹

As ADM Mallon suggested, let us look at two simple examples of today’s best business practices with Starbucks and Southwest Airlines, focusing on efforts to achieve optimal efficiency in routine tasks of their operation. The Starbucks example involves redesigning ice scoops and the Southwest Airlines example involves aircraft turnarounds at gates.

The following is a quote about Starbucks from the Wall Street Journal:

“This is a game of seconds,” says Silvia Peterson, Starbucks’s director of store operations engineering, adding that she and her team of 10 engineers are constantly asking themselves: “How can we shave time off this?”

A few years ago, engineers noticed that “baristas” -- the Starbucks employees who prepare drinks -- had to dig into ice bins twice to scoop up enough ice for a Venti-size cold beverage, Starbucks’s biggest. “The old Venti scoop didn’t give you enough ice,” Ms. Peterson says. Engineers experimented with ceramic coffee mugs, which then led them to develop one-piece plastic “volumetric ice scoops.” But the handles kept breaking, so engineers had stronger ones made. The new scoops helped cut 14 seconds off the average preparation time for blended beverages of about one minute.

⁵⁶ McCaffery, p. 233.

⁵⁷ Phillips, p. 5.

⁵⁸ VADM Mallon.

⁵⁹ McCaffery, p. 233.

Efforts like these have helped Starbucks outlets increase their average yearly volume by nearly \$200,000, to roughly \$940,000, since 1999, executives say.⁶⁰

Notice the efficiency striving mentality and effort displayed by Starbucks. Starbucks saw the value of investing the time of a director and team of ten engineers in redesigning an ice scoop to shave 14 seconds off a step of a routine task. Does a similar mentality and effort exist throughout the Navy? Does today's Naval leadership look at the daily processes performed in our work centers and departments and ask ourselves, "Is there a better way to perform this task?" Can we apply this mentality and level of effort to the routine tasks of servicing aircraft, replacing engines, conducted inspections, and administrating our squadrons?

The following two examples suggest that, in fact, the Navy does not always seek out efficient practices. At least one of these researchers will argue that we do not with two simple examples. Personal experience has shown that very few YNs and PN's possess the most basic level of user knowledge of Microsoft Word. The evidence for this is manual insertion of page numbers and headers into instructions instead of using the designed software feature for these tasks. This is an example of where the Navy has spent the funds to acquire the tools to improve the efficiency of routine operations, but fails to train properly our tool operators.

The second personal example illustrates the efficiencies possible by applying this business mentality. A squadron aviation-training department was manually drafting forms listing each individual using a word processor to document training in each work center. This process took the full department a solid week to prepare and print forms for the monthly training. By engineering a new method of documenting and tracking the training and by instructing the department on using the new method, the department head reduced the process time by 90 percent to a half day of work. This freed a proportional amount of personnel that were now available for assignment to the hangar deck to perform aircraft maintenance.

⁶⁰ Gray, Steven, "Coffee on the Double," Wall Street Journal, 12 April 2005, p. B1.

The second example of best business practices involves Southwest Airlines who shortened the turnaround time at the gate for its aircraft to fifteen minutes using only six employees verse the industry average of one hour using twelve employees—a 75 percent reduction in process time using half the manpower!⁶¹ What enabled Southwest Airlines to improve drastically a routine task that their competitors with greater experience failed to achieve? Contrast this to the following personal example of one of the researchers.

A common practice of at least one helicopter squadron at NAS North Island is to go through the hot pits⁶² at the end of every flight, even if the aircraft is not scheduled to fly until the next day. What is the cost to the FHP to fuel unnecessarily an aircraft in the hot pits when cold refueling would not interfere with scheduled operations? Let us assume the total cost per hour is \$2,800, if the extra time it takes to go through the hot pits is 15 minutes, the approximate cost each time this occurs is \$700.⁶³ This does not include the additional cost of the hot pit crew, which is more expensive than the cost of cold refueling with a fuel truck in the line.

