



FY 2010/2011 Operating Plan



December 2009

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Introduction

A Strategic Operating Plan and Its Desired Effects

Our FY 2010/2011 Operating Plan flows from the vision, goals, and guidance of the Chief of Naval Operations (CNO), the Commander, Naval Air Systems Command (NAVAIR), and the Naval Air Warfare Center Aircraft Division / Weapons Division (NAWCAD/WD) Strategic Plan. It outlines NAWCAD alignment with the goals and priorities of Department of Defense (DoD) and Department of the Navy (DON) leadership, the Naval Aviation Enterprise (NAE), and NAVAIR. Within NAWCAD, this document will communicate strategic direction and operating priorities. To every level, it will drive changes in behavior required to achieve lasting and positive outcomes for the Navy and our nation. For our employees, customers, and stakeholders this document provides transparency to valuable operating resources and activities, demonstrating our stewardship and how we invest in facilities and people to achieve mission objectives.

This strategic operating plan provides a blueprint for how we will operate and what we will accomplish over the next 12-to-24 months. The operating plan includes our mission statement and identifies how we will achieve our strategic priorities through specific actions. The plan identifies the business and workforce indicators that will be used to gauge organizational health. It will also serve as our framework for management decisions, provide the basis for more detailed planning throughout the organization, and stimulate annual change and strategy renewal.

Included in this document is a description of the environmental forces impacting NAWCAD now and in the years ahead. The combined effect of these forces on NAWCAD operations is expected to be profound. In response to demand for rapid acquisition and an expanded organic role as Lead Systems Integrator (LSI), NAWCAD will enhance its Rapid Prototyping (RP) capabilities, develop more advanced systems integration skill sets, and increasingly rely on the speed and cost advantages of advanced modeling and simulation, especially when used in tandem with instrumented ranges and other Research, Development, Test and Evaluation (RDT&E) facilities. Supporting processes will be lean, fast, and adaptive. NAWCAD will develop and test systems, both manned and unmanned, that are inherently interoperable in a joint warfighting environment. These internal developments will well serve our primary Naval Aviation customers, the Program Teams, and will position us to meet increasing demand for joint and inter-agency projects, especially those supporting advanced capabilities in Irregular Warfare (IW).

The purpose of the FY 2010/2011 Operating Plan is to serve as a catalyst in achieving the following desired effects:

- **An organization aligned to the goals and objectives of higher command echelons within the DON.** We will demonstrate how initiatives align with those set forth in the CNO Guidance and NAVAIR Commander's Guidance, *A Cooperative Strategy for 21st Century Seapower* (CS-21), the Navy Strategic Plan in support of Program Objective Memorandum 2012 (NSP-12), the Naval Aviation Vision 2020, the NAE Strategic Plan, the NAE Science and Technology (S&T) Objectives, the 30 Year Aircraft Procurement Plan to Congress, and the Naval District Washington (NDW) Regional Integrated Master Plan (RIMP).
- **An organization that places strategy at the center of our change and management processes.** By clearly defining the NAWCAD strategic focus,

communicating it consistently, and linking it to other drivers of change, we intend to foster a performance-based culture that connects everyone and every activity to the unique features of the strategy.

- **An organization that effectively links together strategic planning, decision-making, resource allocation, operational activities, performance assessment, and accountability in order to successfully execute our mission.** If we are to achieve synergy and true horizontal integration, our people must have shared values and we must specifically evaluate and reward them for exhibiting those values.
- **Employees with the value-added knowledge of how their work is directly tied to naval strategies, leadership priorities, and national security needs.** Through communication of common goals and priorities and essential cross-enterprise coordination we intend to gain the synergies common to all efficient and effective organizations.
- **An outcome oriented workforce focused on the paramount need for program performance excellence.** The ability to successfully perform to plan, to achieve mission objectives, and to deliver superior value to the Warfighter spans every Warfare Center activity. This plan's emphasis on strengthening our scientific and engineering foundation through specific focus areas and measures helps transform performance objectives into reality.
- **Horizontal integration in the way we operate, from strategy and operating plan formulation to program execution.** The formulation of this strategic operating plan was the result of a horizontally integrated and collaborative process with Weapons Division (WD) and National Competencies and provides a tangible endorsement of this more collaborative approach in ongoing implementation and strategic renewal.

We are excited about the strides we have made over the past year in the development of this document. The NAWCAD leadership has chosen a management approach that will develop, implement, and renew our strategy and operating plan annually. Through this interactive approach NAWCAD can offer its customers, employees, and key stakeholders confidence in the face of uncertainty and change.



D. E. GADDIS
Commander



EDWARD R. GREER
Executive Director



Who We Are

NAVAIR is a United States Navy Echelon II command, reporting to the CNO. NAVAIR is headquartered in Patuxent River, Maryland, with military and civilian personnel stationed at eight principal continental United States sites and one site overseas. NAVAIR provides unique engineering, development, testing, evaluation, in-service support, and program management capabilities to deliver airborne weapons systems that are technologically superior and readily available. Using a full-spectrum approach, the command delivers optimal capability and reliability for the Sailor and the Marine. NAVAIR is the principal provider for the NAE, but contributes to every Warfare enterprise in the interest of national security. We embrace the privilege of our responsibility to the Sailor and the Marine in partnership with industry, all Naval Aviation stakeholders, and our fellow Systems Commands. The Echelon III commands reporting to NAVAIR are NAWCAD, NAWCWD, and Commander, Fleet Readiness Centers (COMFRC). COMFRC serves as the command's center of excellence for repair and overhaul of naval aviation systems and equipment, and significant elements of in-service engineering and logistics. NAWCWD serves as the command's center of excellence for weapons, armament, and associated equipment, and weapon systems integration. NAWCAD serves as the command's center of excellence for fixed- and rotary-wing aircraft and their propulsion systems, avionics systems, training systems, take-off and landing systems, associated support and equipment including air traffic control and communications, and ship / shore / air operations. NAWCAD supports the NAVAIR mission by providing physical infrastructure, and the financial framework within which the Competencies, IPTs, and other teams operate. NAWCAD also provides institutional leadership, representing Navy and national security interests with local communities and external agencies, and manages resources (facilities, space, funds) which serve these multiple groups. NAWCAD is a preeminent technical resource for our Naval Aviation Forces, the Fleet, and the nation.

NAWCAD employs a workforce of some 13,000 civilian, military, and contractor support personnel working out of facilities and sites at Patuxent River, Maryland; Lakehurst, New Jersey; and Orlando, Florida, with a total annual business base of approximately \$4 billion. NAWCAD personnel serve on Integrated Program Teams (IPTs) and Externally Directed Teams (EDTs), providing the expertise to develop, test, acquire, and sustain critical Naval Aviation assets and fleet-wide training solutions throughout the acquisition life cycle. NAWCAD leadership is responsible and accountable for aligning all aspects of the mission and product center operations with the expectations and goals of DoD, DON, NAE, and NAVAIR. The NAWCAD command structure is depicted in Figure 1. Two Echelon IV commands report to NAWCAD: the Naval Test Wing Atlantic (NTWL) and Naval Air Warfare Center Training Systems Division (NAWCTSD). NTWL provides aircrew and aircraft assets and oversight of associated maintenance, operations, and safety. NTWL also provides facility support to conduct RDT&E of manned and unmanned fixed and rotary wing aircraft. NTWL oversees training of test pilots, test Naval Flight Officers, and flight test engineers via the United States Naval Test Pilot School (USNTPS). NAWCTSD is the Navy's principal source for a full range of innovative products and services that provide complete solutions supporting training and readiness across all warfare enterprises (aviation, surface, undersea, etc.). The command performs requirements analysis, design, development, test and evaluation (T&E), procurement, and full life cycle support focused on improving the performance of Sailors and Marines.

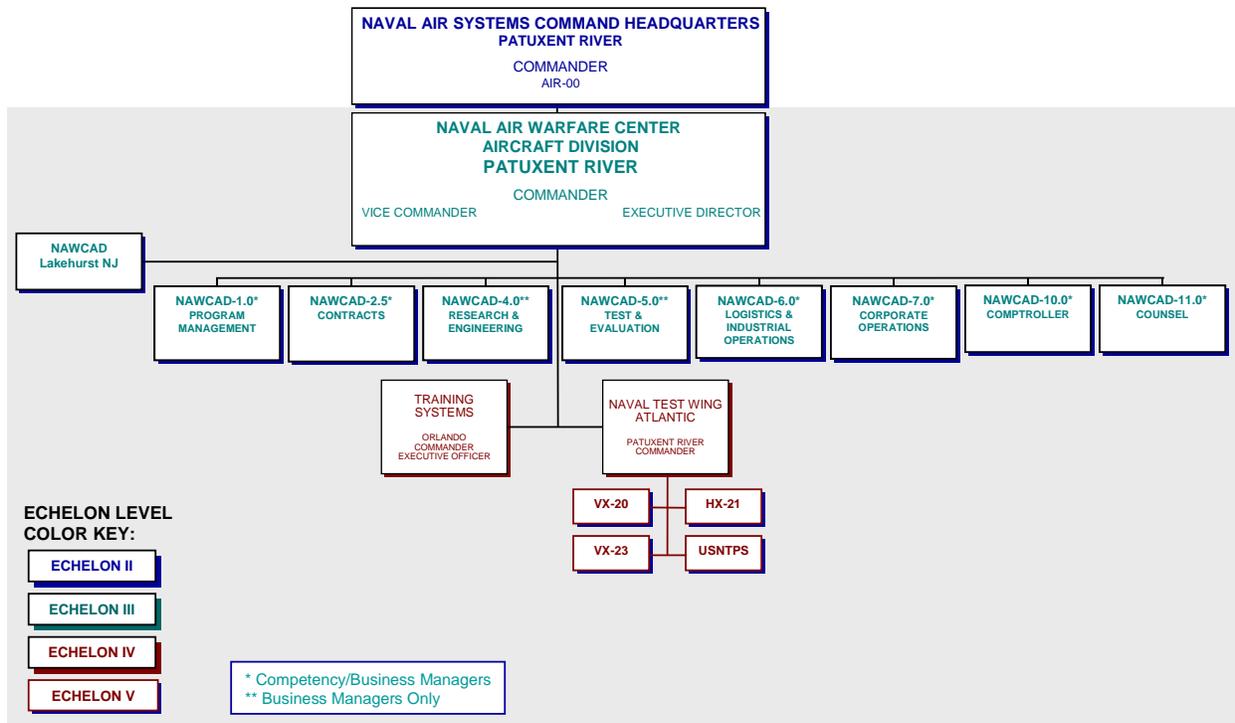


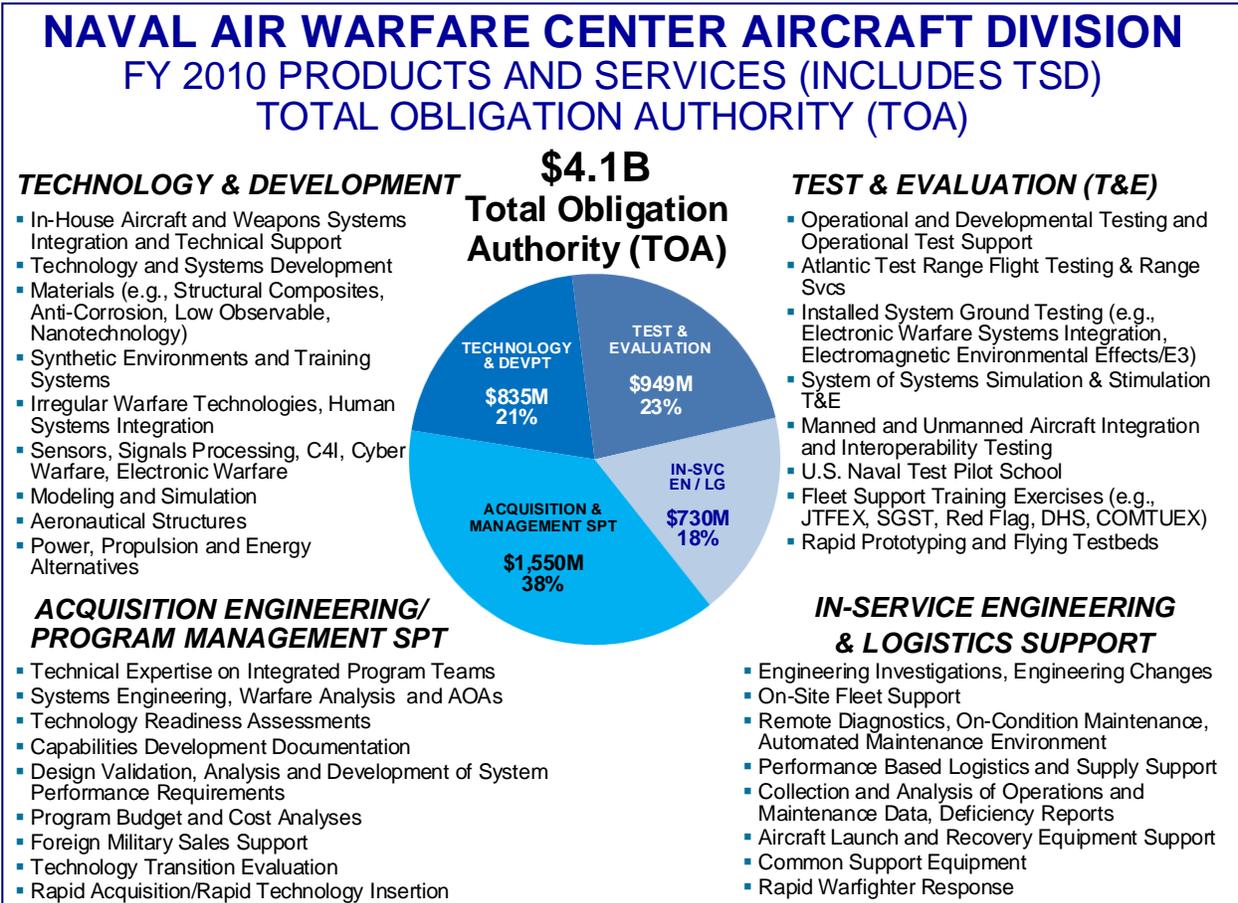
Figure 1 - NAWCAD Command Structure

Mission

The NAWCAD mission is defined in NAVAIR Instruction (NAVAIRINST) 5451.65 of 23 June 1993 as follows: *“To be the Navy’s principal research, development/test, evaluation, engineering, and fleet support activity for Naval aircraft, engines, avionics, aircraft support systems, and ship/shore/air operation. This mission includes: research and development of manned and unmanned air vehicles, air vehicle propulsion systems, including air Anti Submarine Warfare (ASW) systems, core and mission-unique avionics airborne surveillance systems, aircraft launch and recovery systems, aviation support equipment, and related functions such as aircraft modeling and analysis and aircraft active and passive signatures; systems integration of all air platform subsystems; conduct of test and evaluation for these same aircraft, propulsion, avionics, and support systems, as well as aircraft electronics warfare throughout the spectrum of the life cycle to ensure successful operational performance; maintain aircraft test and evaluation ranges; assure an effective transition to production, including manufacturing production support and pilot/emergency production, to maintain a responsive industrial base; and perform in-service engineering of aircraft, avionics, and launch/recovery systems; direct the operations of the Naval Air Warfare Center Aircraft Division and its subordinate activities.”*

Products and Services

The services that NAWCAD provides to its customers can be classified in the four sectors of T&E, Acquisition and Management Support, Technology and Development, and In-Service Engineering and Logistics Support. The dollar breakout for each of these sectors is shown in Figure 2, including associated products and services. These activities combined constitute a \$4.1 billion annual business.



NAWCAD FY2010 Budget - \$M

Site	Reimb	Dir Cite	EOB	TOTAL
Pax/Lakehurst	\$2,495	\$565	\$0	\$3,060
Orl	\$119	\$885	\$43	\$1,047
TOTAL	\$2,614	\$1,450	\$43	\$4,107

Figure 2 - FY2010 NAWCAD Service Sectors

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How We Operate

NAWCAD operations enable and enhance Leadership Team (LT) awareness, measurement, and control of Warfare Center functions. At all organizational levels, NAWCAD decisions are informed, collaborative, focused on those matters of greatest consequence to the mission, and supported by relevant communications flow. The NAWCAD LT focus is continuously oriented toward mission-related work and products that enable the Warfare Center to excel in both executing current tasking and in anticipating and meeting future needs.

National Competency Aligned Organization/Integrated Program Team (CAO/IPT) Concept of Operations (CONOPS)

NAWCAD is a command within the larger NAVAIR and is fully aligned with the CAO/IPT CONOPS, providing Program Teams with specific National Competency-aligned skills and expertise to produce intermediate and end item products. This CAO/IPT model has been adopted as a standard throughout the Navy's Systems Commands and PEOs. As a NAVAIR command within this CAO/IPT construct, NAWCAD operates collaboratively to provide permeable, horizontal access to Competency capabilities at all its sites. Together, the CAO/IPT and NAWCAD operate interdependently and with shared commitment to program success. National Competencies provide the workforce management needed to sustain the technical and business expertise in support of the PMAs/IPTs and other customers. Competencies function across multiple business units/sites, making overall command operations more seamless and geographically transparent. Competencies through common policies, work processes, and standards, effectively leverage the strengths of the total workforce. Essential to the CAO/IPT CONOPS are certain operating principles that guide each of us at NAWCAD in the way we carry out our responsibilities. These principles include transparency in operations and information flow throughout the command, respect for the opinions and expertise of others, accessible and engaged Competency expertise, open discussion to achieve mutual understanding, and collaborative decision making where the interests of multiple entities are at stake. The CAO/IPT CONOPS model used throughout NAVAIR provides the discipline and flexibility to address the full range of systems, acquisition, and in-service requirements.

Navy Working Capital Fund (NWCF) Activity

NAWCAD also operates as a NWCF activity within the Research and Development (R&D) activity group. The NWCF is a revolving fund which finances DON activities that provide products and services on a reimbursable basis, primarily to other government entities. The revolving fund structure creates a customer-provider, demand-supply relationship between operating units and support organizations. NAWCAD's primary customer group is NAVAIR, representing between 65% and 70% of the customer base and consisting of Program Teams (PMAs) and National Competency "Air Codes." As a NWCF activity, NAWCAD uses full cost recovery accounting, meaning all operating costs are recovered through rates charged to customers. After customers receive annual appropriations, funded orders are sent to NAWCAD to furnish the services or products, pay for incurred expenses, and bill the customers who in turn authorize payment. Unlike profit oriented commercial businesses, WCF activities strive to break even in prices charged to customers. NAWCAD must continuously monitor indirect or "overhead" expenses and resist upward pressures on the overhead budget to meet its responsibility to operate efficiently and to keep total costs to the Navy and other customers at affordable levels. The Commander, NAWCAD has fiduciary responsibility to comply with the provisions of Title 31, U.S. Code, Sections 1517 and 1341 regarding the obligation and expenditure of NAWCAD funds.

Management Construct

The chart below, Figure 3, represents NAWCAD leadership and management construct, to include the LT and supporting teams. As depicted, NAWCAD remains an integral part of the NAVAIR CAO/IPT construct, providing Program Teams and supporting Competencies with cost-effective and operationally productive work environments. As a distinct command and NWCF business entity, NAWCAD receives demand signals from Program Teams and external customers and relies on National Competencies for overarching processes, leadership in competency development, and ultimate technical authority. The NAWCAD LT is responsible for executing the NAWCAD mission and developing the NAWCAD Operating Plan. The LT relies on the Strategic Awareness Team as its strategic arm to anticipate the future and enable the organization to better adapt to strategic uncertainties. Reporting to the LT are the Resource Team, responsible for management of the investment and overhead budgets and other business and financial matters; the Workforce Team, for workforce strategy, human resources management practices, and workforce health and diversity; and the Operational Awareness Team, for awareness of major programmatic activities and facilities usage at the Warfare Center.

