# Audit Report

OFFICE OF THE INSPECTOR GENERAL

**TEST FACILITY REALIGNMENT**

Report No. 94-123 June 8, 1994

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**Acronyms**

| | |
|---|---|
| BRAC | Base Realignment and Closure |
| COBRA | Cost of Base Realignment Actions |
| NAWC-WPNS | Naval Air Warfare Center - Weapons Division |
| NAWS | Naval Air Weapons Station |
| RDT&E | Research, Development, Test and Evaluation |
| SECNAV | Secretary of the Navy |
| SID | Services and Information Directorate |
| T&E | Test and Evaluation |
| WSSA | Weapon System Support Activity |

**INSPECTOR GENERAL**
**DEPARTMENT OF DEFENSE**
**400 ARMY NAVY DRIVE**
**ARLINGTON, VIRGINIA 22202-2884**

June 8, 1994

MEMORANDUM FOR SECRETARY OF THE NAVY

SUBJECT: Audit Report on Test Facility Realignment (Report No. 94-123)

We are providing this final report for your review and comments. This report discusses matters concerning the functional realignment within the Naval Air Warfare Center - Weapons Division. Comments on a draft of this report were considered in preparing this final report.

DoD Directive 7650.3 requires that all recommendations be resolved promptly. Therefore, we request that the Secretary of the Navy provide final comments on the unresolved recommendations by August 8, 1994. Potential monetary benefits are also subject to resolution in accordance with DoD Directive 7650.3.

The courtesies extended to the audit staff are appreciated. If you have questions on this audit, please contact Mr. Raymond Spencer, Program Director, at (703) 614-3995 (DSN 224-3995) or Mr. Steven Hughes, Project Manager, at (703) 693-0489 (DSN 223-0489). Appendix J shows our distribution list.

Robert J. Lieberman

Robert J. Lieberman
Assistant Inspector General
for Auditing

# Office of the Inspector General, DoD

**Report No. 94-123** **June 8, 1994**
(Project No. 3AB-0012)

## TEST FACILITY REALIGNMENT

## EXECUTIVE SUMMARY


**Introduction.** In December 1990, the Secretary of Navy initiated a review of all Navy facilities using research, development, test and evaluation (RDT&E) funding and announced a proposal for consolidating separate naval RDT&E and engineering organizations into four warfare centers. Emphasis was directed at reducing the size of shore infrastructure and overhead, streamlining internal management and operations, and reducing the potential for duplication of effort. Accordingly, the Navy undertook certain realignments including creation of the Naval Air Warfare Center - Weapons Division (NAWC-WPNS).

In September 1992, the Joint Chiefs of Staff expressed concern with the apparent degree of duplication and excessive capacity in RDT&E infrastructure, especially at RDT&E test ranges and facilities. The Joint Chiefs of Staff indicated that significant benefits were possible through consolidations and closures of RDT&E test ranges and facilities. Overall infrastructure reduction is a prime DoD management goal.

**Objectives.** The objectives of the audit were to evaluate the mission assignments, workload, and capabilities at NAWC-WPNS and the Air Force's 30th Space Wing. We evaluated the justifications for duplication of functions related to RDT&E operations, whether associated specialized test requirements warranted separate instrumentation and facilities, and internal controls related to those objectives.

**Audit Results.** The audit determined that, while the Navy's realignment and organizational consolidation of the NAWC-WPNS improved efficiencies and operations, it did not eliminate redundant or duplicative functions. The Navy also exempted NAWC-WPNS from consideration under the Defense Base Realignment and Closure process. The Navy could potentially save approximately $1.7 billion more over 20 years by combining duplicative and dual-sited functions at the NAWC-WPNS, Point Mugu base, with the NAWC-WPNS, China Lake base. The audit revealed no problems related to the audit objectives at the Air Force's 30th Space Wing, Vandenberg Air Force Base, California.

**Internal Controls.** The internal controls applicable to test facility realignments were deemed to be effective in that no material weaknesses were disclosed by the audit. See Part I for controls assessed.

**Potential Benefits of Audit.** Implementing the audit recommendations would potentially save the Navy approximately $1.7 billion over a 20-year period, assuming the base realignment and closure process results in realignments along the lines of those discussed in this report. One time costs of $517.7 million preclude any net monetary benefits in the first 6 years. Appendix H summarizes the potential savings.

**Summary of Recommendations.** We recommended that the Secretary of the Navy include the functional realignment within the Naval Air Warfare Center - Weapons Division in the FY 1995 Defense Base Realignment and Closure evaluation process. We also recommended that the selection criteria be limited to protecting capabilities, not bases.

**Management Comments.** Management nonconcurred with our recommendations, but stated that the Naval Air Warfare Center - Weapons Division at both Point Mugu and China Lake would be reviewed during the 1995 base closure and realignment process. The Navy also expressed concern that the audit report requires management to comment on potential 1995 base closure decisions. In addition to the issues associated with the base closure and realignment process, management asserted the report includes many inaccuracies, incorrect assumptions, and incomplete data. A full discussion of management comments is in Part II of the report. The complete text of those comments is in Part IV.

**Audit Response.** The intent of both recommendations is for the potential benefits of the realignments assessed during the audit to be brought to the attention of decision makers in the 1995 base closure and realignment review. The Navy is not being asked to prejudge the results of that decision making process. We stand by the accuracy of our data, assumptions, and recommendations and request the Navy reconsider its position and provide comments to the final report by August 8, 1994.

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This report was prepared by the Acquisition Management Directorate, Office of the Inspector General for Auditing, DoD.