Until we consider compounding, the amount of \$700 dollars seems insignificant. Let us also assume the squadron unnecessarily hot refuels two of its eight aircraft only once each day for 250 days of the year. The annual direct cost incurred by the squadron against the FHP is \$350,000 or 125 flight hours.

If we assume every squadron in the Navy is identical in composition, costs, and practice, the annual total cost would be approximately \$105 million.⁶⁴

⁶¹ Southwest Airlines, University of Virginia Darden School Foundation, Charlottesville, VA, UVA-OM-0743, 1993, p. 9.

⁶² “Hot pits” are refueling facilities at specific, usually isolated, locations on an airfield where an aircraft can be refueled without shutting down the engines of the aircraft.

⁶³ Some might argue the cost to operate on the ground is not equal to the average annual CPH. The researcher argues it is reasonable in this case because the aircraft is a helicopter undergoing vibration and wear of all its moving components. Furthermore, it was standard practice in this squadron to log this time as flight time. Therefore, this ground time is part of the time used to calculate the annual average CPH.

⁶⁴ This calculation assumes 25 percent of the 2,404 FY05 PAA are each unnecessarily hot refueled once per day for 250 days in a year.

Compare this amount to the FY05 \$62 million average cost of a combat aircraft and the amount is significant.

The interesting thing about this example is the Navy recognizes at least some of the inefficiencies of this practice and has instructions prohibiting unnecessary hot refueling at the air station where this occurred. Unfortunately, the squadron does not adhere to the instruction because they do not understand the cost. The air station has difficulty enforcing the regulation because the squadron does not fall under the chain of command of the air station Commanding Officer, who prohibited the unnecessary hot refueling primarily to reduce the hot refueling contract costs of the air station.

Since what the FHP is buying is readiness, let us look at another example focusing on the efficiency of the operations department in scheduling training flights. After all, a squadron exists and receives funding to provide a “product.” That product is a certain level of readiness for assigned mission areas, which is attained through maintenance of aircraft and the training of its crews. Therefore, the squadron that provides the best value to the taxpayers is the one that achieves the highest level of readiness at the lowest cost.

Let us look at a scheduling decision for a typical operations officer. Suppose three pilots are below 70 percent goal of T&R points for PRMAR 1, one pilot will fall below 70 percent in 40 days, and three pilots will fall below 70 percent in 83 days. Flying training sortie D will provide enough T&R points to raise any of the pilots above the 70 percent goal for the following 90 days. Training sortie D is a two-hour sortie, does not require either pilot to be current, and both pilots on the sortie can log the training for themselves. How does the Operation Officer schedule the sorties to accomplish this training? Assuming all have equal qualifications, the optimum way would be to schedule two of the below 70 percent pilots together on one sortie and schedule the other below 70 percent pilot with the pilot who will fall below 70 percent in 45 days. How much improvement in readiness is purchased and at what cost for flying each of the pilots below 70 percent with the pilots who will fall below 70 percent in 83 days? The improvement in readiness purchased is 271 days at a cost of six hours equating to about 45 days of readiness per hour. The optimum way “purchases” 330 days

of improved readiness for the cost of four flight hours equating to 80 days of readiness per flight hour—a 78 percent better return!

Is Naval aviation inevitably inefficient? Absolutely not. Any witness of carrier flight operations will agree that the Navy’s ability to quickly launch and recover aircraft within the confined space of an aircraft carrier is arguably the most time efficient examples of aviation operations in the world. However, the motivation for improving efficiency is a key difference between the private industry examples discussed and Naval aviation. Improving profits motivates Starbucks and Southwest Airlines. Improving the ability to project power motivates Naval aviation.

One of the challenges Naval leadership faces is changing the cultural mentality of spending the full amount budgeted, even when a unit can execute operations below budget without sacrificing the mission. Very little incentive, if any, exists to operate efficiently. Actually, one could argue that the government punishes efficient operators by giving them fewer funds in following years.