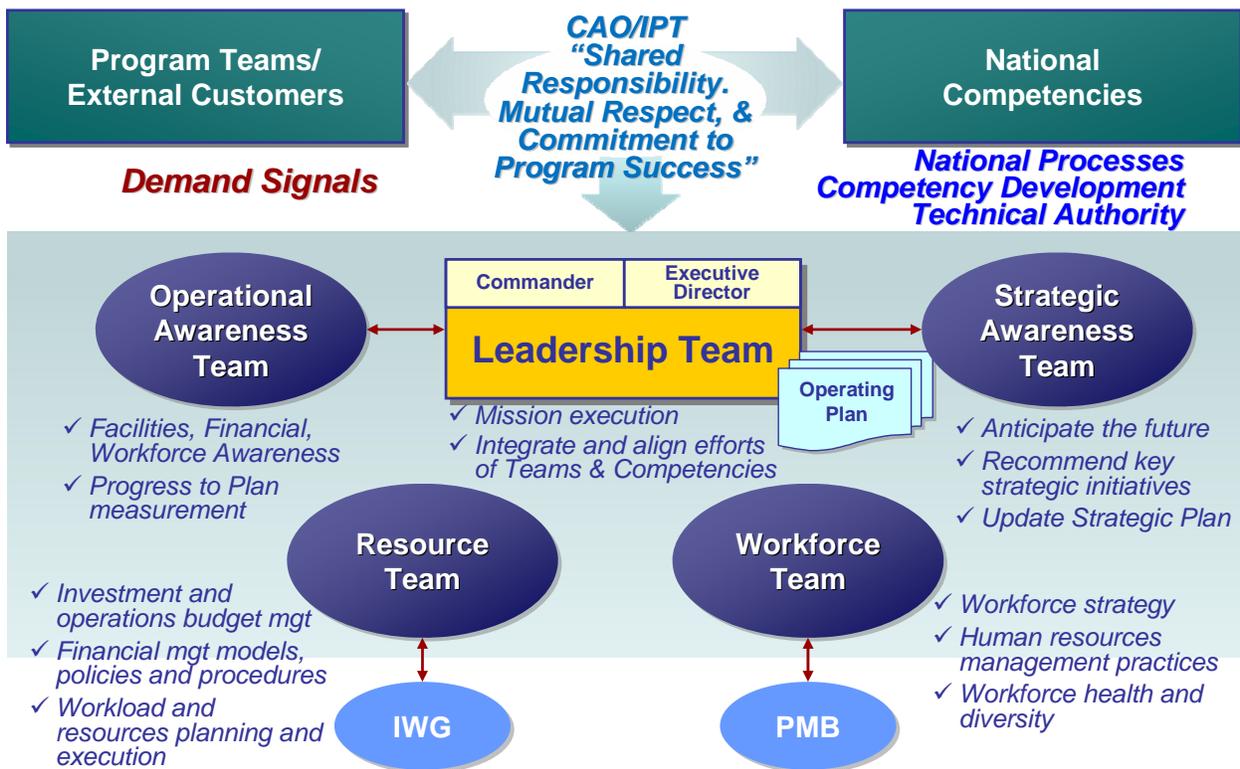


Figure 3 - NAWCAD Management Structure

Horizontal Integration

As described in the NAVAIR Commander's Guidance, the concept of horizontal integration has both organizational and operational connotations. Organizationally, it refers to working collaboratively with industry and across Competencies, Services, sites, and all the Systems Commands and Warfare Centers. Operationally, it refers to the extraction of latent capabilities from systems already in existence and leveraging those capabilities to avoid redundant solutions to warfighting gaps. Horizontal integration is the bridge between Programs of Record (POR) and warfighting effects. As such, NAWCAD actively employs the concept of horizontal integration and expects individuals, competencies, and teams to operate in a horizontally integrated fashion. Focus is centered on coordinating efforts so that platforms, weapons, and sensors work in harmony to create Warfighter-driven effects. NAWCAD pro-actively collaborates with Naval Aviation stakeholders in support of processes to stabilize investment strategies and products with the highest degree of integrated warfighting capability and interoperability. The NAWCAD Operating Plan implements the combined NAWCAD/WD Strategic Plan and was formulated through a collaborative, NAWCAD/WD effort involving WD participation. Where the potential for synergism and greater leveraging of NAE resources exists, NAWCAD will continue to collaborate with WD and National Competency leadership to ensure the needs of the NAE and other NAWCAD/WD customers are met in the most efficient, responsive, and cost-effective manner. Significantly, all FY2010 planned accomplishments in interoperability and other focus areas of this operating plan were the result of offsite planning conferences and numerous other meetings by teams represented by senior managers from AD, WD, and the National Competencies. Execution will also occur through this collaborative and horizontally-integrated approach.

Joint Role

NAWCAD is an integral part of NAVAIR, NAE, and the DON. Likewise, naval forces are integral to interagency, joint and coalition operations pursuant to U.S. national security goals. The maritime strategy, CS-21, specifies as an objective in response to increased demand from the COCOMS for mission-tailored force packages: "Improve Integration and Interoperability." The CNO Guidance for 2010, "*Executing the Maritime Strategy*," states that, "we will leverage Joint Force capabilities and capacities to minimize duplicative or overlapping efforts." Likewise, the majority of Key Success Factors (KSFs) listed in NSP-12 are in the area of Partnership and emphasize the criticality of interagency, joint, and international collaboration and information sharing. The above guidance, in conjunction with DoD Major Range and Test Facility Base (MRTFB) policy and other legal and regulatory guidance, requires that NAWCAD plan and operate with a multi-service joint perspective. In performance of mission tasking, NAWCAD serves not only the Navy and Naval Aviation, but valued NWCF customers from the other Military Services and joint commands; federal, state, and local agencies; and foreign governments. This joint, interagency, and international approach to workload performance benefits both Navy POR and all other NAWCAD customers. Independent studies have shown that the Navy benefits economically and qualitatively when NAWCAD fully utilizes fixed assets and recovers associated indirect costs over a larger customer base, to include non-Navy and non-POR workload. NAWCAD will continue to execute mission tasking and realize the economic and performance benefits of joint, interagency, and international partnerships, with primary focus on integrated and interoperable solutions for Naval Aviation.

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Operating Environment

An environmental assessment, or snapshot in time of influencing forces, is critical to understanding the context for the NAWCAD FY2010/2011 Operating Plan. This summary assessment is provided to help place planned NAWCAD accomplishments, addressed later in the operating plan, into their broader context. Environmental assessment and strategic adjustment should be viewed as an ongoing process which NAWCAD has institutionalized through its Strategic Awareness Team, discussed above in "How We Operate." As an example of the need for ongoing monitoring and strategic adjustment to environmental forces, the CNO's Naval Operations Concept (NOC) will soon be released and should be factored into concepts of operations and activity prioritization, as appropriate. The U.S. Navy's strategic vision is to remain the preeminent maritime power, providing our country a global naval expeditionary force committed to security and prosperity, defending both our homeland and our nation's vital interests around the world. This vision underlies the imperatives and core capabilities of CS-21 and the initiatives and missions of the NOC.

Forces that shape NAWCAD are presented below in the categories of Political, Economic (financial), Technological, Workforce Expertise, and Customer. Emerging as preeminent among these forces are: 1) the requirement that DoD RDT&E centers take on LSI responsibilities in the development, acquisition and support of DoD weapons systems; 2) the growing cost of fossil fuel and the rising demand for alternative energy sources; 3) evolving partnership organizations and the need for organizational structures that are highly adaptive and agile; 4) the proliferation of unmanned systems in the battlespace; 5) the demand for Rapid Warfighter Response, to include RP; and 6) increasing budgetary and cost pressures.

Political

In his address at the Naval War College in April of 2009, Secretary of Defense (SECDEF) Robert Gates articulated the objective to "rebalance the department's programs in order to institutionalize and enhance our capabilities to fight the wars we are in and the scenarios we are most likely to face in the years ahead."¹ This theme of rebalancing from an over-emphasis on planning for large scale conventional warfare against nation states to winning today's conflicts is complemented by the notion of building in the flexibility to cost-effectively respond to a range of potential scenarios. Beyond the major programmatic decisions reflected in the President's FY 2010 Budget Request, the Secretary has the opportunity to further implement his vision of devoting greater focus and balance on winning today's conflicts and building in the flexibility to respond to a range of potential future scenarios through the FY2010 Quadrennial Defense Review (QDR) process, now underway.

The newly-evolving DoD strategy supports a scenario of continuous warfare against ideological and political adversaries in all domains of activity, to include cyberspace and economics. This new concept of warfare requires closer collaboration between military and civil agencies within the U.S. and with other states internationally. The result of this military strategy should be the increased use of Special Forces and smaller combat units in military operations of high strategic importance and the development of military competencies and weapons that involve non-physical/non-kinetic means to achieve national security objectives, to include

¹ U.S. Department of Defense, Office of the Assistant Secretary of Defense. (2009, April 17). Remarks by Secretary of Defense Robert Gates at the Naval War College, Newport, Rhode Island [Speech]. Retrieved from <http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=4405>.

expertise in competing ideologies, state-building, and other roles not traditionally associated with the military.

Accordingly, NAWCAD could realize increased demands for its aviation, Command, Control, Communications, Computers, Intelligence (C4I), human systems integration, and other products and services from non-traditional customers, such as U.S. Special Operations Command (SOCOM) and other Combatant Commands (COCOMS), Department of Homeland Security (DHS), Department of Energy (DOE), and National Geospatial Agency (NGA). Projects/programs funded by and performed for these customers may be expected to be shorter in duration, less in total cost, and require expertise in RP, systems integration in a lead capacity, unconventional/virtual testing mechanisms, alternative forms of communication, use of tactical unmanned systems, and smaller precision and non-kinetic “kill” weapons. The political influences associated with the QDR, DoD Acquisition Policy, IW, and recent CNO guidance is addressed below.

QDR

The QDR, which is conducted every four years, is one of the principal means by which the tenets of the National Defense Strategy are translated into potential new policies, capabilities and initiatives. The purpose of the QDR is to assess the threats and challenges that the nation faces, as well as to balance the department’s strategies, capabilities, and forces to address today’s conflicts and tomorrow’s threats. Specific areas of emphasis in the 2010 QDR include further institutionalizing IW and civil support capabilities and capacities abroad (including partnership capacity), addressing threats posed from the use of advanced technology and Weapons of Mass Destruction (WMD), Global Force Posture, strengthening DoD support to civilian-led operations and activities, and more efficient and effective internal business processes.² The QDR process embraces a “whole of government” approach. As such, DoD will consult with other U.S. Government departments and agencies and appropriate Congressional committees. The QDR will be informed by similar reviews being conducted by the DHS (Quadrennial Homeland Security Review), the Director of National Intelligence (Quadrennial Intelligence Community Review), and incorporate guidance from relevant National Security Council (NSC) reviews. The QDR will be led by the Office of the Secretary of Defense (OSD) and Joint Staff. OSD and Joint Staff leadership will work closely with representatives from the Military Services and COCOMS and across OSD components. COCOMS and Service Chiefs will engage often in helping to shape issues and frame decisions for the review. The QDR is planned for submission to Congress concurrent with the President’s FY2011 Budget Request in early February 2010.

DoD Acquisition Policy

Dr. Ashton B. Carter is the current Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)). In a memo of 12 May 2009, Carter outlined steps the Pentagon is taking to reform the procurement enterprise, including adding 30,000 personnel to the acquisition workforce between FYs 2010 and 2015 and creating a new “mandatory process entry point” called the “Material Development Decision Milestone” to ensure programs are based on approved requirements and “a rigorous assessment of alternatives.” DoD acquisition policy revisions are also being guided by the Weapons Systems Acquisition Reform Act of 2009. Among the provisions of this legislation is a greater emphasis on independent cost estimates through the replacement of the Program Evaluation and Analysis (PE&A) directorate

² U.S. Department of Defense. (2009, April 27). 2010 QDR terms of reference fact sheet. Retrieved from <http://www.defenselink.mil/news/d20090429qdr.pdf>.

with the Cost Assessment and Program Evaluation (CAPE) office. This legislation requires that a program be either terminated or frozen for restructuring if it exceeds 25% of its baseline cost and competitive prototyping before Milestone B approval.

IW

Recognizing the growing strategic importance of IW, effective July 1, 2008 the CNO established the Navy IW Office (NIWO) under Deputy CNO for Information, Plans, and Strategy (N3/N5). The NIWO is responsible for institutionalizing previously ad hoc efforts in the IW missions of Counter-Terrorism (CT) and Counter-Insurgency (COIN) and supporting the missions of Information Operations, Intelligence Operations, Foreign Internal Defense, and Unconventional Warfare as they apply to counterterrorism and COIN. The NIWO focus will be to: a) establish relationships that enable the Navy to optimize support to COCOM IW needs; b) enable Rapid Response (RR) and adaptation of capabilities to fulfill urgent COCOM IW requirements; and c) instill IW as an integral part of Navy strategic planning, analysis, and future capability and concept development.

Office of the Chief of Naval Operations (OPNAV) Reorganization

The CNO, Admiral Roughead, directed significant reorganizations, effective October 1, 2009, that included stand-up of an Information Dominance Directorate (N2/N6), a Naval Warfare Integration Group (N00X), and a Fleet Cyber Command/TENTHFLT. Of special interest to Naval Aviation is the realignment of resource sponsor responsibilities for a number of aircraft programs from N88 to N2/N6. This realignment includes all "E" type aircraft and Unmanned Air Systems (UAS). As stated in the CNO Guidance for 2010, this realignment is intended to achieve the integration and innovation needed for warfighting dominance across the full spectrum of maritime, cyberspace, and information domains. It also provides for a more holistic approach to unmanned systems by developing strategy to guide the architecture, requirements, and procurement plans for these operational necessities. NAWCAD must similarly align its support of associated Naval Aviation programs and infrastructure investments with this newly vested responsibility for strategy and resources. While this reorganization is expected to produce net positive effects for naval capabilities development, the realignments also create organizational "seams" that require close monitoring and coordination between resource sponsors to keep programs whole, as has been necessary in the past between N4 and N88.

CNO Guidance for 2010

In September 2009, U.S. Navy Admiral Roughead issued the CNO Guidance for 2010 in which he emphasized the Navy's active engagement and performance of the CS-21's six core capabilities: forward presence, deterrence, sea control, power projection, maritime security, and humanitarian assistance and disaster response. CNO placed specific emphasis on three focus areas that need to be improved for the coming year: building the future force, maintaining our warfighting readiness, and developing and supporting our sailors, Navy civilians, and their families. The CNO Guidance also establishes Task Force Energy (TFE) and Task Force Climate Change to recommend actions and investments the Navy should take to address emerging operational concerns related to energy and climate change.

NSP-12

According to the CNO's foreword, NSP-12 represents a major step forward in efforts to implement the maritime strategy, CS-21. It addresses the Navy's fundamental objectives of preventing and winning wars and guides planners, resource sponsors, and programmers in their internal development processes for POM-12. NSP-12 identifies three relatively certain trends and seventeen uncertainties expected to have a major influence on the future. The three trends are: 1) the world will become even more dependent on cyberspace networks, 2)

worldwide energy demand will continue to increase (thus increasing the importance of energy security and efficiency), and 3) American military power will decline in relative power as other militaries gain power. Key uncertainties include the location of innovation (will it be U.S. based?), resource rivalry (how will stakeholders respond to an environment of limited resources?), U.S. Navy access (global choke points, sea lanes, port visits), distribution and penetration of technology, and alternative energy/energy storage breakthroughs (will they occur?). From NSP-12's Alternative Futures Planning Process, KSFs were identified and classified into the broad categories of *Partnership KSFs*, *Technology KSFs*, and *Acquisition KSFs*. Partnership KSFs center around interagency, international, and private/public collaboration, communication, and sharing of information, knowledge, and intelligence. It also includes an emphasis on Language, Regional Expertise, and Cultural awareness (LREC) and Security Force Assistance (SFA). Technology KSFs are related to cyberspace/C4I, energy, autonomous systems and processes, and technology portfolio management. Acquisition KSFs focus on the agility of supply/capacity and flexible manpower management, with emphasis on *Human Systems Engineering*.

Economic

The DoD budget, which plays an everyday role in the “economic” environment of NAWCAD, is less likely to be affected by the state of the economy as by a shift in national security strategy. The DoD top line, however, which has seen steady real growth since 2001, is expected to level out at around the 2010 level or see a slight decline going forward in real terms. Language by the current administration has used the term “zero sum” to describe its approach to funding new DoD initiatives and programs.³

As a consequence of increased economic pressures, NAWCAD may see an increase in demand for Total Ownership Cost (TOC) analysis, aircraft modifications associated with increased reliability and technology insertion to extend useful life, potential acceleration of lower cost UAS platform acquisition programs, R&D associated with lower cost energy solutions, and more cost-effective organizational forms able to perform well with substantially lower levels of manpower.

Funding levels for NAWCAD's primary customer, NAVAIR and associated Program Teams, shows a steady rise across the Future Years Defense Program (FYDP), as shown in the President's FY2010 Budget Request, Figure 4. Most of the rise is driven by the Aircraft Procurement, Navy (APN) account, funding major acquisition programs such as the F-35/Joint Strike Fighter (JSF), the P-8A, the E-2D and the UH-1Y/AH-1Z, which are transitioning from RDT&E to full rate production in the FYDP. The APN account also reflects continued robust funding for V-22 and MH-60R. As a result of large acquisition programs transitioning from RDT&E to production, overall RDT&E levels are declining. Operation and Maintenance (O&M) accounts remain relatively level or rise slightly throughout the FYDP.

³ U.S. Department of Defense, Office of the Assistant Secretary of Defense. (2009, July 16). Economic Club of Chicago as delivered by Secretary of Defense Robert M. Gates, Chicago, IL (Speech). Retrieved from <http://www.defenselink.mil/speeches/speech.aspx?speechid=1369>; Rogers, D. & DiMascio, J., Obama agenda gets a lift with F-22 win. POLITICO. Retrieved from <http://dyn.politico.com/printstory.cfm?uuid=9FF0E248-18FE-70B2-A8D9DD53888CC08F>.

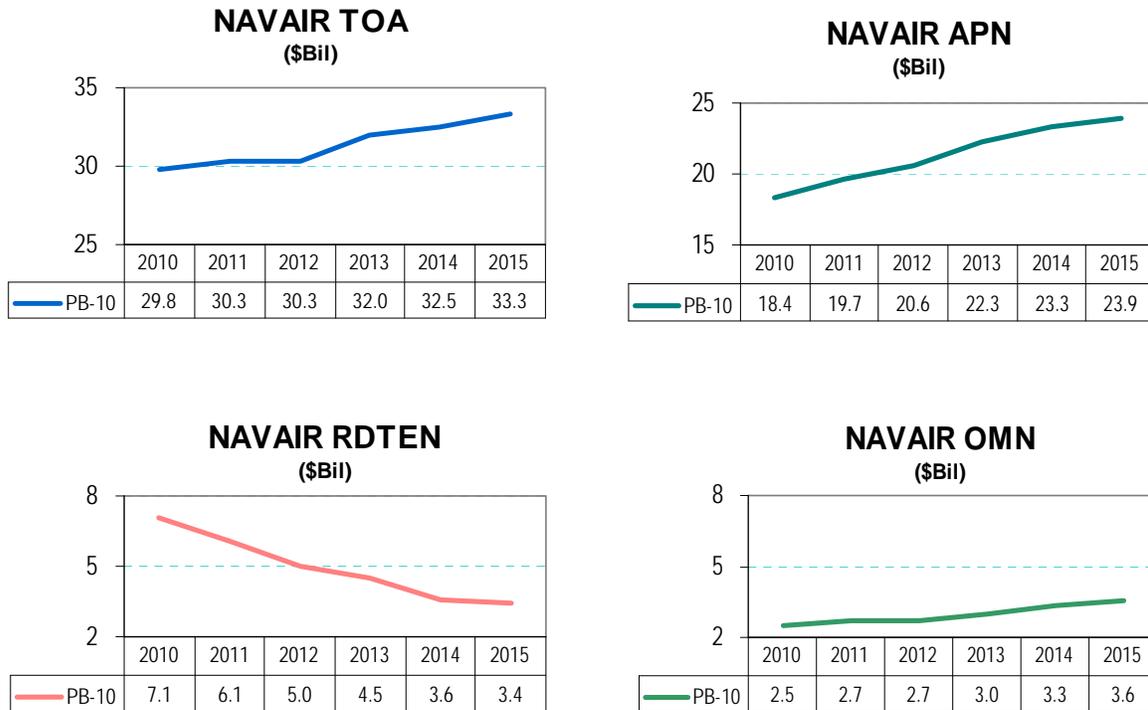


Figure 4 - FY2010 NAVAIR President's Budget Trends

Technological

There has been a growing national recognition that Science, Technology, Engineering, and Mathematics (STEM) education from elementary to graduate levels must be improved and our national laboratories must be revitalized. These technological forces introduce the potential for more robust R&D activities at NAWCAD and across the Warfare Centers. The associated projects related to basic research, applied research, advanced technology development, and advanced component development/prototyping promise to attract and to develop internally the type of scientific and engineering expertise so crucial to NAWCAD long-term success and U.S. national security. Technologies that promise breakthroughs of major proportion that could also promote the attainment of national security objectives include nanotechnology, advanced energetics, electro-magnetics, composite structures, bioengineering, behavioral models, and others. Technological influences associated with disruptive technologies and S&T programs are discussed below.

Disruptive Technologies

Disruptive technologies can emerge and eventually dominate an industry when the main stream technologies in that industry provide solutions to customers that cost more and perform at higher levels than are often required. The disruptive technology tends to be cheaper, more portable/mobile, more modular, and less capable than the technologies it eventually replaces. UASs represent a disruptive technology. Relatively low cost and convenient UASs and associated *modular* payloads – sensors, processors, transceivers/links, and weapons – are highly desired by Warfighters for their situational awareness and time sensitive targeting capabilities. Many of these technologies are already developed but, repackaged into autonomous systems, have the potential to disrupt traditional warfighting methods with greater simplicity/tactical agility and less cost than more sophisticated, fully integrated manned aircraft

systems. Technologies related to automated/remote equipment condition and logistics monitoring and tracking are also in demand.

S&T Programs

The current administration has stated its intent to boost R&D to more than 3% of Gross Domestic Product (GDP), more than any point in recent history. At an October 7, 2009 National Medal of Science and National Medal of Technology and Innovation awards ceremony at the White House, the President stated, "Science is more essential for our prosperity, our security, and our health, and our way of life than it has ever been."⁴ The Recovery Act stimulus plan earmarked \$2.5 billion for R&D. Funding allocated in the FY2010 President's budget for basic research, construction and renovation of government laboratories, and high-risk/high-pay off research exceeded FY2009 levels, with the Defense Advanced Research Projects Agency (DARPA) increasing by 4%. Of major impact to S&T in DoD is Section 219 of the FY2009 National Defense Authorization Act (NDAA). This legislation provides a significant boost to DoD and Navy S&T efforts in three basic areas: 1) innovative basic and applied research in support of military missions, 2) development programs to transition technologies developed by the defense laboratory into operational use, and 3) efforts to improve the capacity of the defense laboratory to recruit and retain personnel with needed scientific and engineering expertise. Secretary of the Navy (SECNAV) Mabus is committed to implementing Section 219 within DON Laboratories, which includes NAWCAD. CNO's S&T priorities as stated in his FY 2010 Guidance include advances in human performance and protection, TOC reduction, autonomy, power and energy, high transition rates, improved collaboration across the Naval Research Enterprise, increased investment in basic science and scientific discovery, and support of STEM education and outreach.

Workforce Expertise

There is a general perception across the DoD, in Congress, in academia, and in industry that DoD laboratories need to be more effective sources of innovation, invention, and creativity. These labs by their nature will support long-term research in high risk programs that industry would not undertake. The 2010 NDAA Conference Report (H.R. 111-288) notes a recent report from independent research group JASON stating that important aspects of the DoD basic research program are "broken" and that "throwing more money at the problem will not fix them." According to the Conference Report, the JASON report observed that "civilian career paths in the DoD research labs and program management are not competitive to other opportunities in attracting outstanding young scientists and retaining the best people."⁵ A shortage in talent is one of five root causes of cost overruns and schedule delays in Major Defense Acquisition Programs (MDAPs), according to a 2008 study published by Deloitte Consulting LLP, *Can we afford our own future? Why Aerospace and Defense (A&D) programs are late and over-budget - and what can be done to fix the problem.*⁶ In comparing degrees in the sciences and engineering fields in the United States to Europe and Asia, using data from

⁴ American Institute of Physics, Media and Government Relations Division (2009, October 9). The White House as delivered by the President of the United States Barack Obama, Washington, D.C. (Speech). Retrieved from <http://www.aip.org/fyi/2009/121.html>.

⁵ United States Congress. (2009, October 8). National Defense Authorization Act for Fiscal Year 2010: Conference report to accompany H.R. 2647 (Report 111-288). Retrieved from http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_reports&docid=f:hr288.111.pdf via GPO access. (694-695).

⁶ Deloitte Consulting, LLP. (2008). *Can we afford our own future? Why Aerospace and Defense (A&D) programs are late and over-budget – and what can be done to fix the problem..* Retrieved from: [http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/us_ad_project%20management%20report-pov\(1\).pdf](http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/us_ad_project%20management%20report-pov(1).pdf).

the National Science Board, the study shows degrees in Europe exceeding those in the United States by some 50% and Asia levels at more than double the U.S. level, with the gap growing. Additionally, according to the September 30, 2009 edition of *The Herman Trend Alert*, entitled "US Brain Drain,"⁷ of those graduate science students studying in the U.S., more than 50 percent are foreign-born - and an increasing portion are returning to their country of origin rather than remaining in the U.S. In the case of those entering the U.S. workforce, the Deloitte study cites a 2007 survey of Massachusetts Institute of Technology (MIT) undergraduates showing relatively few drawn to the A&D industry: 28.7 percent go into finance, 13.7 percent into management consulting, and just 7.5 percent into A&D. The Deloitte study goes on to cite the talent shortage in systems engineering as particularly acute, contributing to widespread quality and budget problems. These national trends have also impacted NAWCAD in certain areas of scientific and technical expertise over the past several years. The results of these and similar shortcomings in A&D scientific and engineering expertise, according to the Deloitte study, are programmatic cost overruns and schedule delays. Unless reversed, these trends point toward an undermining of U.S. invention and innovation capabilities, technical leadership, and national security. NAWCAD's approach in addressing these environmental forces is discussed in the Workforce section of this operating plan.

Customer

With seven of every ten dollars of NAWCAD new orders coming from NAVAIR, and the vast majority of that being from PMAs, the primary NAWCAD customer is, and will continue to be, the Naval Aviation Program Teams. Our customers will manage programs to ever-higher standards of cost and schedule performance, which will require NAWCAD Total Force and RDT&E assets to facilitate their success. This means improved project management techniques and early in-depth expertise on key technical risks and mitigation strategies. Also required are enhanced capabilities in independent cost and schedule estimation and awareness of and access to NAWCAD infrastructure, including expanded lab and range Modeling Simulation and Analysis (MS&A) and RP capabilities, designed to drive out technical risk and improve program performance. The nature of NAWCAD work for these customers will require the Warfare Center to assume a greater role as LSI, performing systems integration functions in-house as in-service platforms are extended and both cost and political pressures drive the RDT&E centers toward this role.

⁷ The Herman Group, Inc. (2009, September 30). The Brain Drain. Retrieved from http://www.hermangroup.com/alert/archive_9-30-2009.html.

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What We Will Accomplish

Our operational priorities for FY2010 align NAWCAD's mission with its operating environment. The resulting six focus areas represent the change that must occur within the Warfare Center to align requirements with resources and acquisition processes and meet the CNO's priorities of: 1) maintaining warfighting readiness, 2) developing and supporting our workforce, and 3) building for the future. Primary focus areas for NAWCAD in the coming year are:

- **Strategic Awareness**
- **Irregular Warfare**
- **Rapid Prototyping**
- **Unmanned Air Systems**
- **Interoperability**
- **Increasing Execution Efficiency**

NAWCAD remains committed to developing and strengthening warfighting capabilities in other areas as well. The following are additional FY2010 operational priorities:

- **Naval Aviation Center for Rotorcraft Advancement**
- **U.S. Navy and Marine Corps Airworthiness Office**
- **Energy Alternatives and Efficiencies**
- **Improved Program Performance (PPT)**

NAWCAD's action plan in each of these six primary focus areas and four additional operational priorities are addressed below.

Strategic Awareness

The overarching function of the Strategic Awareness Team is to maintain cognizance of the forces that are likely to have an impact on NAWCAD operations in the decades ahead. This task is a continuing evolution that will develop significant inputs to the operating plan at any time. The vast majority of the forces can be characterized as political, economic, technological, and workforce (social), but other factors may also be involved. Generally, there will be two Strategic Awareness Team functions: 1) the development of a portfolio of influential factors that are substantially relevant to shaping NAWCAD and 2) the organization and support of special analysis teams, or Working Groups (WGs), that will target the influential factors deemed most critical.

Vision

The ad hoc Strategic Awareness Team formed in August 2009 has produced a list of critical influence factors that will be elemental to the long-range plans of NAWCAD. The compendium of critical influence factors relevant to NAWCAD will not remain static. The value of the Strategic Awareness Team will only be as good as its mechanisms for staying connected to those elements of our environment that will drive change. Sometimes simply identifying such elements is a challenge. Thus the composition of the Strategic Awareness Team will be diverse and its modus operandi will be to facilitate communication. A listing of critical NAWCAD influence factors has been subjected to a variety of ranking and affinity processes with the factors shown below emerging as the highest ranking areas for future focus:

- **Future Government LSI Responsibilities.** The government will assume an expanded role as LSI in new systems development and sustainment. This trend within the AD may be expected to most immediately manifest itself in the form of increased emphasis on “micro” programs, UAS, and upgrades to larger manned aircraft systems. Performing the LSI role will necessitate reliance on, and development of, more sophisticated capabilities in RP, systems engineering, rapid acquisition, modeling and simulation, and organizational adaptation. Meeting the LSI challenge requires an in-depth knowledge of both the component technologies related to air combat systems and the operational environment of such systems, as well as the highest order of practical engineering experience.
- **Increasing Cost/Decreasing Availability of Energy.** There will be a growing demand for alternative energy technologies. The demand is being driven by the increasing costs of traditional fuels and the demand to reduce the logistical support costs of sustaining global operations. Breakthroughs may be expected in the area of nanotechnology as a result of the tremendous scientific investment. As another way to reduce fleet energy costs, training requirements will be increasingly met through simulation technologies. Energy and energetic technology gains in weapons propulsion and warhead kill efficiency will lead to smaller and more powerful kinetic and non-kinetic weapons.
- **A Need for Multiple Organizational Formats.** Evolving research in organizational forms and the changing nature of NAWCAD work will require more situational and adaptive organizational models. These organizational forms will evolve beyond current communities of interest, cross functional teams, and integrated products teams to potentially be fast-evolving, fast-learning organizations enabled through inexpensive and accessible social networking technologies. A more intense interaction, both formally and informally, with other Services and Departments is likely .
- **Intensified UAS Focus.** Demand for unmanned systems by Warfighters remains very high, with expectations to accelerate UAS PORs and to make greater use of organic LSI capabilities and rapid acquisition methods. There is great pressure to more fully integrate UAS into military operations from a Tactics, Techniques and Procedures (TTP) standpoint and in terms of interoperability. UAS interoperability is needed with other manned and unmanned aircraft as well as with sea-based and ground-based command and control elements. The development of UAS capabilities and interoperability is by its nature a joint challenge, requiring joint RDT&E capabilities. SECNAV has declared his intent for DON to be the lead Military Department in unmanned systems development and acquisition. The CNO, as part of his realignment of resource sponsors, is putting greater emphasis on the role of UASs as Intelligence, Surveillance and Reconnaissance (ISR) platforms. The DHS could become a significant NAWCAD customer for UAS-related products and services.
- **Programmatic Cost Pressures.** Cost pressures on the discretionary government budget accounts and throughout the DoD can be expected to increase in the coming years. These cost pressures will lend additional impetus to increased reliance on cheaper, less capable, but “good enough” weapon systems, including UAS. Achieving stated Navy leadership shipbuilding objectives will further increase pressures on the APN accounts. These cost pressures and associated policies will increase the need for legacy air platform upgrades and service life extension programs and promote increased reliance on in-house product development and sustainment solutions. This environmental force of increasing cost pressure is closely coupled with the “energy” factor, discussed above, as the cost and availability of fuel may ultimately dominate

combat commodity procurements from a life cycle cost perspective. The cost pressure force also synergizes with the “Rapid Response Emphasis” force addressed below in the sense of bringing added impetus to rapid, lower cost internal prototyping.

- **Rapid Response Emphasis.** The fast rate of technological development within the commercial sector, particularly within the areas of telecommunications, computers, sensors, imaging and associated applications, as well as highly innovative and adaptive enemy TTP, enable adversaries to gain asymmetric advantage at low cost in many conflict scenarios. Effectively defeating an enemy in this environment requires U.S. and allied capabilities equally adaptive and able to exploit U.S. technological superiority. This situation demands rapid response by the DoD RDT&E infrastructure to immediate warfighting needs.

Near-Term Objectives/Execution Plan

WGs will be formed to facilitate developing specific action plans to guide NAWCAD leadership in the direction and apportionment of institutional resources. Each WG will have at least some members who are also part of the Strategic Awareness Team to ensure coordination of related enterprise-wide activities.

Irregular Warfare (IW)

SECDEF's Guidance for Development of the Force (GDF)⁸ specifically directs SECNAV to provide IW platforms to accomplish the IW mission with Light Strike and nontraditional platforms for logistics and other support that will require NAWCAD resources and expertise to develop, integrate, test and field in rapid fashion. IW has been a top Congressional and Administration priority, resulting in Congressionally-mandated Service IW Offices in FY2009. The newly-established NIWO in N3/N5 is focused on rapidly improved Navy contributions to the IW missions of counterterrorism and COIN and the supporting missions of Information Operations, Intelligence Operations, Foreign Internal Defense, and Unconventional Warfare as they apply to counterterrorism and COIN. Imminent Fury and SeaStalker are two examples of NAWCAD rapid reaction projects sponsored by NIWO and USD (AT&L) that have been developed within a year's timeframe.

Recently, the Science Advisor for SOCOM has identified the need to establish a web based capability that will allow the Warfighter to directly enter requirements from the theater of operations to labs for analysis and quick delivery of products in theater. NAVAIR is ideally situated to respond to IW requirements, since existing expertise resides in airborne, seaborne, expeditionary and shore-based systems as well as the crucial Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) connectivity that no other Naval Systems Command can provide in as holistic a manner.

Vision

There is an opportunity for the NAWCAD/WD to play a prominent and vital role in Navy and DoD response to irregular challenges. *Specifically, we offer the ability to rapidly develop, test, and adapt non-traditional platforms (manned and unmanned) to a highly-integrated and interoperable C4I construct – using a holistic model that spans air, ground, sea, and space domains.* This high value-added role will be enabled through robust partnerships with other Warfare Centers and government agencies; industry; OPNAV and OSD sponsors, including the N3/5 NIWO, USD (AT&L)'s Rapid Reaction Transition Office (RRTO), and the Office of the Assistant Secretary of Defense (OASD) for Special Operations and Low-Intensity Conflict (SO/LIC); in-theater operators; and foreign allied governments. We will implement new and enhanced business and engineering processes that will better meet the Navy's and other agencies' IW product requirements. When directed, we will focus directly on the COCOMS most critical Warfighter needs and provide a faster, more agile and integrated response and products to meet their urgent needs.

Near-Term Objectives/Execution Plan

During FY2010, the NAWCAD IW Team will accomplish the following specific actions:

- **Establish the position of IW Director for NAWCAD.** The IW Director will report directly to the Commander/Executive Director and serve as the overall IW point of contact for NAWCAD for all internal and external organizations.
- **Charter an IW Steering Group and commence regular meetings.** The Director will facilitate and chair an IW Steering Group with membership consisting of representatives from the Avionics Department (AIR-4.5), the Human Systems Department (AIR-4.6), ALRE/SE (AIR-4.8), the Airworthiness Office (AIR-4.0P), the Integrated Battlespace

⁸ The GDF (Guidance for Development of the Force) and the GEF (Guidance for Employment of the Force) are DoD's two primary strategic planning documents. Both were published April 2008. The GDF considers a 20-year view of the security environment and informed development of the FY2010-2015 POM. The July 2009 GDF update captured early insights from the 2010 QDR to direct improvements in key capability areas.

Simulation and Test Department (AIR-5.4), Air Vehicle Modification and Instrumentation (AVMI), NAWCTSD, the Science and Technology Intelligence Liaison Office (STILO), the Naval Aviation Center for Rotorcraft Advancement (NACRA), the Director of UAS, the Director of Prototype Development, WD, and others as needed. The Steering Group will periodically meet to consider emerging requirements and coordinate within their Competencies meeting those requirements. The IW Steering Group will lead in the identification and planning for one or more “Flying Testbeds” in collaboration with NACRA. The director will use the Steering Group process to keep all concerned informed of IW opportunities and trends as well as to maintain an active inventory of NAWCAD IW capabilities and capacities that will be used in coordinating with external Warfighter liaisons to discuss requirements and Warfighter demand signals. The IW Director will use the Steering Group to socialize and develop recommendations to NAWCAD leadership on business process changes and internal requirements (facilities, skills, etc.) needed to support IW.

- **Develop a classified website Secret Internet Protocol Router Network (SIPRNet) portal database.** This SIPRNet portal will identify emerging Warfighter requirements for translation to rapid-reaction projects.
- **Establish IW communications and training program.** IW is still a relatively new term and subject to evolving concepts, organizations, relationships and demand signals. A living IW communications and training program for other NAVAIR employees, as well as Warfighter customers and other stakeholders, will be established immediately, leveraging a pilot program underway at the National Defense University (NDU).

Rapid Prototyping (RP)

Since 9/11 the nature of warfare the U.S. is experiencing has changed. The changing nature and tactics of the enemy has prompted changes to how the U.S. responds. The enemy's use of roadside and suicide bombs has prompted widespread research on how to counter these threats. Other major changes in Warfighter demands include the seemingly unquenchable desire for ISR and the proliferation of UAS. In Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF) and other Overseas Contingency Operations (OCO) U.S. troops are engaged with the enemy daily and their requests for new and improved equipment has taken on great urgency to protect and to save lives. NAVAIR has recognized the urgency in responding to the Warfighter as articulated in the NAVAIR Commander's Guidance priority: "Improve responsiveness to urgent Warfighter requests ..."

NAWCAD Instruction 3960.3 of July 11, 2008 formally established the business and technical requirements for NAWCAD prototyping projects intended to provide in-house alternatives for weapons system performance enhancements or other capability improvements in direct support of programs. In addition, this instruction establishes the position of Director of Prototype Development (DPD) for NAWCAD and delineates the relationships this position has with the executing Competencies. The instruction pertains to all NAWCAD prototyping work that falls within AVMI's technical capabilities and all NAWCAD Competencies that support such efforts. The associated prototyping solutions are intended to encompass any level of effort ranging from design and fabrication support for a prime contractor or Fleet Readiness Center (FRC) to fully AVMI-managed, build-to-print procurement and fleet retro-fit supported by production system flight clearances. Typically, production is limited to the number of units essential to performing the proof-of-concept and effectiveness T&E work in addition to trial kit hardware and software. If additional units must be produced, such work would normally be undertaken by industry or the FRC. The end product of a prototyping effort is the enhancement of combat capabilities either directly or via improved acquisition effectiveness and efficiency. Well executed prototyping projects can be a direct instrument of competition advocacy since they can provide Program Managers with build-to-print procurement options. In addition, prototyping can often provide the most rapid solution to critical fleet needs resulting from operational experience.

Prototype acquisition can be binned into three categories: 1) Competitive Prototyping - prototyping mandated by recent changes to the DoD 5000.2, requiring prototypes be built, presented, tested and the results used as a discriminator in acquisition programs; 2) Acquisition Alternative Prototypes – those prototypes produced by the government, as opposed to a Prime Contractor, and then the design competed for manufacture; 3) RP – those prototypes produced in a government owned facility on an accelerated schedule, and fielded in response to an urgent (formal or informal) Warfighter request. This latter category represents NAWCAD's primary focus for internal capabilities development.

Vision

The vision for the future is a robust prototyping capability and capacity with NAWCAD/WD such that customers (PEOs, Program Offices, and outside Naval Aviation customers) will not hesitate to commission internal prototyping centers to fulfill any need short of full aircraft development. There are two capabilities that should add to the already robust prototyping capability. The first to be developed and implemented in the mid-term, 5-10 years is the expansion into production capabilities. This will offer customers a "full service" option, from design to total fleet implementation. This will require additional and different contract vehicles to handle production and kitting. Additionally, agreements with enterprises capable of production line installations will have to be struck.