Even though the federal budget is unfathomably large to most people, it is still finite. Increasing funding for one item decreases the funds available for another. Mandatory spending items such as social security and Medicare are already shrinking the amount of discretionary funds available for critical items such as aircraft procurement. Protecting inefficiencies of the FHP that drive CPH up or reduce the readiness purchased per flight hour increases the difficulty of securing funds for critical programs. It also decreases the value per dollar of the FHP making it less competitive when compared to other programs facing budget cuts.

CNAP’s emphasis of hours being the metrics and not dollars appear to be an attempt to change this cultural fear of not spending the full amount budgeted. CNAF’s FHP Manager states, “Our goal is to have every squadron execute 100 percent of the granted hours in order to meet readiness requirements and defend future budgets.”⁶⁵ The T&R matrix-based FHP model is a way to validate the hours needed for the program that

65 Commander Naval Forces Pacific Flying Hour Program staff member, “FHP Brief + FHP 101” E-mail, 07 February 2005.

is not solely dependant on historical spending. The T&R matrices create a defense for the FHP by demonstrating a direct relationship between hours and readiness.

B. (OFC-50) AIRCRAFT OPERATIONS MAINTENANCE (AOM)

Equally important to its role as the primary budgeting document for the FHP, the OP-20 serves as the primary roadmap for subsequent program execution. Following the annual build of each funding element (SIC), the formulated cost per hour and bottom line figures act as guidance on expected program implementation for the ensuing FY. Recognizing the need to improve the link between the documents forecasted dollar figures with ultimate execution not only led to the need for budgetary process change, but to how CNAF orchestrated the execution of the program as well. Though some adjustments materialized within the AOM account, the realities of fiscally constrained resources and the firmly entrenched use of creative cash management techniques fosters an environment not entirely receptive to change.

Unlike the numerous opportunities available to effect the execution of AFO dollars, the mere nature and purpose of maintenance funds does not allow for significant latitude in terms of execution. Spending levels result solely from the inherent need for aircraft maintenance actions and the CNO promulgated availability rate of fleet aircraft. (The Navy currently targets a 73 percent aircraft Mission Capable rate and 56 percent Full Mission Capable rate.)⁶⁶ This mandated availability rate, in conjunction with a quantifiable dollar cost for a particular broken aircraft component, suggests little room for creative financing. However, the historic practice of "bow-waving" and unfilled customer orders used by CNAP to stretch flying dollars to the end of each fiscal year proved to have a significant impact both on current and follow on budget year execution.

⁶⁶ FY2006/2007 Department of the Navy Budget/Submission to the Secretary of Defense, September 2004, https://dbweb.secnave.navy.mil/budbrief/Highlights_Book.html, p. 2-12.

1. (FA/DLR) Aviation Depot Level Repairable (AVDLR)

a. *What Has Changed and Why*

The discontinued practice of "bow-waving" represents the first significant change to the execution of the FA SIC. In simple terms, bow-waving refers to deferring the cost of something from the current fiscal year to the next fiscal year. CNAP historically used this technique with AVDLRs to circumvent end of year funding shortfalls. The practice entailed retaining end of year BCM items at an AIMD activity until after the new fiscal year to avoid a current year AVDLR (FA) charge. Though this freed up program dollars in the current year, squadrons faced a substantial first quarter over execution of FA funds due to the addition of this unbudgeted cost. Subsequently, program managers began each fiscal year attempting to reestablish compliance with a level of OP-20 funding that did not accurately reflect actual fleet requirements.

The second area of change surrounds the former use of unfilled customer orders (UCO) as a FHP cash flow strategy. The practice involved the cancellation or de-obligation of outstanding requisitions for AVDLRs by individual fleet squadrons to recover funds for use in other areas of the FHP. The original requirement remained satisfied however, through an agreement between CNAP and Navy Inventory Control Point (NAVICP) that all requisitions cancelled required reordering within 45 days after the new fiscal year.⁶⁷ This reallocation of funds unto itself is not seen as faulty execution but, as with "bow-waving", program managers chose a near term solution despite the known long-term budgetary ramifications to follow on years.