The second capability would be a longer term implementation, 10-15 years, in bringing technology out of labs and universities and bridging the gap for Technology Readiness Level (TRL) advancement for fleet implementation. This directly addresses the CNO S&T goal of higher transition rates of S&T programs to operational use. This will require a much closer partnering of labs, S&T, ONR and prototyping. The impact to NAWCAD will be seen as the rapid reaction to urgent Warfighter requests influences the steady pace on PORs. The shift requires leadership's influence to rapidly prioritize responses within the heavily planned POR workload. The key will be in the organization's ability to quickly bring to bear the required engineering, management, test, logistics, and artisan skills.

NAVAIR has instituted a Rapid Reaction Cell (RRC) to parse out requests for solutions on urgent operational needs. Appropriate projects are assigned to NAWCAD/WD for resolution. Once an appropriate prototyping center receives the request it will gather an IPT to work a solution. Government employees are envisioned to perform the management and most of the engineering, with contractors performing lower level engineering and production line fabrication work. The contracted workforce will expand and shrink as projects begin and end.

Funding for the workforce will be direct. This vision will require a rapid, flexible contracting vehicle to bring people and materials to bear quickly. Competency agreements must be in place that allow flexibility in the assignment of personnel while continuing to meet other Competency program support requirements. As requirements for projects increase the need for engineering, hangar spaces, and other working space will also increase.

Near-Term Objectives/Execution Plan

During FY2010, the NAWCAD RP Team will accomplish the following specific actions:

- **Enhance potential customer awareness of RP capabilities.** Awareness of substantial current and expanding RP capabilities at NAWCAD/WD by the leaders and program managers at NAVAIR is important to realizing the full cost, cycle time, and risk reduction potential of these capabilities. This communication and shared awareness is a continuing need as personnel change and capabilities become ever more advanced. Briefings will be offered to the Combined Leadership Team (CLT), PEOs, and PMAs to make them better aware of the substantial RP capabilities already available to them at NAWCAD/WD. Non-NAVAIR customers with the potential to leverage AD/WD capabilities in RP will likewise be made aware of these capabilities. This includes SOCOM, DHS (including U.S. Coast Guard), Department of Justice, and counternarcotics agencies. Briefings will highlight NAWCAD/WD's capabilities and appropriate points of contact.
- **Secure funding for follow-on phases of the Aircraft Prototyping Facility.** Actively engage in the POM-12 budget cycle as necessary to maintain Aircraft Prototype Facility (APF) Military Construction (MILCON) funding. A new brief will be developed with updated and relevant justification for delivery to regional commander staffs, Navy resource sponsor staffs, and MILCON professional staff members in Congress, as appropriate. The progress of the MILCON budget will be continuously tracked with elevation of issues as required to ensure a full understanding of project need and value.
- **Put into place responsive contracting vehicles and methods.** Put into place new contract vehicles at separate prototyping centers to enable rapid acquisition of needed services and material. This is emerging as the single most important constraint in RP success. Contracting vehicles and methods must support an operating model of in-house senior engineering and project management relying on contracted manpower for

lower level engineering design and virtually all artisan/fabrication work. The overriding design and implementation feature of such vehicles must be in their ability to quickly expand, contract, and reconfigure to meet immediate needs.

- **Develop strategy to support RP workforce expertise and surge requirements.** Adopt a RP Competency support concept that allows National Competency managers to supply the right level of Subject Matter Expertise (SME) in a timely manner to meet RP project needs. The associated competency development and personnel management strategy must recognize that SME involvement will be fully resourced via direct funding from the project. Possible funding strategies will be established to fund personnel prior to funds transferring from a project to facilitate rapid project starts.

Unmanned Air Systems (UAS)

The proliferation of UAS throughout the Military Services and other agencies necessitates an increased focus by the Naval Air Warfare Centers on the unmanned opportunity. With the stated intention by the SECNAV to lead the way in UAS capability development, NAWCAD must collaborate closely with WD and the PEO for Unmanned Aviation and Strike Weapons (PEO (U&W)) on UAS-related research, design, simulation, stimulation, development, test and evaluation. These activities must encompass the complete spectrum of needed UAS capabilities, including launch and recovery, ground control, data and communication links, mission sensor packages, airspace integration, and weapon integration. The Warfare Centers must be prepared to assume the LSI role with UAS capabilities development and to rely heavily on a RP approach to reduce cost and improve responsiveness to the Warfighter.

Environmental factors which attribute to NAWCAD focus on UAS efficiencies include, but are not limited to, SECDEF's National Defense Strategy regarding increased Unmanned Systems (UxS) ISR roles in both traditional and IW scenarios in the global war against terrorism; SECNAV recognition of USN involvement in the vast majority of air, land/sea-surface, and sub-surface unmanned systems development, procurement, fielding and sustainment; CNO Unmanned Imperative Briefing – Strategic Studies Group XXVIII (July 2009) which focused on warfighting mission sets, warfighting enablers, and manned/unmanned integration concepts; and the most recent acknowledgements and endorsements of PEO (U&W) UxS roles and responsibilities assigned by the Assistant Secretary of the Navy for Research, Development and Acquisition (ASN (RDA)).

In an effort to improve NAWCAD RDT&E efficiencies and effectiveness as it relates to UAS current and future POR activities and S&T initiatives, the following areas of interest will be reviewed and enhancements documented, presented and implemented: 1) proactively acknowledge planned UAS activity requirements and align manpower, skill levels, and T&E resources accordingly; 2) modify NAWCAD T&E operational capabilities, policies, processes, and procedures where applicable; 3) improve transparency between NAWCAD/WD UAS S&T and R&D activities and NAVAIR POR activities in an effort to reduce acquisition cycle times, meet resource sponsor expectations, and ensure end user success with improved efficiency.

Vision

NAWCAD will efficiently and effectively support UAS-related S&T activities and POR that best outfit our military customers with capable, reliable and sustainable weapon systems, on time and within budget. UAS RDT&E and support operations will serve as a model for RP and Rapid Warfighter Response and demonstrate innovative and effective solutions to range and airspace utilization challenges. Associated organizations and processes will be tailored to Warfighter needs, demonstrating unsurpassed speed, agility and adaptability.

Near-Term Objectives/Execution Plan

During FY2010, the NAWCAD UAS Team will accomplish the following specific actions:

- **Improve UAS integration, planning and execution strategies across Competencies, Warfare Centers, and Services.** NAWCAD/WD UAS directors will lead a WG that will identify key UAS personnel, associated Competencies and their alignment with specific UAS activities across the NAE. The team will investigate all UAS RDT&E capabilities across NAE and document current activities, capabilities and successes, and UAS-related RDT&E technology gaps. The team will develop and maintain a Navy UAS S&T, R&D, and POR roadmap. Based upon that UAS

developmental roadmap, the team will develop a UAS-related investment strategy to ensure NAWCAD/WD capabilities are sufficient to meet future UAS RDT&E requirements.

- **Address current and emergent NAWCAD range/restricted area airspace challenges.** This UAS Airspace WG will be led by the Integrated Systems Evaluation, Experimentation and Test (ISEET) Department (AIR-5.1), Atlantic Test Ranges, and NDW Air Operations. This team will research current and near-future NAWCAD UAS and manned air traffic surveillance, separation and safety policy and procedural challenges, as well as resource and capability limitations as they all pertain to UAS integration into and operation within NAWCAD restricted areas. This WG shall identify, socialize, document, and implement general air traffic and/or UAS-specific airspace planning and operation policies and procedures that improve either safety or operational efficiency in NAWCAD restricted airspace. Additionally, this team shall develop, present and execute a NAWCAD investment plan which supplements ATC traffic surveillance and tracking, maintains safe separation among all aircraft, and promotes confidence during concurrent manned and unmanned aircraft flight operations.
- **Organize and align to best meet UAS T&E influx.** This UAS T&E WG will be led by the ISEET Department (AIR 5.1) and NTWL. This WG will determine the near-term and future T&E workforce construct and skill-set, and will implement training curricula and execute hiring initiatives to ensure NAWCAD meets projected UAS T&E requirements. The ISEET Department will investigate revisions and updates of USNTPS long- and short-course curricula in order to incorporate unique UAS-specific T&E training skills. NTWL and the ISEET Department will initiate the standup of an UAS Test Squadron.
- **Identify opportunities to tailor UAS-related RP and acquisition processes and policies.** This UAS RP WG will be led by senior level Systems Engineering Department (AIR-4.1), ISEET Department (AIR-5.1), Contracts Group (AIR-2.0) and PEO (U&W) personnel. This WG will identify and document specific areas and associated time and dollar savings in the areas of acquisition processes and procedures, Systems Engineering Technical Review (SETR) processes and T&E processes that can be streamlined for certain UAS groups. The WG will also present and socialize their findings and suggestions with PEO (U&W), the Program Management Group (AIR-1.0), and the National Competency Leaders. PEO (U&W) will then socialize relevant streamlined processes with ASN (RDA)'s Deputy Assistant Secretary of the Navy for Air Programs (DASN-Air) and OPNAV.

Interoperability

The landscape is rapidly changing in the area of interoperability. With the CNO's focus on Cyberspace, emphasis on IW and UxS Integration, and creation of a U.S. Cyber Command, the Navy has made significant organizational changes to strengthen the focus on interoperability. Of particular interest is the OPNAV N2/N6 reorganization into an Information Dominance directorate (N2/N6) and establishment of a new FLTCYBERCOM/TENTHFLT. The establishment of FLTCYBERCOM/TENTHFLT will allow the Navy to better anticipate and meet COCOM demands in this rapidly evolving warfighting area. Along with this reorganization comes re-alignment of significant NAVAIR programs with large interoperability requirements, including P-8A, EP-X (Electronic Patrol-X Intelligence, Surveillance, Reconnaissance and Targeting (ISR&T) platform), Broad Area Maritime Surveillance (BAMS), Fire Scout, Small Tactical Unmanned Air System (STUAS), Navy Unmanned Combat Air System (NUCAS), Next Generation Jammer and others.

Warfighting capability has become more reliant on interoperability and network centric concepts to achieve effectiveness. NAWCAD has significant experience supporting Interoperability and the Net-Ready Key Performance Parameters (NR-KPP). NAVAIR Systems Engineering Competencies are working closely with the ASN (RDA) Chief Systems Engineer (RDA CHENG) supporting Integrated Architecture development and have also pioneered improvements to the NAVAIR SETR process. NAWCAD/WD facilities, labs, and ranges are unequalled for interoperability demonstration, experimentation, and T&E. Additional investment will enable greater sophistication in early system interoperability R&D, with the ability to more quickly and cost-effectively produce inherently interoperable solutions for the Warfighter.

As a command, we face challenges that affect our ability to develop interoperable products. NAWCAD/WD is supporting an unusually large number of new program developments simultaneously and the stress on the workforce will be great as we staff up to perform this tasking. An additional challenge is growing expertise in the area of LSI. The expanded role of government as LSI is new and will require new business process, policy, and workforce training to accomplish effectively. In many instances, the current architectures supporting interoperability are implemented using industry proprietary standards. Competition of architectures between Industry elements and Government, as well as non-NAVAIR claims to interoperability certification, will hinder our efforts to deploy effective interoperable products. Close collaboration with RDA CHENG and industry, as well as government ownership of interoperability requirements and standards, are key to the successful achievement of this goal.

Vision

NAWCAD/WD must begin to design and test for interoperability from first concepts and throughout a program's life cycle. In the near term, NAWCAD/WD must adopt a standard and methodology to track and drive interoperability requirements and create a new systems development process that fully supports interoperability. Within the next few years, NAWCAD/WD must institutionalize interoperability test methods and normalize System of Systems/Family of Systems (SoS/FoS) tests for all programs. Institutionalization of new processes and adopting a systems approach to interoperability will ensure that NAWCAD/WD products and solutions are interoperable in the Joint Battlespace and will make them systems of choice by the Navy and other Services. On the horizon, NAWCAD will be in a position to propose new net-centric capabilities, validate the enhanced effect these capabilities will have on warfighting, and then develop and test the capability to ensure interoperability and effectiveness are maintained.

Near-Term Objectives/Execution Plan

During FY2010, the NAWCAD Interoperability Team plans to accomplish the following specific actions:

- **Establish a NAWCAD/WD Interoperability Community of Practice (COP).** Charter the Interoperability COP and promulgate a COP Plan of Actions and Milestones (POA&M) and roadmap. The Interoperability COP will consist of a cross Competency, multi-disciplinary team from both AD and WD components that spans the entire CAO. This team will have specific experience with NAWCAD processes and policy, as well as interoperability concepts, issues, process policy, and developments. It will be this COP, in conjunction with partner agencies such as SPAWAR, and RDA CHENG, that develops and executes the strategy for enhancing the interoperability of NAWCAD products. The operating concept is predominantly an effort between Systems Engineering and ISEET to support Interoperability process development. Engineering and T&E facilities play into the requirements and process generated through Systems Engineering. The team will meet periodically to vet process issues, develop interoperability strategy, and create horizontal integration/communication cross Competency.
- **Adopt ASN (RDA) Integrated Architectures Guidance through NAVAIR SETR process change recommendations.** One of the main tasks the COP will accomplish during FY2010 is to adopt RDA CHENG "Integrated Architectures" guidance and incorporate it into appropriate NAVAIR SETR process change recommendations. These SETR process change recommendations will be made to specifically ensure that interoperability objectives are considered throughout a program's life cycle and that the objectives are achieved. NAVAIR's current gate review process is very robust and has been effective in delivering quality products. Modifying this process to account for interoperability will be key in ensuring we meet long term effectiveness goals for all programs.
- **Map Department of Defense Architecture Framework (DoDAF) interoperability architecture artifacts to NAWCAD/WD capability areas.** The Interoperability COP will establish a library mapping interoperability architecture artifacts out of the current DoDAF to related NAWCAD/WD capability areas. This will give NAWCAD a clear picture of what personnel, facility, and process resources will be needed to accomplish effective interoperability development and testing for our products. Analysis of program requirements for interoperability against the map will be essential in determining gaps that can then be filled through future investment.
- **Perform an Interoperability Pilot project.** NAWCAD will perform an Interoperability Pilot project, demonstrating a key interoperability objective using existing NAWCAD/WD RDT&E capability. This Pilot will be the first of many that leads to normalization of the interoperability T&E process. The team will consider ongoing program efforts at NAVAIR with current interoperability requirements that may be difficult to demonstrate using conventional methods. The proposal uses a mix of Live, Virtual, and Constructive modeling, simulation, and stimulation techniques against system under test hardware.

Increasing Execution Efficiency (IEE)

The IEE Team develops proposed improvements to contracting, financial, and corporate operations processes that enable NAWCAD to better support the Program Teams and other customers. This focus area encompasses the development and implementation of innovative contracting strategies, the identification and removal of workflow barriers, and the formulation of overhead activity and cost efficiencies. As an initial top priority, the IEE group will focus on the contracting, financial and corporate operations processes necessary to support rapid acquisition capability within NAWCAD.

Vision

Current and anticipated environmental influences drive the need for NAWCAD to provide immediate and long-term capability to procure RP/RR/IW products and services to meet urgent Warfighter requirements. Influences such as technological advancements, ongoing OCO, increasing demands for limited resources, changes in statutes/regulations/policies, and recruiting/retention challenges have far-reaching effects in shaping our operating environment. With this in mind, NAWCAD must establish a sustainable and defensible rapid acquisition process (including the pre-established requirements, funding, and contracting process structure) that is responsive to the Warfighter and meets established statutory and policy constraints. NAWCAD's tactical approach to current RP/RR requirements will set the stage for long-term strategic success. To that end, RP/RR criteria and standards will be applied by the RP and IEE Teams in accordance with the NAVAIR RRC operating concept to a decision framework that aligns project tasking and funding with the appropriate contracting instrument.

Near-Term Objectives/Execution Plan

During FY2010, the NAWCAD IEE Team will accomplish the following specific actions:

- **Establish RR contract vehicle(s).** The NAWCAD IEE Team will establish contract vehicle(s) that meet the scope and lead-time requirements essential to operating the world's best RP capability serving the Avionics Department (AIR-4.5), the Human Systems Department (AIR-4.6), the ISEET Department, the Range Department (AIR-5.2), the UAS Directorate, Naval Aviation Center for Rotorcraft Advancement (NACRA), and other organizations throughout the Warfare Center. Establishment of the NAWCAD Prototype Rapid Acquisition Capability (NAPRAC) will begin immediately by aligning current processes and contractual tools within NAVAIR to stand-up the NAPRAC capability. The long term plan will be to further develop the NAPRAC by placing NAWCAD RP contract vehicles that are appropriately tailored in scope to the needs of NAWCAD/WD to meet future RR requirements.
- **Set up online Rapid Contracting Tool Box.** The NAWCAD IEE Team will coordinate with NAWCAD Contracts, Comptroller, Information Management Department (IMD), and NAWCAD/WD Competency leads to establish the POA&M and secure the resources to stand-up interactive Web based tools (i.e. Rapid Contracting Tool Box). Research will be conducted on existing RR processes and contract vehicles that may be available both within and outside the command and be accessible via this portal. The IEE group will propose and effect changes to existing contracting and financial policies in order to enhance responsiveness, sustainability, and defensibility of the NAPRAC capability on a long-term basis. The NAPRAC processes will evolve in terms of the number and scope of acquisition tools available and will potentially include partnerships with other DoD/Federal agencies, academia, and industry.

Additional FY2010 Operational Priorities

In addition to the planned accomplishments noted above in the areas of Strategic Awareness, IW, RP, UAS, Interoperability, and IEE the following represent priorities that will also be monitored for progress by the NAWCAD LT.

Naval Aviation Center for Rotorcraft Advancement (NACRA)

The NACRA was established during FY2007 as a result of the 2005 BRAC. NACRA was chartered by the NAWCAD Commander to align and consolidate Rotary Wing RDAT&E efforts to focus support for the Warfighter and develop future rotorcraft capabilities. Initial efforts during FY2009 included establishing cross-program initiatives for technology road mapping, condition-based maintenance, and degraded visual environment applications, as well as an initial strategic study of the rotorcraft community as a whole. During FY2010, the NACRA plans to accomplish the following specific actions:

- **Commence vertical lift testbed operations.** During FY2010, and as a result of the analysis of NACRA's FY2009 initial strategic study of the Rotorcraft Community, the NACRA will establish (in concert and close coordination with the Competencies, programs and other NAVAIR organizations) a vertical lift testbed capability to rapidly develop, demonstrate, and apply critical technologies/innovative material solutions that enhance the capability, affordability, readiness and safety of DON rotorcraft platforms. The capability will integrate existing Systems/Software Integration Labs (SILs), simulators and naval rotorcraft platforms centered at Naval Air Station (NAS) Patuxent River to leverage existing facilities and expertise. This combined approach will provide an affordable and efficient capability using streamlined processes for contracting, flight clearances and maintenance. Planned benefits of NACRA testbed capability include: expeditiously fielding new technologies that enhance the Warfighters' ability to counter irregular/emergent threats; developing enabling technologies in support of fleet sustainment/future rotorcraft; conducting validation and verification; providing opportunities for risk reduction in critical enabling technology development; encouraging commonality and open architecture; building stronger partnerships, advocacy and synergy across the rotorcraft community; and attracting, growing and retaining a capable vertical lift work force.
- **Synchronize common systems and S&T roadmaps across platforms.** NACRA has developed a common technology road mapping tool for the programs that coordinates cross-platform technology efforts and initiatives to take advantage of the economies of scale realized with a concentrated effort toward a similar solution. For FY2010, NACRA will commence a series of semi-annual forums to take the road mapping effort to the next level of alignment and integration by comparing platform and commodity road maps to even greater leveraging and commonality. Additionally, NACRA will be pursuing an effort to coordinate program roadmaps with the S&T road maps being developed by the Chief Technology Officer (CTO).
- **Coordinate Condition-Based Maintenance (CBM) efforts across programs to achieve synergistic gains in economy and reduce TOC.** Defined as performing "maintenance only when there is objective evidence of need...", CBM optimizes readiness while reducing maintenance costs. In FY2010, NACRA's CBM commonality efforts should greatly decrease or eliminate the duplication/overlap created by program stovepipes and prevent as many as 20 disparate processes featuring different hardware and software solutions through cooperative information sharing efforts between programs, Competencies and external agencies. Also, NACRA will build upon its formation of the CBM+ IPT, formed from across NAWCAD/WD, to promote,

advocate, and monitor the implementation of CBM+ throughout NAVAIR's maintenance and logistics processes. NACRA will make recommendations, based on business analysis, for the executive steering of NAVAIR CBM+ acquisitions and decisions.

- **Identify high priority testbed projects to demonstrate solutions to the number one cause of rotorcraft mishaps, controlled flight into terrain.** Demonstrating solutions to recurring safety, survivability and Degraded Visual Environment (DVE) issues across the rotorcraft community has the potential to save lives and costs. NACRA is working with NAVAIR Competencies, program offices, academia, and industry to expedite development of common safety and survivability requirements, coordinate and convey potential solutions to the Rotorcraft Community, and identify (through program roadmaps) a viable implementation strategy that address the number one cause of rotorcraft mishaps (controlled flight into terrain) and minimizes acquisition life cycle costs for all rotorcraft platforms. In FY2010, these efforts will lead to high priority projects being identified and pursued by NACRA's testbed effort.
- **Promote Rotorcraft COP.** The NACRA will stand up an innovative and unique (for DoD) Internet resource portal aimed solely at the Rotorcraft Community. Featuring different levels of security, the portal will offer networking, collaboration, resource sharing, and teaming capabilities across the global community of rotorcraft-related industries, users, operators and maintainers (civilian, military and international). NACRA will also coordinate and host rotorcraft industry days, technology workshops, and other events expressly designed to improve the information flow across the Rotorcraft Community.

U.S. Navy and Marine Corps Airworthiness Office (AIR-4.0P)

In support of NAVAIR's focus on RP, the U.S. Navy and Marine Corps Airworthiness Office (AIR-4.0P) has re-organized to be a PEO-aligned office supporting the new NAVAIR flight clearance instruction, 13034.1D. As part of this initiative, AIR-4.0P has established a Deputy Director for Rapid Warfighting. This position will oversee all Rapid Warfighter Response, RP, Testbed (including NACRA) and IW airworthiness actions and will use a senior leader Rapid Warfighting Technical Area Expert Team nominated by all AIR-4.0/5.0 Departments to support these urgent needs. This team will operate under the broad guidance provided by SECNAV Notice 5000 "Department of the Navy Urgent Needs Process" dated 12 March 2009, NAVAIRINST 13034.1D (draft), guidance from the developing NAVAIR RRC, and an Airworthiness Rapid Warfighting Charter that is in development for AIR-00 signature. The goal is to provide significantly reduced turnaround times for these airworthiness actions by utilizing senior engineers that have greater knowledge of risk and risk mitigation/consequence coupled with their engineering expertise to be able to review and approve flight clearances without a compromise to the integrity of the overall process. Lessons learned and/or process improvements that this team develops for Rapid Warfighting will also be implemented, as appropriate, for "conventional" airworthiness actions.

Energy Alternatives and Efficiencies

The importance of energy as a strategic and operational resource has been recognized by SECNAV, CNO, and the Commandant of the Marine Corps (CMC). In FY2009 the CNO issued a Fragmentary Order forming Task Force Energy (TFE) to develop the Navy's strategic energy plan focusing on three main tenants: security, efficiency and the environment. OPNAV N88 led the development of the aviation energy framework and plan in support of the TFE effort. As result of these efforts, \$22.8 million of FY2009 American Reinvestment and Recovery Act funding was obtained and \$23 million was added to the FY2011 budget to pursue aviation energy initiatives.

In FY2010, NAWCAD will continue its leadership role in supporting both SECNAV and CNO energy initiatives. NAWCAD will build upon the CNO's FY2009 TFE initiative by: 1) standing up an energy team, 2) refining and expanding the aviation energy roadmap, 3) collaborating with NAWCTSD and NAWCWD, and 4) disseminating relevant guidance and direction to the NAE community. Specific NAWCAD efforts include: 1) demonstrate engine efficiency component technology in the F414 engine, 2) test and certify the F/A-18E/F to operate on JP-5 produced from a non-petroleum renewable source, and 3) continue to evaluate energy improving technologies for potential Naval Aviation and associated shore infrastructure applications.

Improved Program Performance

Executing programs on time, on cost, and to technical performance requirements is fundamental to NAWCAD's mission objectives. NAWCAD has made substantial contributions in the form of financial resources and expertise to analyze the root causes for poor program performance and the identification of tools and techniques to improve it. These efforts have been led by NAVAIR's Program Performance Team (PPT), chartered to provide the analysis, tools, training, and assistance to support and improve the planning, execution, and total operating cost of NAVAIR programs. The outcomes of the PPT efforts hold the promise of savings to the federal government and the U.S. taxpayer while improving the timeliness, affordability and quality of aircraft and weapons systems to the Warfighter. During FY2010, the PPT will accomplish the following specific actions:

- Pilot leading indicators of production quality, delivery and cost performance;
- Reduce supplier cost risk through improved insight into supplier network activities;
- Launch training modules for program performance education; and
- Implement a closed loop Independent Cost Estimating (ICE) process.

Business Outlook

The following section provides a look at the business and financial aspects of managing NAWCAD as a NWCF activity. As such, the graphs and measures are focused on reimbursable workload only and not direct cite (contracted orders). NAWCTSD reimbursable workload is included in the FY2011 information, which is when NAWCTSD converts from direct Expense Operating Budget (EOB) funding to the NWCF as part of NAWCAD.

Workload Trends and Composition

As shown in Figure 5, based on OSD/Office of Management and Budget (OMB) FY2011 budget controls, NAWCAD expects to see a continued increase in workload, with FY2010 estimated to increase by 8% over FY2009. Figure 6 shows expected breakout of New Order funding by customer group. NAVAIR continues to represent approximately 70% of the NAWCAD business base, Other Navy/Marine Corps approximately 11%, and Other DoD approximately 14%. Non-DoD workload (Other Federal and Non-Federal) is relatively consistent at 4% of the total.

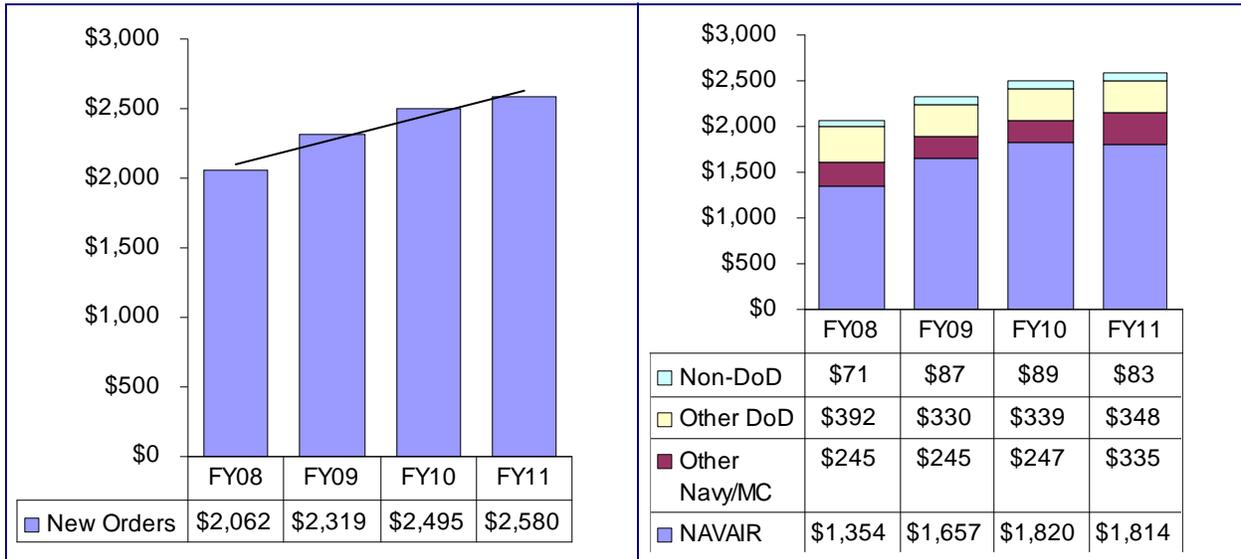


Figure 5 - FY2010/2011 NAWCAD Workload Trend

Figure 6 - FY2010/2011 NAWCAD Workload by Customer Group

Customers

A further breakdown of *Navy customer groups* is shown in Figure 7, below. NAVAIR customer groups/programs include the PEO for Tactical Aircraft Programs (PEO (T)), PEO for Air, ASW, Assault, and Special Mission Programs (PEO (A)), PEO JSF, PEO (U&W), Major Range and Test Facility Base (MRFTB), Program Management (AIR-1.0), and other National Competencies. This NAVAIR customer group represents 88% of Navy funding at \$1.8 billion. Major Navy customers outside NAVAIR include NAVSEA, Navy Engineering Logistics Office / Naval System Management Activity (NELO/NSMA), Commander Fleet Forces Command (CFFC), and the ONR. NAVSEA business is focused on air-ship integration, AEGIS, and other C4I and interoperability projects, with a much smaller amount of similar C4I and interoperability

work funded by SPAWAR. NAWCAD performs direct fleet support to the NAE via the Commander, Naval Air Forces (CNAF), under CFFC. NAWCAD also performs S&T work for Navy customers via NELO/ NSMA and ONR funded projects.

A further breakdown of *non-Navy customer groups* is shown below in Figure 8. These include the COCOMS, particularly SOCOM, U.S. Central Command (CENTCOM) and U.S. Joint Forces Command (JFCOM); U.S. Air Force; U.S. Army; Foreign Military Sales (FMS); Department of State; Missile Defense Agency (MDA); and DHS. Much of the COCOM, Department of State, and DHS work is focused on various aspects of IW, to include counterintelligence and counterterrorism as well as joint C4I systems. In many of these projects NAWCAD performs the role as LSI in product development and limited quantity manufacturing. Funding from the Air Force supports numerous joint air warfare related programs, such as the F-35 JSF. Funding from Army customers supports RDT&E associated with rotary wing aircraft, to include Electromagnetic Environmental Effects (E3). NAWCAD is an RDT&E center of excellence for various international allies under the FMS program supporting E-2, F/A-18, P-3 and other air platforms. Other DoD customers not specifically broken out include Defense Intelligence Agency (DIA), National Security Agency (NSA), White House Security Agency, Defense Logistics Agency (DLA) and DARPA. Much of this work could also be classified as IW and/or S&T in nature.

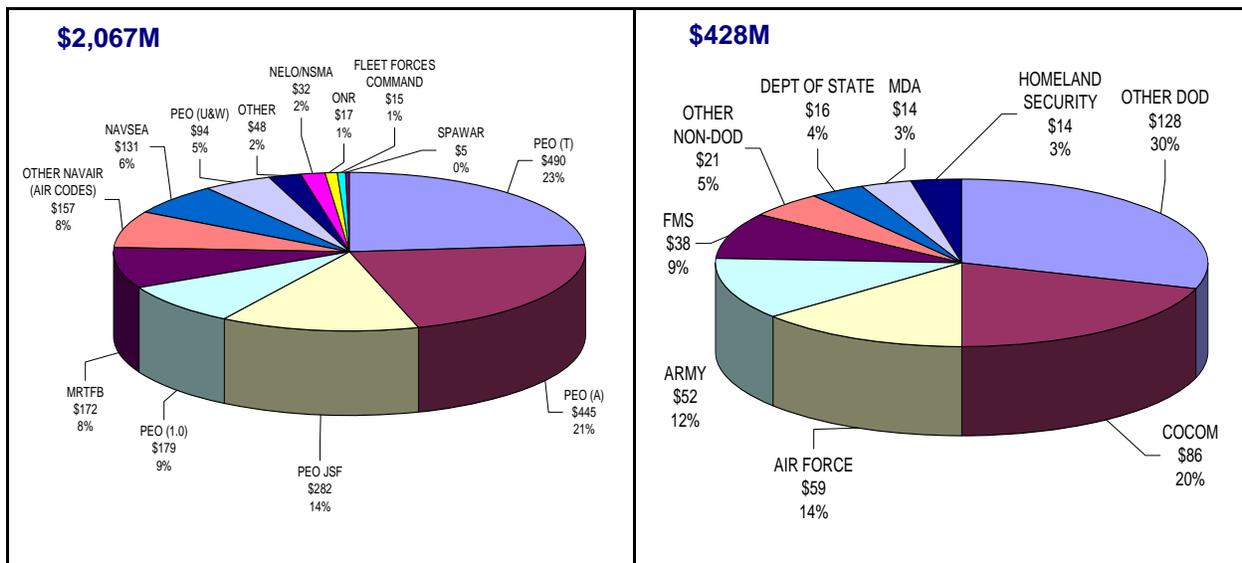


Figure 7 - FY2010 NAWCAD Navy Customer Group Breakdown

Figure 8 - FY2010 NAWCAD Non-Navy Customer Group Breakdown

The expected Top Programs for NAWCAD in FY2010 are shown in Figure 9. These ten programs represent 45% of NAWCAD New Orders in FY2010. During this period, F-35/JSF workload is expected to exceed what was previously the largest NAWCAD program, the F/A-18 (PMA 265). Rounding out the top five after JSF and F/A-18 are Maritime Surveillance Aircraft (PMA 290), ATC (PMA 213), and ALRE/SE (PMA 251).

NAWCAD Top 10 Programs \$M	
PEO JSF	\$282
F/A-18 (PMA 265)	\$163
Maritime Surveillance A/C (PMA 290)	\$152
Air Traffic Cntrl (PMA 213)	\$145
ALRE (PMA 251)	\$77
Multi-Mission Helo (PMA 299)	\$72
Aviation Support Equipment (PMA 260)	\$64
Air Combat Electronics (PMA 209)	\$63
C-2/E-2 (PMA 231)	\$58
Heavy Lift Helo (PMA 261)	\$55
Total	\$1,131
% of Total	45.3%

Figure 9 - FY2010 NAWCAD Top Programs (\$M)

NAWCTSD Reimbursable by Major Customer Group \$M	
NAVAIR	56.8
NAVSEA	17.0
Other DON	20.5
Other DOD	16.4
Non-DOD	8.2
TOTAL	\$118.9

Figure 10 - FY2010 NAWCTSD Key Customer Groups

Beginning in FY2011, NAWCTSD will be incorporated into the NWCF, increasing the reimbursable workload for NAWCAD. A breakdown of NAWCTSD's FY2010 customer groups is shown in Figure 10 as an indication of the way NAWCAD workload will be affected. NAVAIR represents approximately half of the NAWCTSD reimbursable total, with Navy customers comprising approximately 80%. Most of the remainder consists of other DoD customers, including Army, SOCOM and JFCOM. Non-DoD customers include FMS, DHS, and Department of Justice.

Carryover and Operating Results

The recognition of Revenue relative to receipt of New Orders has a direct effect on Carryover, which represents carry-in and New Order funding not yet executed at the end of the FY. Figure 11 shows the anticipated timing of FY2010 New Order receipts and Revenue recognition (the New Order curve assumes no continuing resolution, which will slow down the inflow of New Orders during the early part of the year). FY2010 New Orders are estimated at \$2,495M and revenue at \$2,459M.

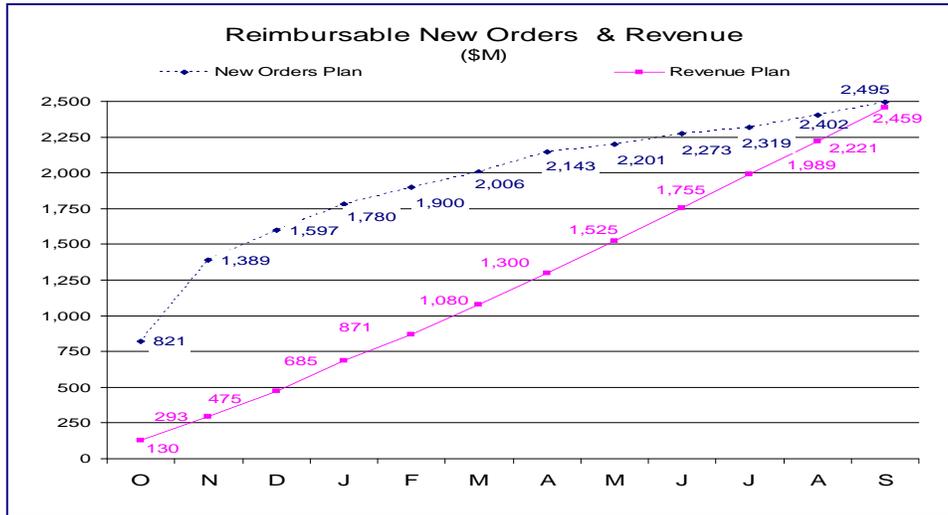


Figure 11 - FY2010 NAWCAD Planned New Orders & Revenue

The NAWCAD FY2010 year-end Carryover estimate is \$73M below the estimated authorized ceiling amount of \$1,048M. The FY2010 Carryover Plan, Figure 12, is based on a three-year average of historical execution trends and authorized outlay rates. Actual Carryover ceiling will be affected by revised outlay rates, normally received in March or April of the year of execution, and by actual New Orders received by appropriation or funds type. Successfully executing below the Carryover ceiling will result from appropriate management of New Order acceptance relative to the rate of revenue recognition, driven primarily by the direct labor workforce to include contracts.

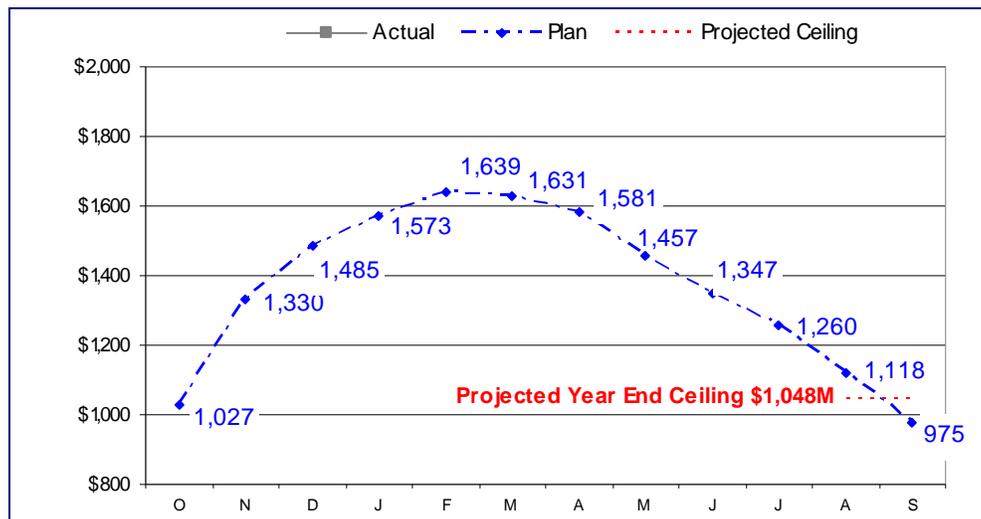


Figure 12 - FY2010 NAWCAD Carryover Plan

Net Operating Result (NOR) represents the difference between revenue and expenses, which is equivalent to net income or net profit in private industry. The NAWCAD FY2010 NOR Phasing Plan, Figure 13, shows a NOR target of -\$10.9 at FY2010 year-end. This negative target is intended to correct for a positive Accumulated Operating Result (AOR) condition. AOR is the accumulated result of all prior year NORs. As a NWCF activity, the financial operating objective for NAWCAD is to neither make nor lose money, but to break even, or achieve an AOR of zero. The NOR Phasing Plan reflects a negative NOR as a result of October 2009 operations of approximately \$12 million, with relatively slight variation month-to-month after that.