The habitual use of the aforementioned cash management execution practices no longer exists at CNAP for the following reasons. First, the current DOD environment reflects a more business like approach where accurate justification and documentation of every budgeted defense dollar is paramount. Failure to adequately defend and support the needs of the program now poses the greatest risk to securing future defense funding. Therefore, the use of creative cash management techniques, and

⁶⁷ Keating, Peter J. and Paulk, David A. Examination of the Flying Hour Program (FHP) Budgeting Process and an Analysis of Commander Naval Air Forces Pacific (CNAP) FHP Underfunding. Masters Thesis. Naval Postgraduate School, Monterey, California, December 1998, p. 182 .

the inability by OPNAV to account accurately for these unplanned program adjustments in the OP-20, mandated the elimination of the practices.

More importantly, recent enhancements to the tracking of current year expenditure rates reduced the chance of program managers getting surprised by end of year funding shortfalls, thus eliminating the need for creative financing methods, at least as long as funding for the FHP remains robust. The most significant improvement is due to the continuing maturation of the CNAF sponsored Aviation Financial Analysis Tool, where monthly snapshots of individual TMS spending rates and execution are available throughout the fiscal year. Originally conceived to enhance the tracking and analysis capabilities available to program managers, AFAST since includes individual Type Wings in monitoring the FHP costs for their respective type model aircraft. Further refinements to the system afford Type Wing Commanders with an executive summary of the FHP cost status for their applicable type model aircraft. This provides an additional echelon of program execution tracking, which further mitigates the chances of unforeseen shortfalls at fiscal year end and need for creative cash management practices.

Figure 11 illustrates one of many outputs of the AFAST web tool. AFAST users can display comparable FHP information from the CNAF level down to the individual TMS level. Additionally, Type Wings can download FHP Cockpit Charts, which provide a graphic representation of the status of the FHP for their respective aircraft type. Information includes trends in AVDLR and AFM expenditures, fuel and overhead costs and year to date average and target cost per hour figures. A squadron version of the Cockpit Charts is presently in work.⁶⁸

68 Commander Naval Air Forces N422 Plans & Policy, "Squadron CO Cost-wise Guide." 2005, p. 10.

CNAP FHP Summary CNAP YTD for FY2005 up to Mar 31 2005					
	Execution	Target Should Cost	Target Execution Delta \$	% Variation To Should Cost	CPH
Flt Hrs	137,556				
Fuel \$	\$142,722,270	\$146,589,697	\$3,867,427	2.6%	\$10.38
AVDLR	\$266,116,513	\$302,992,023	\$36,875,510	12.2%	\$8.85
AFM	\$106,181,593	\$117,787,610	\$11,606,017	9.9%	\$7.72
AOM Tot\$	\$372,298,106	\$420,779,633	\$48,481,527	11.5%	\$2.707
Total Cost	\$515,020,376	\$567,369,330	\$52,348,954	9.2%	\$3.744

Figure 11. AFAST CNAP FHP Summary

b. Remaining Concerns

The long established culture of using creative cash management practices to meet fleet execution requirements remains a credible obstacle to improving the overall efficiency of the FA SIC and the FHP as a whole. Program managers can personally justify the manipulation of AVDLR funding as a necessity to ensure adequate numbers of aircraft remain available to the operating forces. The rationale is that the existence of adequate transfer authority and availability of defense supplemental appropriations will recoup any funding shortfalls produced. However, Congress will not provide war related supplementals forever – probably not beyond FY 2007 – so this source of funding will dry up, which will provide new challenges to FHP execution. In addition, there exists the strong belief that the needs of the war fighter today outweigh the potentially negative impacts budget manipulation may have to funding levels tomorrow. Overcoming this

culture, therefore, must remain at the forefront of CNAP's agenda in creating a more efficient FHP.

Supporting the CNO's message that "the era of readiness at any price is over,"⁶⁹ the required shift in mindset will require a continued emphasis by senior leadership to look at the FHP as a business venture that relies on sound financial decision making for its long-term health. This translates into executing the budget for each year as closely to the OP-20 funding level as possible and not circumventing the documents true intent with creative end of year financing. This increased emphasis on strict fiscal constraint comes at an inauspicious time primarily due to increased demands imposed by GWOT. Additionally, program executors and managers see the inability of recent FHP budgetary enhancements to overcome a 6.7 percent annual under funding of CNAP AVDLR requirements during the same period, as continued reason for the use of creative cash management practices.⁷⁰ These very issues mandate continued refinement to the recently implemented program budgeting changes along with congressional recognition of the impact contingency operations have on baseline funding requirements.

C. FO (FO/SUPPORT)

1. Current Process

The process for executing the FO account, which has not changed for the period studied, is reactionary. Every account seems to always begin below the amount currently needed. Labor and "must fund" accounts get pay first resulting in the common challenge of how to cut the remaining accounts—one item or spreading it.

The FO manager tracks obligations every month using Standard Accounting and Reporting System, Field Level (STARS-FL). If the unit is noticeably under or over spending, the manager asks for explanations. If over spending is severe, the manager

69 Pappalardo, Joe, "Keeping Up the Fleet," National Defense, January 2005, <http://nationaldefense.ndia.org/Issues/2005/Jan/KeepingUpTheFleet.htm>.

70 Commander Naval Air Forces CNAF Extranet, M422C5A Downloads, <https://extra.cnaf.navy.mil/portalmain.asp>.

consults the deputy controller for guidance in solving the problem. If under spending is identified, the manager can move funds to a different FO account in need of funds.⁷¹

2. Remaining Concerns

The major concern for the FO account has not changed. FHP managers are still struggling with how to effectively budget for the various odd accounts and how to manage more effectively the challenging accounts, such as transportation of things. Hopefully, the IPTs will develop effective models that will improve both the budgeting and execution processes.

⁷¹ Telephone interview with Flying Hour Program staff member, Commander Naval Air Forces Pacific, San Diego, CA, 01 April 2005.

V. CONCLUSION

A. INTRODUCTION

The goal of this thesis was to provide an analysis into the recently implemented changes to the OP-20 budget formulation process and ultimate execution of the FHP at Commander Naval Air Forces Pacific. The methodology of the study involved an in-depth description of the funding composition and budgeting process of the OP-20 through a comparison of the FY02 and FY05 budget years. Additionally, the study highlighted the resulting impact on the program following the Navy's transition to the Fleet Response Plan and the concurrent OP-20 pricing model changes commencing in FY03.

B. PRIMARY RESEARCH QUESTION

1. Have the changes to the budgeting models, execution, and procedural methods of CNAF's annual FHP improved the overall efficiency and effectiveness of the program at CNAP?

The execution of more budget cycles will be necessary to determine if changes to the budgeting models and execution practices reap any significant improvements to the efficiency and effectiveness of the program. However, a significant improvement is currently evident in the ability of CNAP program managers to validate, justify, and defend program requirements. In comparing the FY02 and FY05 AFO and AOM accounts, the emergence of improved tracking and forecasting tools allow program managers to provide more defensible and accurate inputs used in the construction of the OP-20. This enhancement then translates into an improvement in overall execution by more closely matching OP-20 funding levels with actual fleet execution. Although highlighting a single component of the FHP, Table 2 illustrates a less than one percent delta between budgeted and executed FA cost per hour figures in FY04 compared with a six percent delta in FY03.

Answers to the secondary research questions will provide specific outcomes resulting from the pricing model enhancements and subsequent execution and procedural changes.

C. SECONDARY RESEARCH QUESTIONS

1. What specific changes did OPNAV make to the FHP budgeting models and execution methods?

Chapter III of the study highlights the specific changes to the OP-20 pricing models. The primary impetus for these changes was to allow for more accurate and justifiable budgeting of the individual funding elements (SIC) within the OP-20. The following is a summary of these changes.

Flight Hours: OPNAV changed the T&R matrices from task-based to sortie-based. The change to sortie-based T&R matrices creates a direct link between flight hours and readiness that enables OPNAV to defend its FHP requirements in a way that is not solely dependant on historical execution.