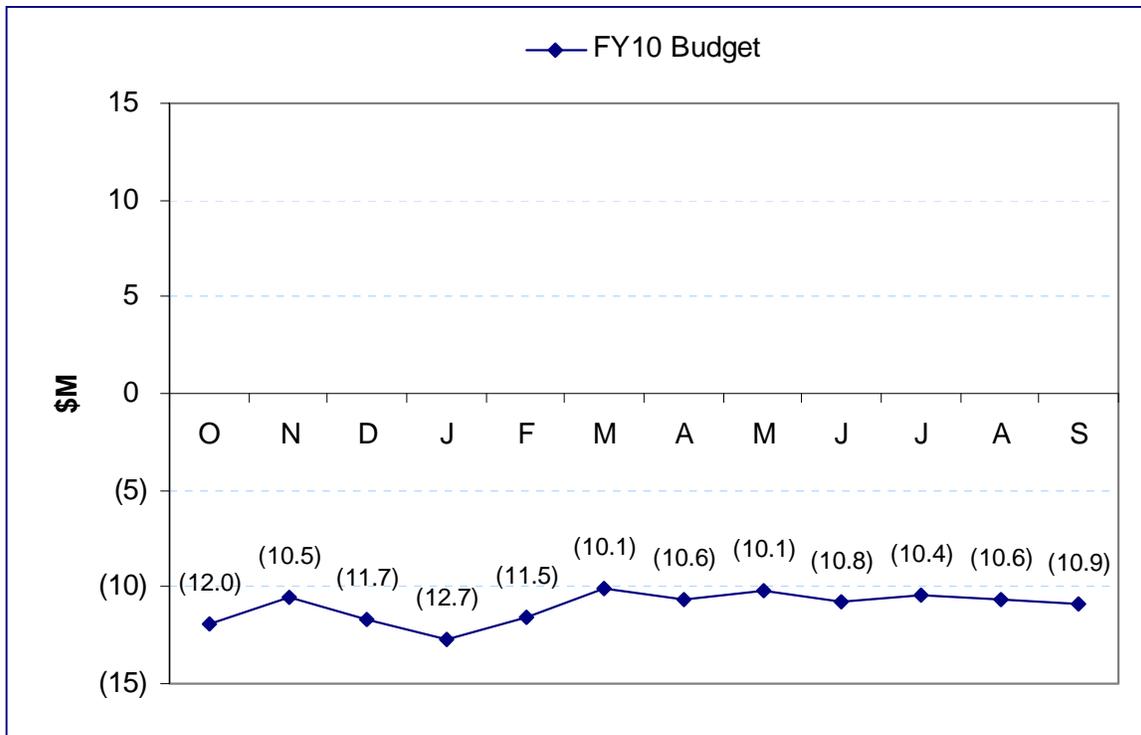


Figure 13 - FY2010 NAWCAD NOR Phasing Plan

Investments

NAWCAD is able to capitalize investments made from a range of sources shown in Figure 14. While the Capital Improvement Program (CIP), Figure 15, is the major provider of NAWCF investment funding, investment in NAWCAD infrastructure also occurs via MILCON, Central Test and Evaluation Investment Program (CTEIP), and Improvement and Modernization (I&M) funding. CIP funding runs approximately \$20-\$25 million annually, with most going towards equipment purchases. In FY2010, approximately 40% of the CIP budget is devoted to Automated Data Processing (ADP) and Telecommunication, or Information Technology (IT) projects, 40% to non-ADP equipment, and approximately 20% to Minor Construction projects. NAWCAD CTEIP and I&M each averages between \$10 and \$15 million per year. A more detailed breakdown of all these investment projects for FY2010 is contained in Appendix B.

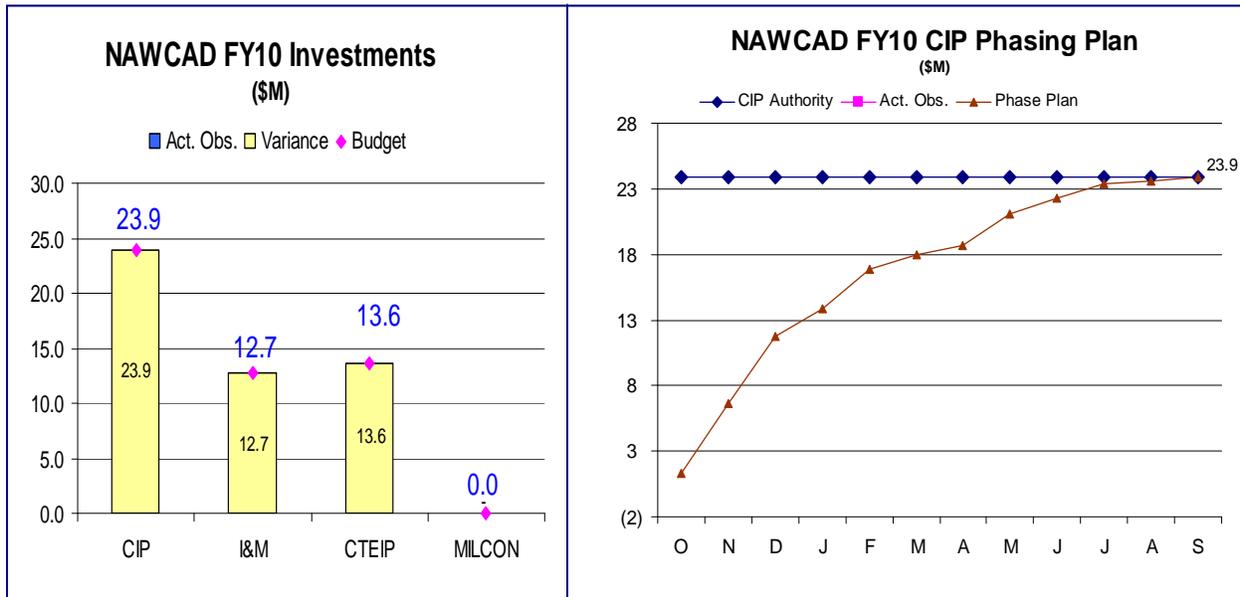


Figure 14 - FY2010 NAWCAD Investments (\$M)

Figure 15 - FY2010 NAWCAD CIP Phasing Plan (\$M)

Military Construction (MILCON)

MILCON projects are shown in Figure 16, reflecting ongoing projects as well as those contained in the FY2010 President's Budget and outyear plan. The MILCON investment strategy for NAWCAD is an integral to the NDW RIMP. RIMP is intended to provide for balanced operational requirements and shore investment while translating Shore Vision Navy 2035 into reality and aligning with warfare enterprise (including NAE) requirements. While there are no MILCON projects funded for NAWCAD in FY2010, two projects from FY2008 and FY2009 are still underway: the Aircraft Prototype Facility Phase 1 (P-558), and the Advanced Arresting Gear Test Site (P-252). The Aircraft Prototype Facility Phase 1 at Patuxent River is scheduled to complete in May 2010 and will provide a hangar, tool shops and labs for advanced prototyping and modification of classified projects. The Advanced Arresting Gear Land Based Test Facility at Lakehurst will complete in July 2010, reconfiguring/recapitalizing the existing Runway Arrested Landing Site facility for new-generation arresting gear to coexist with legacy arresting gear testing facilities. P-252 includes new facilities at the Jet Car Track Site (JCTS) for dead-load testing of new-generation arresting gear and adds a high speed

aircraft turnaround to enable rapid-cycle testing capability of arresting gear. The FY2011 and beyond MILCON projects and associated funding contained in the FY2010 President's Budget are subject to internal DoD adjustments as part of the ongoing Planning, Programming, Budgeting and Execution (PPBE) process.

SITE	FISCAL YEAR	MILCON #	RECENT OR ONGOING MILCON PROJECTS	COST
PAX	2008	P-558	AIRCRAFT PROTOTYPE FACILITY PHASE 1	\$15.8M
LKE	2009	P-251	ADVANCED ARRESTING GEAR TEST SITE	\$15.4M
PB10 MILCON (FY2010- FY2015)				
PAX	2011	P-263	BROAD AREA MARITIME SURVEILLANCE T&E FACILITY	\$42.44M
PAX	2011	P-559	AIRCRAFT PROTOTYPE FACILITY PHASE 3	\$16.74M
PAX	2011	P-561	AIRCRAFT PROTOTYPE FACILITY PHASE 2	\$42.29M
LKE	2013	P-139	AIRCRAFT CARRIER AVIATION INTEGRATED TEST FACILITY	\$35.07M
PAX	2014	P-131	HANGAR 111 LIFE EXTENSION	\$21.32M
PAX	2014	P-142	CONSOLIDATED PRECISION MACHINE SHOP	\$5.17M

Figure 16 - FY2010-FY2015 NAWCAD MILCON Budgeted/Programmed (PB-10)

Operating Resources and Rates

NAWCAD operates within the NWCF. As such, all operating resources come in the form of customer funding for products and services provided. The revenue received from NAWCAD customers should match the expenses incurred by NAWCAD in performing its mission, producing an AOR of zero. Thus the rates charged by NAWCAD to customers must be sufficient to reimburse the *direct* costs of labor and materials and the *indirect* costs of running the Warfare Center, such as the costs of production overhead and G&A expenses. NAWCAD is obligated to operate efficiently through careful control of indirect costs so that customer rates and the total cost of AD products and services produced is affordable. NAWCAD's management of indirect costs occurs through its Operating Budget, and includes such costs as supervisory labor, contracting, security, human resources management, comptrollership functions, utilities, facilities maintenance, and depreciation expense.

Direct Labor Rates

As shown in Figure 17 and Figure 18, NAWCAD direct labor rates have shown a general increase of approximately 3.7% annually in nominal "then-year" dollars, which equates to an average of .7% annually in real (FY2010 constant year) terms. The current composite direct labor rate of approximately one-hundred dollars per hour is attractive DoD-wide and on par with other Naval Warfare Centers.

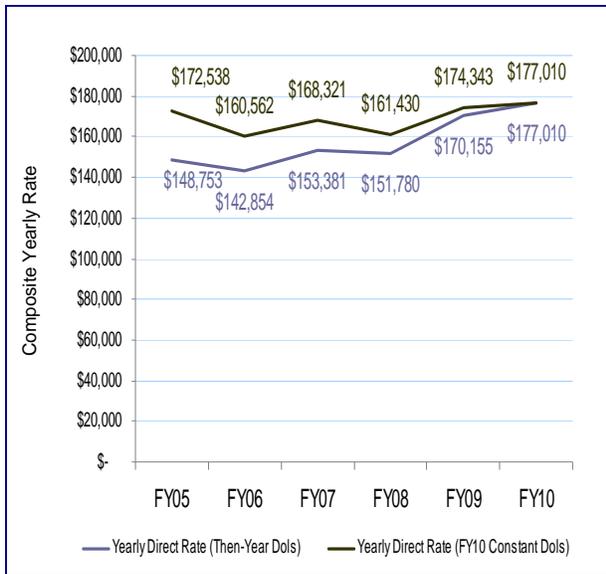


Figure 17 - FY2010 NAWCAD Hourly Direct Labor Rates Trend

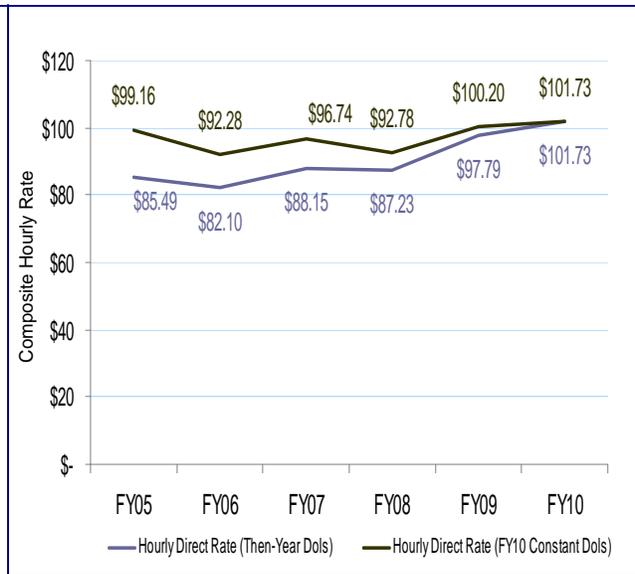


Figure 18 - FY2010 NAWCAD Yearly Direct Labor Rate Trend

Indirect Costs and Applied Revenue

Figure 19 shows the ratio of direct labor hours to total labor hours has consistently been 85% or more, representing six workyears of direct labor for each workyear of indirect labor. The planned FY2011 increase in the indirect portion is due to the absorption of NAWCTSD Orlando into the NWCF. The Applied Revenue from the indirect portion of direct labor rates is used to fund the indirect costs of operating the Warfare Center. Allocations to Competencies for production overhead and G&A expenses represent “controls” that must be managed to for the purposes of cost control and attainment of the NOR target.

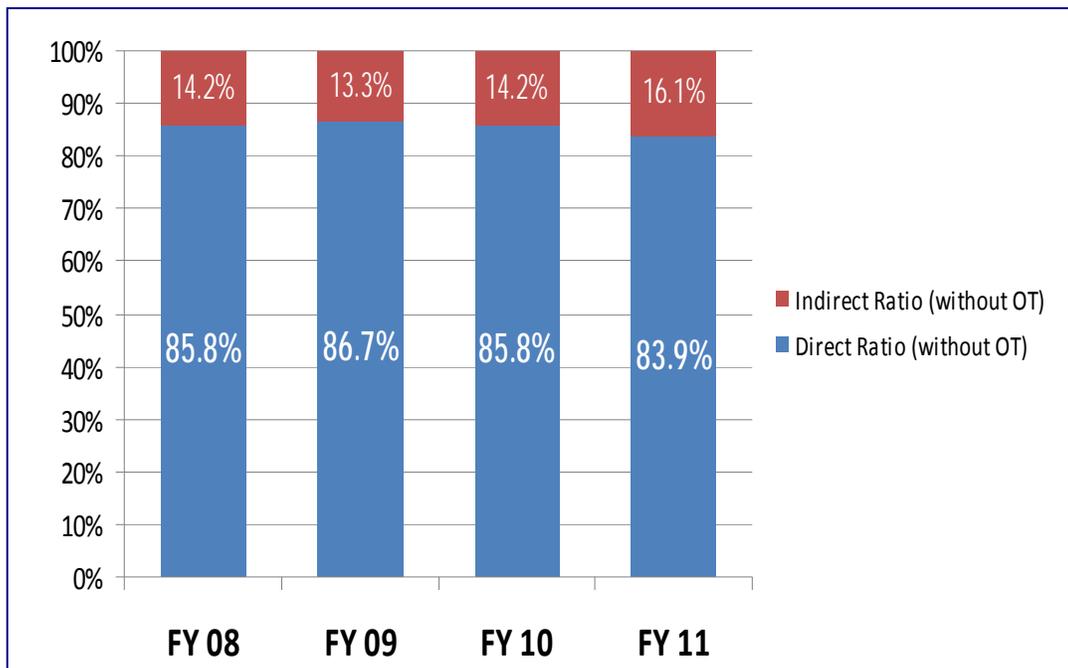


Figure 19 - FY2010/2011 NAWCAD Productivity Ratio

FY2010 Operating Budget

NAWCAD has taken a Zero-Based Budget (ZBB) approach to determining Overhead Budget allocations for FY2010. This approach resulted in the development of consistent command business rules for determining affordability and for funding requirements determination. The FY2010 estimate of this Overhead Budget is approximately \$246 million, with much already committed to relatively fixed, centrally-managed General and Administrative (G&A) expenses, such as depreciation, equipment and facilities maintenance, utilities, NMCI and other IT support. Within NAWCAD's Operating Budget there are certain expenses that are beyond the command's ability to control. These are referred to as "Must Funds" for NAWCAD. Figure 21 contains the list of Must Fund Corporate Account categories which total \$80.9 million dollars. NAVAIR Shared Services accounts for \$10M of those Must Fund activities. Figure 22 is a listing of the Shared Services. In developing the annual operating budget, Competency direct hour targets and estimated expenses are gathered and used to develop a phased revenue and expense plan. Figure 20 contains FY2010 Applied Revenue, Overhead Expense, and NOR controls. Planned versus actual progress and NOR variances are monitored throughout the year.

NAWCAD Competency Revenue, Expense, NOR Controls as of 30 Sep 10 (\$K)			
	APPLIED REVENUE	OVERHEAD EXPENSE	NOR
COMPETENCY	EOY CONTROL	EOY CONTROL	EOY CONTROL
0.0	\$ -	\$ 9,632.8	\$ (9,632.8)
1.0	\$ 12,060.4	\$ 4,752.6	\$ 7,307.8
2.0	\$ -	\$ 1,520.2	\$ (1,520.2)
4.0	\$ 168,150.1	\$ 76,157.2	\$ 91,992.9
5.0	\$ 23,168.4	\$ 19,785.0	\$ 3,383.4
6.0	\$ 24,318.3	\$ 12,616.8	\$ 11,701.5
7.0	\$ 4,397.0	\$ 41,624.9	\$ (37,227.9)
10.0	\$ 114.1	\$ 17,726.6	\$ (17,612.5)
11.0	\$ -	\$ 1,877.6	\$ (1,877.6)
Command Initiatives	\$ -	\$ 20,098.0	\$ (20,098.0)
MUIC	\$ -	\$ 55,420.3	\$ (55,420.3)
NMCI	\$ -	\$ 8,993.5	\$ (8,993.5)
Depreciation	\$ -	\$ 23,924.0	\$ (23,924.0)
Expense Credits	\$ -	\$ (44,375.2)	\$ 44,375.2
TOTAL	\$ 232,208.3	\$ 249,754.3	\$ (17,546.0)

NOTE: COMPETENCY EOY NOR TARGET (\$17.6M)

EXTERNAL EOY NOR TARGET (\$10.9M); \$6.8M DIFFERENCE IS UTILITY OVER EXECUTION

Figure 20 - FY2010 NAWCAD Competency Operating Budget

Must Funds	FY2010 \$K
Corporate Acct	
FECA	\$ 2,481
DFAS	\$ 2,122
Union Repts	\$ 299
N-ERP Program Office	\$ 2,448
Shared Services	\$ 10,047
Navy War College	\$ 25
EEOC Settlement Costs	\$ 282
FedEX	\$ 835
Transportation Subsidy	\$ 250
Training Labor \$	\$ 16
Subtotal	\$ 18,805
Depreciation	\$ 23,924
Utilities	\$ 23,477
Overhead NMCI Seats	\$ 9,000
Awards	\$ 5,295
Allowances for Overseas Personnel	\$ 390
Total	\$ 80,891

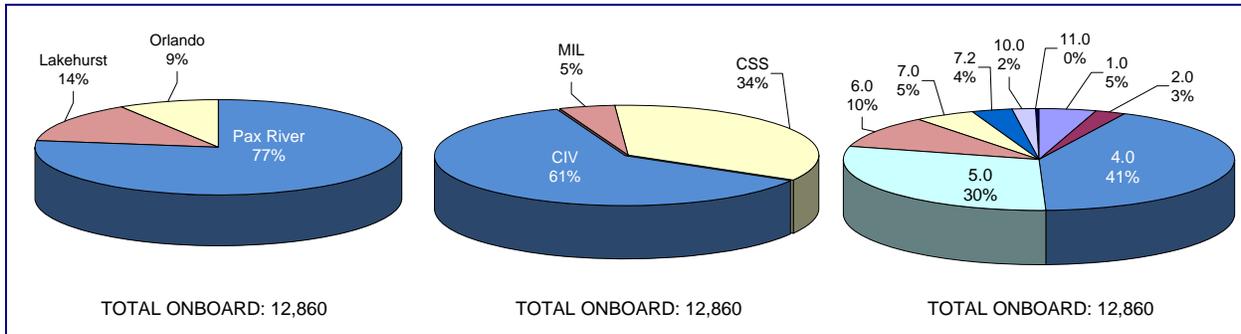
Figure 21 - FY2010 NAWCAD Must Funds

Shared Services	FY2010 \$K
CDO Mandatory Training	\$ 73
Defense Messaging System	\$ 380
DoD declassification Program	\$ 88
Total NAVAIR Critical Security	\$ 199
NAVAIR Critical Security - Continuity of Operations	\$ 72
NAVAIR Critical security - Critical Program Information	\$ 128
Career Development Program	\$ 1,483
Web Enablement	\$ 497
National Special Recruitment	\$ 429
NAVAIR Business Office	\$ 3,375
Electronic Acquisition	\$ 1,196
Navy ERP Training	\$ 164
National Help Desk	\$ 722
National Security Personnel System (NSPS) Implementation/Training	\$ 320
NMCI Enterprise Team	\$ 385
Total Force Readiness	\$ 736
Total	\$ 10,047

Figure 22 - FY2010 NAWCAD Shared Services

Workforce

The most valuable resource for NAWCAD is the people who define it. As shown in Figure 23, below, over three-fourths of the NAWCAD workforce is concentrated in Patuxent River, with the remainder split between Lakehurst and Orlando. The NAWCAD Total Force is comprised of approximately two-thirds government civilian/military personnel and one-third contractor support services personnel. Over 70 percent of the workforce is in the Research and Engineering (4.0) and T&E (5.0) Competencies, with approximately 20 percent in the Logistics and Industrial Operations (6.0) and Corporate Operations (7.0), including the IT/IM Department (7.2) Competencies. The remainder is in the Program Management (1.0), Contracts (2.0), Comptroller (10.0), and Counsel (11.0) Competencies.