FA/DLR: The FA element of the FHP realized the largest amount of change in the calculation of its projected cost per hour. The two enhancements to the model were the incorporation of the Center for Naval Analysis Demand Factor and inclusion of programmatic adjustments via the NAVAIR Cost Adjustment and Visibility Tracking System. The Demand Factor multiplier represents a percentage change in BCMs per flight hour, which the FA pricing model translates into a change in AVDLR (FA) cost per flight hour for incorporation into the OP-20. The Cost Adjustment and Visibility Tracking System is a NAVAIR sponsored web site tool that facilitates the timely input and visibility of programmatic issues that may impact future FA/DLR, FM, FW or FO costs.

FM/Maint: There have been two primary changes in determining the funding requirement for consumables. As with the AVDLR pricing model, the calculation of the FM cost per hour incorporates CAVTS inputs to determine the level of OP-20 funding. The second change involves the removal of non-recurring costs from the actual expenditure baseline.

FW/Contract: Prior to the changes to the FHP, the FM (consumables) SIC absorbed all contract costs. The creation of a separate FW SIC, that reflects only contract related cost estimations, now allows for the identification and budgeting of purely contract related items. Additionally, the current cost estimating equation accounts only for recurring NAVAIR and Fleet-sponsored maintenance contract requirements.

2. Have improvements in cost and readiness materialized due to these changes?

As previously mentioned, the most significant outcome of the FHP model changes is not reflected in direct cost savings but in the ability of budget analysts and program managers to more accurately match program dollars with execution requirements. Thus, program managers now have the supporting documentation needed to better justify and defend future funding requests, which can only serve to enhance the overall readiness of fleet assets. Due to the short duration in which the above model changes have been in place, however, definitive budget effects are still uncertain. As illustrated by Table 2 and Table 5 in Chapter III, a comparison of actual and budgeted cost per hour figures fail to provide any conclusive evidence to improved cost efficiency. An accurate assessment of any recognized benefits will require the passage of more budget cycles to ascertain what if any program efficiencies eventually materialize.

3. From the view of stakeholders, have these changes proven beneficial, detrimental, ineffective, or a combination of the above?

From the perspective of the CNAF/CNAP FHP Manager, the change to a sortie-based T&R matrix incorporated into the budgeting and execution models significantly improves the FHP manager's ability to 1) accurately project funding requirements for selected readiness goals, and 2) defend the hours of the program against proposed cuts. The improvement is to the extent that the manager believes he can practically identify the reduction in readiness down to the specific pilots affected by any proposed cut.⁷²

⁷² Personal interview with Flying Hour Program staff member, Commander Naval Air Force Pacific, San Diego, CA, 04 February 2005.

Although the pricing model enhancements did not immediately resolve each of the funding issues facing the FHP, program managers see the changes as a significant step in ensuring the fiscal health of the program. Both in terms of increased participation in the budgeting process by way of CAVTS, as well as, a perceived improvement of budget analysts to recognize and satisfy the operational needs of CNAP squadrons, program managers view ongoing efforts favorably. Most notably, the elimination of the long-standing execution strategies of "bow waving" and unfilled customer orders suggests an increased level of trust with the current pricing models. This willingness to alter AOM related execution practices is important; however, ultimate validation of program changes hinges solely on the ability of aviation maintenance to consistently provide mission capable aircraft to the fleet.

4. How has implementation of the Navy's FRP affected the budgeting and execution process of the FHP?

The implementation of the Navy's FRP has not significantly changed the budgeting and execution process. The FRP has changed the shape of the funding profiles to match the IDRCs of the FRP, but it has not affected the process for budgeting and execution.

5. Do further changes to the program's budgeting models or execution methods warrant consideration?

Budget analysts at both OPNAV 432D and CNAF continue to seek improvements to the pricing models used in formulating the FHP budget. The current models reflect both a considerable change, as well as, perceived improvement from those used in forecasting funding requirements prior to the FY03 budget year, yet continued refinement is necessary. In the area of AOM accounts, the inclusion of an aging aircraft "demand factor" into the FM (consumable) cost per hour equation warrants consideration. Additionally, an increased recognition of the expeditionary nature of Marine aviation units and the effect this has on FW funding requirements calls for further analysis. Though critics remain vocal for continued improvement, the dynamic nature of FHP funding precludes ever finding the perfect pricing model.

D. CONCLUSION

The effective management of the FHP continues to pose unique challenges for every individual with a vested interest in the program. The reality of fiscally constrained funding within DOD and the inability to accurately budget for every possible operational contingency makes the Navy FHP a work in progress. Additionally, with the ever-increasing value Naval leadership places on supporting and defending each allocated defense dollar, the ability to justify every funding requirement has become a crucial measure of effectiveness for the program. The resulting increase in high-level scrutiny and the need to improve the manner in which Naval aviation TYCOMs forecast and execute their piece of the defense budget mandated a number of changes. From the incorporation of pricing model changes, to altering execution and procedural methods to reflect compliance with the new Fleet Response Plan, the changes commencing in FY03 allowed the program to emerge with an enhanced level of budgetary accountability. In doing so, the FHP and Naval aviation as a whole now have a firmer foundation from which to advocate and defend its programmatic and financial utility as a vital part of America's 21st century military.

E. RECOMMENDATIONS FOR FURTHER STUDY

1. An analysis into the effects of the FY03 changes to the OP-20 pricing models over subsequent budget cycles. With only two fiscal years to date having experienced the effects of the program changes, the lack of sufficient quantitative data precludes the drawing of any definitive conclusions from the current study.

2. Perform a direct comparison between the Navy's FHP budgeting process and that utilized by the Air Force. Incorporating a joint perspective on the funding of DOD wide aviation units, while highlighting any recognized strengths or weaknesses, may serve to improve the budgeting and execution processes currently employed by each of the services.

3. A study of the execution management of the FHP at the unit level could identify effective management techniques for maximizing the readiness achieved for each

flight hour flown. Simply studying the topic could raise awareness and educate managers on the importance and benefits of effective FHP management. If successful, the study could lead to the development of a short FHP management course designed to teach managers how to improve the efficiency of executing the FHP at the unit level.

4. Since IPTs are still developing the FO models, a study of the effectiveness of the FO models once complete and used for a few years could provide beneficial information to improve FHP budget justification.

LIST OF REFERENCES

Phillips, William E., Flying Hour Program Cash Management at Commander Naval Air Forces Pacific. Masters Thesis. Naval Postgraduate School, Monterey, California, June 2001.

McCaffery, Jerry and Muttty, John E., "The Hidden Process of Budgeting: Execution," Journal of Public Budgeting, Accounting and Financial Management, Summer 1999.

Memorandum from Commander Naval Air Forces (N43) to Director, Assessment Division (N81) of 15 Jan 02, Subject: Program Objective Memorandum (POM-04) Fleet Readiness Division Baseline Assessment Memorandum (BAM).

FY05 Department of the Navy OP-20, Version 1664 05-82 Execution OP-20, 18 October 2004.

Commander Naval Forces Pacific Flying Hour Program staff member, "FHP Brief + FHP 101" E-mail, 07 February 2005.

Marine Corps Order (MCO) 3125.1A, <http://hqinet001.hqmc.usmc.mil/AVN/MCO31251A/FHP%20encl%209%20Glossary%20V2.0.doc>, 15 March 2005.

Commander Naval Forces Pacific Flying Hour Program staff member, "FO Accounts" E-mail, 14 April 2005.

Memorandum from Chief of Naval Operations, Fleet Readiness Division (N43) of 8 Oct 2004, Subject: Data Call in Support of the Flying Hour Program (FHP) Capabilities Plan (CP) Development for PR-07.

Darling, Robert LtCol. (N432D), Chief of Naval Operations, Fleet Readiness Division (N43) Brief, "Flying Hour Program," 16 March 2005.