NAWCAD ON BOARD WORK FORCE AS OF 30 SEPT 2009											
		1.0	2.0	4.0	5.0	6.0	7.0	7.2	10.0	11.0	Site Totals
Pax River	Civ	278	157	2,543	1,257	588	379	85	116	14	5,417
	Mil			38	504	13					555
	CSS	52	13	1,059	2,060	351	53	307	63		3,958
Lke	Civ	73	72	1,003		194	79	19	25	3	1,468
	Mil			28							28
	CSS	39	0	190		66	2	10			307
Orl	Civ	117	84	459	1	100	90	27	40	8	926
	Mil	27	1	7		2	2				39
	CSS	33		91		17	10	11			162
Competency Totals		619	327	5,418	3,822	1,331	615	458	244	25	12,860

Figure 23 - FY2010 NAWCAD Workforce by Site, Competency and Labor Category

As a working capital fund organization, NAWCAD will continue to grow its organic workforce through FY2010 and FY2011 to execute anticipated customer workload. The Navy leadership's emphasis on revitalizing the civilian acquisition workforce has introduced many enabling opportunities that must be leveraged in the competition for technical talent. Examples of these opportunities include the availability of funding through Section 852, Section 219, and the National Defense Education Program; expanded entry and journey-level acquisition intern programs; and improved recruiting and retention tools such as Expedited Hiring Authority and Student Loan Repayment programs.

Outreach

NAWCAD will continue to invest in Community Outreach and Education Partnership efforts at all three sites that create a vital pipeline of summer hires and cooperative education students. Our outreach efforts are designed to inspire interest in STEM and finance fields, and to entice outstanding local students to become future NAWCAD employees. The outreach program will be strongly aligned with DoD's National Defense Education Program. Since the outreach pipeline is designed to serve as a principal conduit to future and lasting NAWCAD employment, obtaining a diversity pool of summer hire Student Career Experience Program (SCEP), formerly Co-Operative Education Program (Co-Op), applicants must be a primary consideration.

NAWCAD's Educational Outreach efforts, ranging from kindergarten to the postgraduate level, operate from all three sites. By sponsoring student and teacher development programs in K-12 schools and partnering with local colleges to guide and develop undergraduate and postgraduate degree programs, NAWCAD has consistently encouraged growth of S&T, RDT&E, and overall technological competitiveness within the future workforce. NAWCAD participation in the K-12 Outreach Program includes science fair judging, job shadowing, student summer hires and non-paid internships, and educator support. Both Patuxent River and Lakehurst have been involved in curriculum and teacher development efforts resulting in Patuxent River's STARBASE Atlantis support and the award-winning Personnel Excellence Partnership Program. Planned future growth for Patuxent River includes the continuation of STEM development in public and private schools, including MATHCOUNTS coaches, and student participation in Association for Unmanned Vehicle Systems International (AUVSI). Lakehurst's plans include technology development with Monmouth University and the Marine Academy of Technology and Environmental Science. Meanwhile, Orlando recently received \$120K from the National Defense Education Program (NDEP) and has begun to develop outreach models and school partnership contracts for FY2009-2010.

At the College Level, Patuxent River has fostered partnerships with the College of Southern Maryland, and Morgan State University to develop degree programs and student SCEP opportunities. Lakehurst has focused on increasing the number of sponsored student capstone projects, increasing from four to six in FY2010, and in developing STEM participation in community colleges. Orlando outreach consists of engineering partnerships with the University of Florida and University of Central Florida with a focus on training system demonstrations and workforce opportunities. All sites currently participate in the Naval Research Enterprise Internship Program (NREIP) and Science, Mathematics, & Research for Transformation (SMART) Scholars Program with future postgraduate outreach efforts including a customized Master of Science in Systems Engineering (MSSE) graduate program at the Naval Post-Graduate School and a new Electromagnetics Graduate Program located at Lakehurst.

Recruiting

NAWCAD workforce growth will be met through an aggressive recruiting effort that leverages the NAVAIR national recruiting campaign. The recruiting efforts will include sending hand-selected and well-trained recruiters to colleges and universities that have demonstrated high offer acceptance rates and produce highly diverse graduate pools. Expanded uses of Expedited Hiring Authority, local large-scale "meet and greet" recruiting events and increased emphasis on journey-level recruiting will provide NAWCAD with the quality and quantity of skills needed to support our customers and execute our mission. A formal research partnership will continue with the University of Maryland (UMD), and we will continue to support the expansion of a UMD engineering bachelor degree program at the Southern Maryland Higher

Education Center. As shown in Figure 24, NAWCAD achieved a net workforce gain of approximately 600 end strength in FY2009 as a result of these recruiting efforts, with the highest portion of those (approximately half) in the 4.0 Research and Engineering Competency.

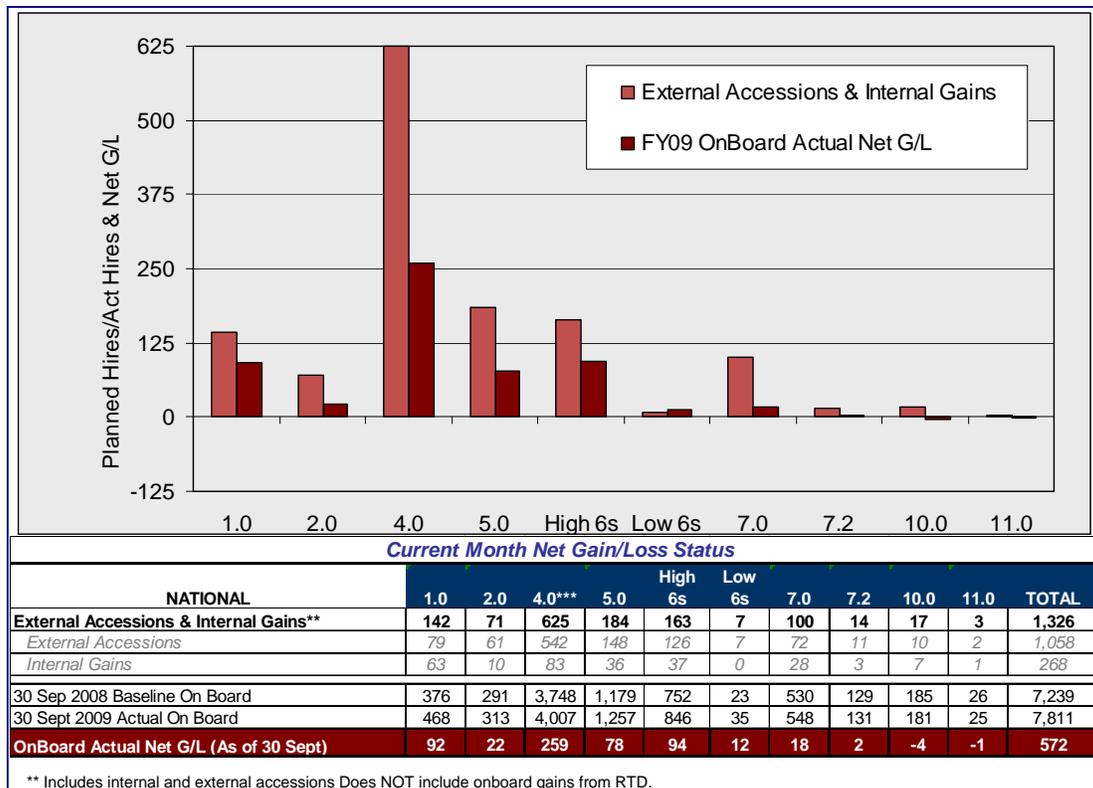


Figure 24 - FY2009 NAWCAD Recruitment Overview (all sites)

Diversity

NAWCAD will continue to develop and mature a model Equal Employment Opportunity (EEO) program that includes diversity recruiting and diversity sustainment. The program will continue to educate the workforce through the diversity seminar series and recognition opportunities such as Disability Employment Awareness Month and an annual Individuals with Disabilities Mentoring Day. We will continue to provide Command leadership, supervisors, hiring managers and recruiters with up-to-date insight in areas of low participation through a sophisticated Diversity Data Mart.

NAWCAD will champion the recruitment and retention of Individuals with Targeted Disabilities (IWTG), with the Navy's 2% IWTG goal in mind. We will continue to staff a dedicated team of IWTG recruiters and lead the NAVAIR-wide IWTG Barrier Removal Team. NAWCAD will continue to support cultural changes within NAVAIR through support of other national diversity barrier removal teams such as the Hispanic National Barrier Removal Team, and by encouraging the formation of diversity-based affinity groups at all sites. Partnerships and alliances with diversity-oriented organizations such as Society of Women Engineers (SWE), National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), and universities/colleges with strong minority populations such as Gallaudet University, Historically Black Colleges and Universities (HBCUs), University of Texas El Paso, and University of Puerto Rico, will continue to provide our organization an extremely talented and diverse candidate pool.

In comparison to National Census Bureau data for the Patuxent River site, key areas of low participation are White Males in the finance and accounting (501) series; Black Males and White Females in the logistics management specialist (346) occupational series, and Black Males in the engineering technician (802) occupational series. At the Lakehurst site, key areas of low participation are Hispanic Males and Black Males in the logistics management specialist (346) occupational series. The Orlando site has generally good representation rates based on census bureau data. However, secondary analyses have revealed low participation of minorities in high grade positions. NAWCAD will actively pursue full participation rates in the leadership ranks by emphasizing professional development opportunities such as formal education, rotational assignments, and specialized training. We will also encourage active leadership participation in professional associations with diversity emphasis.

NAWCAD's diversity barrier analyses and detailed improvement plans are contained in the Command's annual Federal Agency Annual Equal Employment Opportunity Status Report (MD-715). Examples of future actions that will continue to improve the Command diversity posture include advertising vacancies in diversity-oriented trade publications, holding job fairs at HBCUs, and adjusting outreach and CO-OP programs for increased diversity emphasis.

Retention and Development

NAWCAD will actively continue to develop and execute nationally aligned retention initiatives. The NAVAIR national retention program will provide NAWCAD with tools such as improved on-boarding process that places an early emphasis on sponsorship and mentoring. The Workforce Team will analyze exit interview data using the improved National Exit Interview web tool and provide NAWCAD supervisors with focus areas to reduce separations and attrition rates. Implementation of Section 852-funded initiatives, such as the MSSE and targeted student loan repayments, will help NAWCAD grow and retain its valuable skill base. Structured development programs such as the Engineering and Science Development Program (ESDP), the Acquisition Intern Program (AIP), National Leadership Development Program (NLDP) and other formal curricula such as the Federal Executive Institute will provide a continuum of learning opportunities for NAWCAD employees at all career levels. The emerging Section 219 initiatives will provide NAWCAD with needed investment dollars in the areas of Basic and Applied Research, Technology Transition, and Workforce Development. These development and retention initiatives appear to be having the effects desired with a reduction of external NAVAIR separations, as shown in Figure 26, from almost 8% in FY2008 to approximately 7% in FY2009.

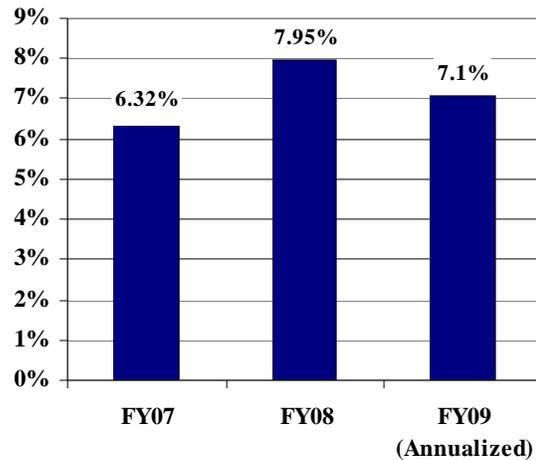


Figure 25 - FY2007-FY2009 NAWCAD Attrition Rates

Workplace Climate

The overall 2008 Command Climate Survey results shown below in Figure 26, reflect a positive trend in how NAWCAD employees perceive their work environment. NAWCAD showed improvement in each of the 17 dimensions used in the Office of Personnel Management (OPM) survey when compared to 2003 results. Initiatives that are intended to continue the positive trends include increased training for scientists and engineers; more technical innovation opportunities through Section 219 sources; the availability of wellness oriented classes for all NAWCAD employees, and on-going investment in many forms of continuous process improvement, including AIRSpeed. Specific examples where CPI initiatives are working to improve employee experiences include reducing FY09 recruiting turnaround time by over 64% (from 104 to 37 days) and improving the mandatory supervisory training course content (now in development). Implementation of the National Security Personnel System (NSPS) will enable more direct links between pay and performance. Widespread distribution of the NAWCAD Operating Plan and access to NAWCAD performance measurement metrics should enhance leadership communication with, and connection to, the NAWCAD workforce.

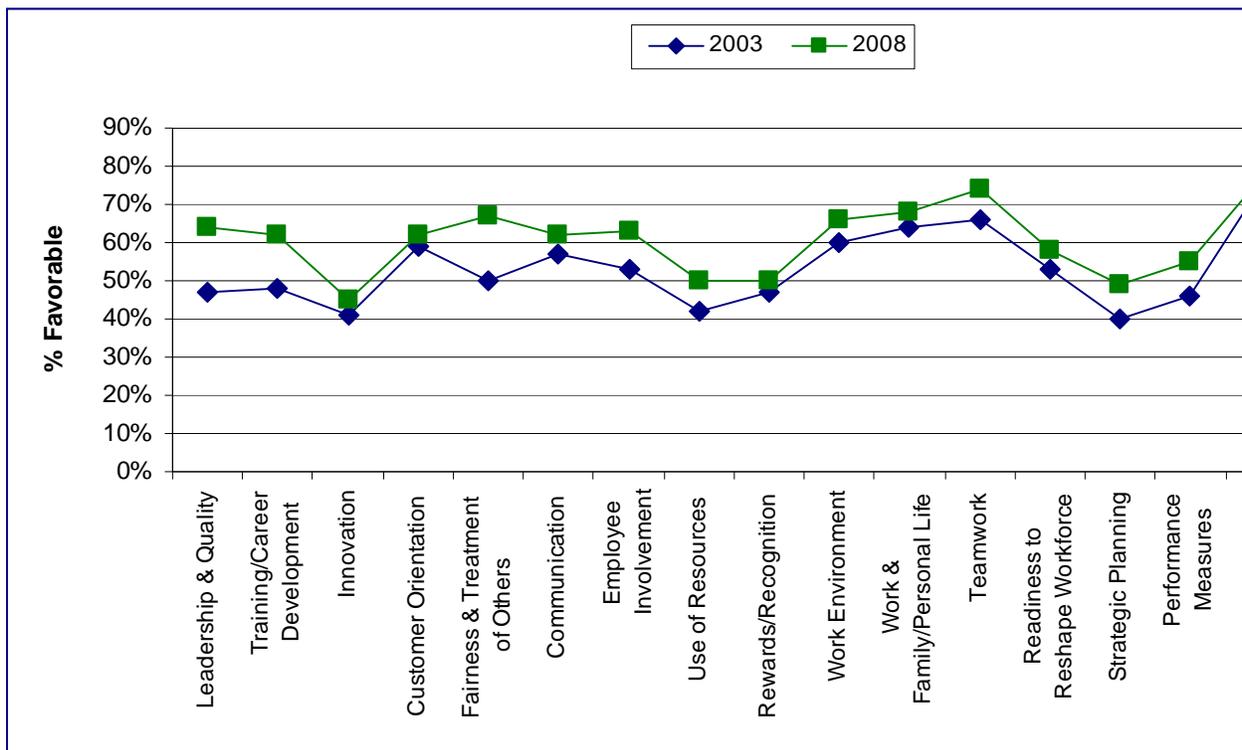


Figure 26 - NAWCAD Climate Survey Results and Trends

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Conclusion

This FY2010/2011 NAWCAD Operating Plan represents a process of alignment with the NAVAIR Commander's Guidance and the NAWCAD/WD Strategic Plan. This alignment is depicted in Figure 27 below.

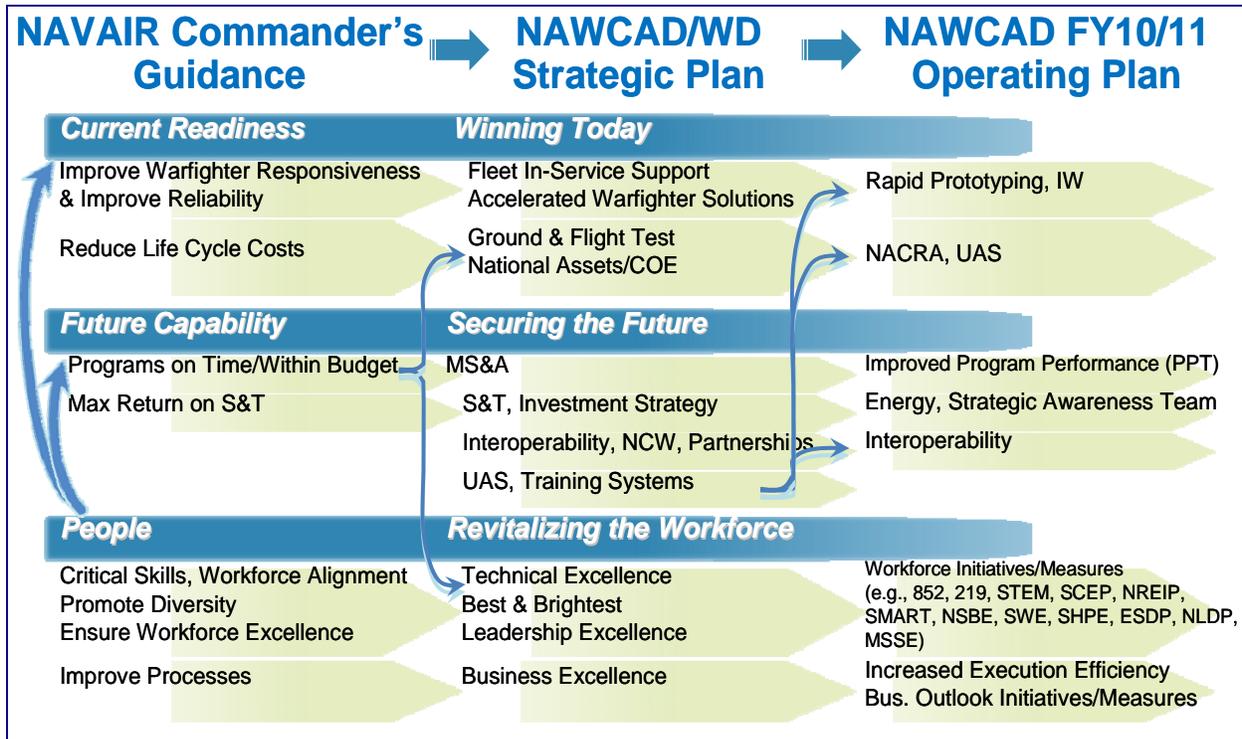


Figure 27 - FY2010/2011 NAWCAD Operating Plan Alignment

All planned accomplishments are driven by a focus on current readiness – winning today's war; future capability – effecting a future of increased national security; and people – developing the workforce vital to achieving all strategic and operational goals. To excel at its mission, NAWCAD must adapt to the need for more Rapid Warfighter Response; we must be prepared to develop, test and field advanced systems organically; we must enable successful conventional and irregular warfare operations by ensuring systems interoperability in the Joint Battlespace. NAWCAD must lead the revolution in unmanned systems from the standpoint of advanced concepts and technologies, tactical agility enablers, decision superiority, and human systems integration and efficacy. Excellence by NAWCAD in leading these changes requires operations and business processes that are efficient, fast, adaptive, economically viable, and that directly support the needs of the Warfighter.