Highlights of the Department of the Navy Fiscal Year 2003 Budget, https://dbweb.secnnav.navy.mil/budbrief/Highlights_Book.html, 24 May 2005.

Highlights of the Department of the Navy Fiscal Year 2005 Budget, https://dbweb.secnnav.navy.mil/budbrief/Highlights_Book.html, 24 May 2005.

COMNAVAIRFOR INSTRUCTION 3500.1, Squadron Training and Readiness.

COMNAVAIRFOR INSTRUCTION 3500.1B, Squadron Training and Readiness.

CNAF Commander Naval Air Forces N422 Plans & Policy, "Squadron CO Cost-wise Guide," 2005.

Naval Air Systems Command CAVTS Homepage, <http://logistics.navair.navy.mil/cavts/index.cfm>, 24 May 2005.

Center for Naval Analysis (CNA Sept) Study, "Results on the Cost of the Naval Flight Hour Program," September 2003.

Center for Naval Analysis (CNA) Study, "The Effect of Aging Equipment on Depot-Level Repair of Aircraft Components," March 2002.

Chief of Naval Operations, Fleet Readiness Division (N432D) budget analyst email, 9 May 2005.

Center for Naval Analysis (CNA) Study, "Support Costs and Aging Aircraft: Implications for Budgeting and Procurement," January 2002.

Stoll, Laurence W., Naval Air Systems Command briefing for Aging Aircraft Forum, "Analysis of Operations and Support Cost Trends or Why do Aging Aircraft Cost so Much," 6-8 October 2004, http://www.washingtonscea.com/Presentations/SCEA_Nov_23_2004_Navy_Flying_Hr_Program.pdf.

Commander Naval Air Forces Pacific FY04 Certified Flight Hour Cost Report, September 2004.

Naval Air Systems Command CAVTS Report, POM06 E-2C & C-2A 60KVA Generator.xls, <https://qtrdeck.nalda.navy.mil/cavts/fhilib01.nsf>, 07 April 2005.

VADM Mallon, http://www.tailhook.org/Brf_Su04.htm, 22 May 2005.

Gray, Steven, "Coffee on the Double," Wall Street Journal, 12 April 2005, p. B1.

Southwest Airlines, University of Virginia Darden School Foundation, Charlottesville, VA, UVA-OM-0743, 1993.

FY2006/2007 Department of the Navy Budget/Submission to the Secretary of Defense, September 2004, https://dbweb.secnv.navy.mil/budbrief/Highlights_Book.html.

Keating, Peter J. and Paulk, David A. Examination of the Flying Hour Program (FHP) Budgeting Process and an Analysis of Commander Naval Air Forces Pacific (CNAP) FHP Underfunding. Masters Thesis. Naval Postgraduate School, Monterey, California, December 1998.

Pappalardo, Joe, "Keeping Up the Fleet," National Defense, January 2005, <http://nationaldefense.ndia.org/Issues/2005/Jan/KeepingUpTheFleet.htm>, 15 April 2005.

Commander Naval Air Forces CNAF Extranet, M422C5A Downloads, <https://extra.cnaf.navy.mil/portalmain.asp>, 25 March 2005.

Telephone interview with Flying Hour Program staff member, Commander Naval Air Forces Pacific, San Diego, CA, 01 April 2005.

Personal interview with Flying Hour Program staff member, Commander Naval Air Force Pacific, San Diego, CA, 04 February 2005.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California
3. Professor Larry R. Jones
Naval Postgraduate School
Graduate School of Business and Public Policy
Monterey, CA
4. Assistant Professor Richard L. Dawe
Naval Postgraduate School
Graduate School of Business and Public Policy
Monterey, CA
5. CNAP Force Comptroller (N01F)
NAS North Island, CA
6. CNAP Force Deputy Comptroller (N01FA)
NAS North Island, CA
7. Walter H. Glenn
8326 Wilde Lake Rd
Pensacola, FL
8. Eric E. Otten
122 El Camino Drive
Norfolk, NE