The NAWCAD FY2010 Operating Plan describes who we are, how we operate, what we will accomplish in the coming year, and how we will measure ourselves in terms of workforce capabilities and business outcomes. The specific steps enumerated herein set the foundation for the far-reaching change that must occur so that Naval Aviation may continue to serve as a preeminent arm of U.S. national security. Planned FY2010 accomplishments will be monitored through "a regular drumbeat of accountability" using LT meetings as a primary venue for monitoring performance to plan. NAWCAD demand signals and operating results combined

with the need for strategic alignment will necessitate updates to the NAWCAD/WD Strategic Plan. Thus, as shown below, Figure 28, this operating plan represents a crucial element in an ongoing process of strategic awareness, alignment, and renewal.

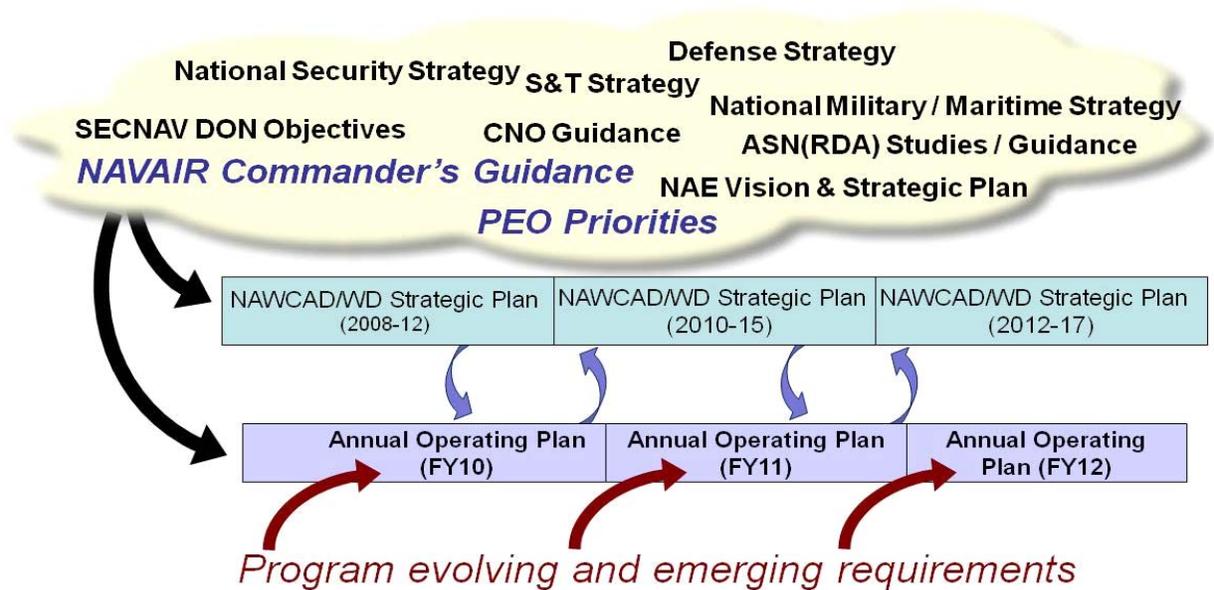


Figure 28 - NAWCAD Strategic Operations and Renewal

The FY2010/2011 NAWCAD Operating Plan is a tool for all members of the NAWCAD workforce to use in winning today, securing the future, and continually revitalizing our capabilities and expertise. This and future NAWCAD Operating Plans will operationalize and renew the NAWCAD/WD Strategic Plan – providing a disciplined, documented approach to program execution excellence.

Appendices

Appendix A. NAWCAD FY2010 Investment Projects Listing

Capital Improvement Program (CIP)

CIP establishes the capability for reinvestment in the infrastructure of NAWCAD and works to modernize and improve NWCF activity functions and equipment items to accomplish essential mission requirements. CIP projects help improve product and service quality and timeliness, reduce costs, and foster comparable and competitive business operations. The CIP budget is a portion of the NAWCAD NWCF budget and is calculated primarily from the depreciation of existing NWCF assets. CIP is managed by the Investment Working Group (IWG). The IWG, together with NAWCAD leadership guidance and approval, prioritizes and selects CIP projects based on mission need, customer requirement, how well the solution meets the need, and cost/savings requirements. The NAWCAD CIP project listing for FY2010 is shown below.

Dollars in Thousands

AD CIP Projects	Prior Year Funding	FY2010	Funding to Complete	Total Cost
Advanced Mission Computer Upgrade		\$ 575		\$ 575
Advanced Sensors Application Program (ASAP)	\$ 850	\$ 950		\$ 1,800
Aircraft Conceptual Design & Analysis Collaborative Environment	\$ 313	\$ 175		\$ 488
AN/UPX-29A		\$ 695		\$ 695
Annodize Lab Minor C		\$ 175		\$ 175
Antenna Range Equipment Upgrade		\$ 624		\$ 624
CDP Hydraulic Press		\$ 1,301		\$ 1,301
Cold Atom Magnetometer Environment		\$ 200	\$ 200	\$ 400
Crashworthy Systems Static Test Fixture		\$ 272		\$ 272
Electrical Generator Test System/ Spin Drive Stand	\$ 161	\$ 1,500		\$ 1,661
FARM Chambers Refurbishment		\$ 390		\$ 390
Ejection Windblast Minor C		\$ 50	\$ 750	\$ 800
High Performance Liquid Fuel Chromatography Equipment		\$ 312		\$ 312
ICIS Mobile Test Platform		\$ 900		\$ 900
Multispectral Image Processing and Advanced Tracking	\$ 450	\$ 350		\$ 800
Operations Research Immersive & Optimization Network	\$ 1,000	\$ 800		\$ 1,800
Radar and Computational Electromagnetic Modeling Lab		\$ 595	\$ 300	\$ 895
RF and Microwave Electronic Systems (RAMES) Laboratory		\$ 305	\$ 250	\$ 555
Scanning Electron Microanalysis System		\$ 400		\$ 400
SE & ALRE Design and Analysis Lab	\$ 425	\$ 925	\$ 630	\$ 1,980
SE/ALRE Integrated Supt Environment Info Sys		\$ 420	\$ 1,500	\$ 1,920
Secure Horizontal Access to RDT&E Enterprise Network (SHARENET)	\$ 764	\$ 764		\$ 1,528
Sonobuoy Minor C		\$ 610	\$ 75	\$ 685
Synthetic Lab Equipment	\$ 66	\$ 282		\$ 348
UAS Tracking Radar		\$ 554		\$ 554
Warfare Analysis Environment Enhancement		\$ 704		\$ 704

Appendix A. NAWCAD FY2010 Investment Projects Listing

AD CIP Projects	Prior Year Funding	FY2010	Funding to Complete	Total Cost
Antenna Testing Laboratory Automated System Revitalization (ATLAS)	\$ 72	\$ 332		\$ 404
HGR 101 Test Team Facility LRP		\$ 2,000		\$ 2,000
Prototype Simulation Engineering Infrastructure		\$ 300		\$ 300
SAIL Roadhawk III		\$ 725		\$ 725
SAIL/ E3 Interface		\$ 328		\$ 328
Surface Ship Acoustic Warfare Systems Support		\$ 276		\$ 276
T&E Support Minor C		\$ 499		\$ 499
Test Management & Reporting Tool		\$ 900		\$ 900
Webster Field UAS Control Station Center		\$ 750		\$ 750
Application and Analysis Tools Refreshment	\$ 425	\$ 550		\$ 975
Classified RDTE Network Upgrade		\$ 553		\$ 553
Davis Spur Rd Minor C		\$ 400		\$ 400
Help Desk Tools Refresh		\$ 83	\$ 765	\$ 848
Infrastructure Relationship Management		\$ 520		\$ 520
IT Platform Services Refresh		\$ 420		\$ 420
Video Technologies Refreshment	\$ 750	\$ 460		\$ 1,210
<i>Total</i>	\$ 5,276	\$ 23,924	\$ 4,470	\$ 33,670

Appendix A. NAWCAD FY2010 Investment Projects Listing

Central Test and Evaluation Investment Program (CTEIP)

CTEIP is an OSD-sponsored funding source to provide new Test and Evaluation (T&E) capabilities for joint and multi-service system test requirements. In this role, CTEIP provides a corporate means to leverage test investments for the Services and Defense agencies. All Services are eligible for CTEIP funding but approved programs must be for test capabilities that do not currently exist and be oriented toward multi-service programs. The entire CTEIP account totals approximately \$135 million DoD-wide, with NAWCAD normally receiving \$10-15 million annually. The NAWCAD CTEIP project listing for FY2010 is shown below.

Dollars in Thousands

AD Lead CTEIP Projects	Prior Year Funding	FY2010	Funding to Complete	Total Cost
Advanced Radar Environment Simulator (ARES)	\$14,204	\$3,056	\$2,190	\$19,317
Horizontal Fast Rise EMP Pulser (HFREMP)	\$6,770	\$1,470	\$0	\$8,240
Joint UAS Mission Environment Testbed	\$0	\$800	\$13,500	\$14,300
Multi-Level Secure (MLS) Joint/Coalition Network Environment	\$0	\$2,700	\$17,700	\$20,400
Joint Distributed IRCM Ground-Test System (JDIGS)	\$0	\$3,520	\$21,575	\$25,260
Joint Battlespace Environment Test Capability Study	\$0	\$650	\$0	\$650
Next Generation Electronic Warfare Environment Generator (NGEWEG) Study	\$0	\$1,400	\$0	\$1,400
Total	\$20,974	\$13,596	\$54,965	\$89,567

Appendix A. NAWCAD FY2010 Investment Projects Listing

Improvement and Modernization (I&M)

Improvement and Modernization (I&M) replaces and upgrades obsolete equipment in Major Range and Test Facility Base (MRTFB) facilities, and increases Test and Evaluation (T&E) support capabilities at various locations including NAVAIR, Atlantic Undersea Test and Evaluation Center (AUTECE), Nanoose and Dabob Bay, and Pacific Missile Range Facility (PMRF). Project proposals are tracked by AIR-5.0 and approved requests are incorporated into the Investment Roadmap based on a needs and solutions requirement to identify high priority items. The Navy I&M annual budget is expected to see a decline in FY2011. The NAWCAD I&M project listing for FY2010 is shown below.

Dollars in Thousands

AD I&M Projects	Prior Year Funding	FY2010	Funding to Complete	Total Cost
Rotor Spin Facility Enhancements	\$1,000	\$750		\$1,750
AD Minor Installation & Maintenance (I&M)	\$7,438	\$1,100	\$2,200	\$10,738
Simulation Environment Visualization and Debriefing Capability	\$1,000	\$1,100		\$2,100
High Power Radio Frequency (RF) Carts	\$1,000	\$1,000		\$2,000
Integrated Command Environment (ICE) Instrumentation Upgrade	\$608	\$432		\$1,040
Electromagnetic Interference (EMI) Life Cycle Sustaining Program	\$0	\$1,280		\$1,280
Common Data Link Simulator	\$0	\$1300	\$400	\$1,700
RCMP Development – Pax	\$367	\$275		\$642
P-558/559 Aircraft Prototyping Facility	\$1,926	\$732		\$2,658
MIR Modernization	\$3,700	\$1,300		\$5,000
Bay Fiber Replacement	\$711	\$1,889	\$1,875	\$4,475
NAVPASS	\$300	\$1,087		\$1,387
5.1 Project Schedule Database	\$0	\$400		\$400
<i>I&M Total</i>	<i>\$18,050</i>	<i>\$12,645</i>	<i>\$4,475</i>	<i>\$35,170</i>

Appendix B. List of Acronyms

A&D	Aerospace and Defense
AD	Aircraft Division
ADP	Automated Data Processing
AFPP	Alternative Futures Planning Process
AIP	Acquisition Intern Program
AIR-1.0	Program Management
ALRE	Aircraft Launch and Recovery Equipment
AOR	Accumulated Operating Result
APF	Aircraft Prototype Facility
APN	Aircraft Procurement, Navy
ASN (RDA)	Assistant Secretary of the Navy (Research, Development and Acquisition)
ASW	Anti Submarine Warfare
AT&L	Acquisition, Technology, and Logistics
ATC/ACLS	Air Traffic Control/Automatic Carrier Landing System
AUTEC	Atlantic Undersea Test and Evaluation Center
AUVSI	Association for Unmanned Vehicle Systems International
AVMI	Air Vehicle Modification and Instrumentation
BAMS	Broad Area Maritime Surveillance
BRAC	Base Realignment and Closure
C4I	Command, Control, Communications, Computers, Intelligence
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CAO	Competency Aligned Organization
CAPE	Cost Assessment and Program Evaluation
CBM	Condition-Based Maintenance
CENTCOM	U.S. Central Command
CFFC	Commander Fleet Forces Command
CIP	Capital Improvement Program
CLT	Combined Leadership Team
CMC	Commandant of the Marine Corps
CNO	Chief of Naval Operations
COCOMS	Combatant Commands
COIN	Counter Insurgency
CONOPS	Concept of Operations
COP	Community of Practice
CPI	Continuous Process Improvement
CS-21	A Cooperative Strategy for 21st Century Seapower
CSBA	Center for Strategic and Budgetary Assessments
CTEIP	Central Test and Evaluation Investment Program
CTO	Chief Technology Officer

Appendix B. List of Acronyms

CVE	Escort Carrier
CVN	Nuclear-Powered Aircraft Carrier
DARPA	Defense Advanced Research Project Agency
DASN-Air	Deputy Assistant Secretary of the Navy – Air Programs
DDR&E	Director of Defense Research and Engineering
DHS	Department of Homeland Security
DIA	Defense Intelligence Agency
DLA	Defense Logistic Agency
DoD	Department of Defense
DoDAF	Department of Defense Architecture Framework
DOE	Department of Energy
DON	Department of the Navy
DPD	Director of Prototype Development
DVE	Degraded Visual Environment
E3	Electromagnetic Environmental Effects
EDT	Externally Directed Team
EEO	Equal Employment Opportunity
EOB	Expense Operating Budget
EP-X	Electronic Patrol-X Intelligence, Surveillance, Reconnaissance and Targeting (ISR&T) platform (EP-3 follow-on)
ESDP	Engineering and Science Development Program
FMS	Foreign Military Sales
FRC	Fleet Readiness Center
FY	Fiscal Year
FYDP	Fiscal Year Defense Program
G&A	General and Administrative
GDF	Guidance to Defense Forces
GDP	Gross Domestic Product
GWOT	Global War On Terror
HBCU	Historically Black Colleges and Universities
I&M	Improvement and Modernization
ICE	Independent Cost Estimating
IEE	Increasing Execution Efficiency
IFF	Identify Friend or Foe
IMD	Integrated Maintenance Diagnostics
IPT	Integrated Program Team
ISEET	Integrated Systems Evaluation, Experimentation and Test
ISR	Intelligence, Surveillance, Reconnaissance
IT	Information Technology
IW	Irregular Warfare
IWG	Investment Working Group
IWTD	Individuals With Targeted Disabilities
JCTS	Jet Car Track Site

Appendix B. List of Acronyms

JFCOM	Joint Forces Command
JSF	Joint Strike Fighter
KSF	Key Success Factor
LAMPS	Light Airborne Multipurpose System
LREC	Language, Regional Expertise, and Cultural awareness
LSI	Lead System Integrator
LT	Leadership Team
MDA	Missile Defense Agency
MDAP	Major Defense Acquisition Program
MILCON	Military Construction
MIT	Massachusetts Institute of Technology
MRTFB	Major Range and Test Facility Base
MS&A	Modeling, Simulation and Analysis
MSSE	Master of Science in Systems Engineering
N00X	Naval Warfare Integration Group
N2/N6	Information Dominance Directorate
N3/N5	Deputy Chief of Naval Operations for Information, Plans, and Strategy
NACRA	Naval Aviation Center for Rotorcraft Advancement
NAE	Naval Aviation Enterprise
NAPRAC	NAWCAD Prototype Rapid Acquisition Capability
NAS	Naval Air Station
NAVAIR	Naval Air Systems Command
NAVAIRINST	NAVAIR Instruction
NAVAIRWARCENACDIV	Naval Air Warfare Center Aircraft Division
NAVSEA	Naval Sea System Command
NAWCAD/WD	Naval Air Warfare Center Aircraft Division and Weapons Division
NAWCTSD	Naval Air Warfare Center Training Systems Division
NDAA	National Defense Authorization Act
NDU	National Defense University
NDW	Naval District Washington
NELO	Navy Engineering Logistics Office
NESC	Naval Electronics Engineering Center
NGA	National Geospatial Agency
NIWO	Navy Irregular Warfare Office
NLDP	National Leadership Development Program
NMCI	Navy Marine Corps Intranet
NOC	Naval Operating Concept
NOR	Net Operating Result
NREIP	Naval Research Enterprise Intern Program
NR-KPP	Net-Ready Key Performance Parameter
NSA	National Security Agency

Appendix B. List of Acronyms

NSBE	National Society of Black Engineers
NSC	National Security Council
NSMA	Naval System Management Activity
NSP-12	Navy Strategic Plan in support of Program Objective Memorandum 2012
NSPS	National Security Personnel System
NTWL	Naval Test Wing Atlantic
NUCAS	Navy Unmanned Combat Air System
NWCF	Navy Working Capital Fund
O&M	Operation and Maintenance
OASD	Office of the Assistant Secretary of Defense
OCO	Overseas Contingency Operations
OMB	Office of Management and Budget
ONR	Office of Naval Research
OPM	Office of Personnel Management
OPNAV	Office of the Chief of Naval Operations
OSD	Office of the Secretary of Defense
PA&E	Program Analysis and Evaluation
PEO	Program Executive Office
PEO (A)	Program Executive Office for Air, ASW, Assault, and Special Mission Programs
PEO (JSF)	Program Executive Office for Joint Strike Fighter
PEO (T)	Program Executive Office for Tactical Aircraft Programs
PEO (U&W)	Program Executive Office for Unmanned Aviation and Strike Weapons
PMA	Program Manager, Air
PMRF	Pacific Missile Range Facility
PO&AM	Plan of Actions and Milestones
POC	Point of Contact
POM-12	Program Objective Memorandum-12
POR	Program Of Record
PPBE	Planning, Programming, Budgeting and Execution
PPT	Improved Program Performance
PSYOPS	Psychological Operations
QDR	Quadrennial Defense Review
R&D	Research and Development
RDA CHENG	ASN (RDA) Chief Systems Engineer
RDAT&E	Research, Development, Acquisition, Test and Evaluation
RDT&E	Research, Development, Test and Evaluation
RIMP	Regional Integrated Master Program
RP	Rapid Prototyping
RR	Rapid Response
RRC	Rapid Reaction Cell
RRTO	Rapid Reaction Transition Office

Appendix B. List of Acronyms

S&T	Science and Technology
SCEP	Student Career Experience Program
SE	Support Equipment
SECDEF	Secretary of Defense
SECNAV	Secretary of the Navy
SETR	Systems Engineering Technical Review
SFA	Security Force Assistance
SHP	Society of Hispanic Engineers
SIL	Systems/Software Integration Lab
SIPRNet	Secret Internet Protocol Router Network
SMART	Science, Mathematics And Research for Transformation
SME	Subject Matter Expert
SO/LIC	Special Operations/Low Intensity Conflict
SOCOM	Special Operations Command
SoS/FoS	System of Systems/Family of Systems
SPAWAR	Space and Naval Warfare Systems Command
STEM	Science, Technology, Engineering, and Mathematics
STILO	Scientific and Technical Intelligence Liaison Office
STUAS	Small Tactical Unmanned Air System
SWE	Society of Women Engineers
T&E	Test and Evaluation
TFBN	Total Force Battle Network
TFE	Task Force Energy
TOC	Total Cost Ownership
TRL	Technology Readiness Level
TSD	Training Systems Division
TTP	Tactics, Techniques, and Procedures
UAS	Unmanned Air System
UAV	Unmanned Air Vehicle
UMD	University of Maryland
U.S.	United States
USD (AT&L)	Under Secretary of Defense for Acquisition, Technology and Logistics
USN	United States Navy
USNTPS	United States Naval Test Pilot School
UxS	Unmanned System
WD	Weapons Division
WG	Working Group
WMD	Weapons of Mass Destruction
ZBB	Zero Based Budget