# Part I - Introduction

## Background

The Secretary of the Navy (SECNAV), anticipating DoD budget reductions, initiated a review on December 14, 1990, of all Navy facilities receiving research, development, test and evaluation (RDT&E) funding. The review was to identify actions that would reduce the size of shore infrastructure and overhead, streamline internal management and operations, and reduce the potential for duplication of effort. In December 1990, SECNAV announced a proposal for consolidating more than 63 separate naval RDT&E and engineering organizations into four warfare centers. The Naval Air Warfare Center was created from 9 organizations.

Naval Air Systems Command directed that the Naval Air Warfare Center be split into components concentrating on airframes and weapons. As a result, the Naval Air Warfare Center - Weapons Division (NAWC-WPNS) was created with four geographically dispersed field sites that included two extensive test ranges: the Sea Test Range at Point Mugu, California, and the Land Test Range at China Lake, California. The mission of NAWC-WPNS includes RDT&E and in-service engineering for weapon systems associated with air warfare missiles and missile subsystems, aircraft weapons integration, and assigned airborne electronic warfare systems. A description of the four sites that comprise NAWC-WPNS follows.

o NAWC-WPNS, Point Mugu, California, supports complex test scenarios with fleet-deployed/fleet-configured air and sea combatant forces on a 36,000-square-mile highly instrumented and controlled sea range. It provides test and evaluation (T&E) for Navy air-launched/airborne weapons, targets, and related devices, including Tomahawk cruise missiles, Phoenix missiles, Harpoon air- and surface-launched missiles, Trident, Sparrow, and Sidewinder missile families; Advanced Medium-Range Air-to-Air Missiles; Vandal target, sub-scale targets; and F-14A/D weapon system integration and EA-6B system integration. Also included are extensive nondestructive simulation facilities.

o NAWC-WPNS, China Lake, California, is the Navy's largest RDT&E activity from the standpoint of force level, land area, and plant investment. Extensive air and land ranges are utilized for T&E of missiles, weapons, aircraft, and electronic warfare systems, subsystems, and components, and weapon system and aircraft system integration for the F/A-18, AV-8B, A-6, and AH-1W aircrafts. More than 1,700 square miles of dedicated land, accompanied by 17,000 square miles of restricted airspace, provide capability for extensive "outdoor laboratory" T&E.

o NAWC-WPNS, White Sands, New Mexico, is a Navy tenant Command at the Army-operated White Sands Missile Range. It is a land-based test site for the Standard Missiles and the Navy's only test site capable of firing all versions of the Standard Missile, including Vertical Launch Standard and Aegis missiles. Testing of other missiles is supported, including Sea Lance, Standoff Land Attack Missile, and Vertical Launch Seasparrow.

o NAWC-WPNS, Albuquerque, New Mexico, is a Navy tenant Command at Kirtland Air Force Base. Its primary purpose is to assist in establishing and maintaining a nuclear weapon capability with Navy combat aircraft, ships, submarines, and Navy and Marine Corps amphibious forces, and to ensure that nuclear weapon systems can be employed effectively with an adequate degree of safety. The Albuquerque site was recommended for closure by the FY 1991 Base Realignment and Closure (BRAC) Commission. However, the FY 1993 BRAC Commission recommended that a small detachment of Weapons Division personnel remain after the closure to provide liaison with the Sandia Laboratory of the Department of Energy. As a result, several Albuquerque personnel will be relocated to the China Lake base.

In September 1992, the Joint Chiefs of Staff recommended changes to enhance efficiency and effectiveness of the forces. The Joint Chiefs of Staff also expressed concern with the apparent degree of duplication and excessive capacity in RDT&E infrastructure, especially at RDT&E test ranges and facilities. The Joint Chiefs of Staff indicated that consolidations and closures of RDT&E test ranges and facilities could streamline RDT&E infrastructure. The overall reduction of infrastructure remains a primary DoD management goal.

## Objectives

The objectives of the audit were to evaluate the mission assignments, workload, and capabilities at the NAWC-WPNS and the Air Force's 30th Space Wing. Specifically, we evaluated the justification for duplication of functions related to RDT&E operations; evaluated whether associated specialized test requirements warranted separate instrumentation and facilities; and evaluated applicable internal controls related to the objective. We found no problems related to the objectives at the Air Force's 30th Space Wing, Vandenberg Air Force Base, California.

## Scope and Methodology

We interviewed personnel involved in RDT&E test range management and support operations. We examined data relative to NAWC-WPNS' current and proposed organizational structure, mission and function statements, current and projected workload, funding documents and program schedules, facilities and equipment, proposed military construction projects, staffing and force structure plans, and contractor-support services for FYs 1990 through 1999. Additionally, we utilized the Cost of Base Realignment Actions (COBRA) software program to estimate the costs, savings, and the payback period associated with realigning the NAWC-WPNS, Point Mugu base. Because of the time sensitivity of the data under review, we did not review internal controls related to the software program. The audit used the COBRA model, which was reviewed by the General Accounting Office and used by the Department of Defense for the Base Realignment and Closure process. Except as noted, this economy and efficiency audit was made from October 1992 through October 1993 in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD. Accordingly, we included tests of internal controls that were considered necessary. Organizations visited or contacted during the audit are listed in Appendix I.

During the audit, we examined each directorate, department, and branch within the NAWC-WPNS organization. Our analysis included, but was not limited to:

o current and proposed organizational structure;

o mission and functions performed by each directorate, department, and branch;

o past and estimated future workload;

o facilities and equipment;

o contractor-support services;

o personnel resources;

o interface between functional areas; and

o inter- and intra-base support requirements.

Also, technical personnel of the Inspector General, DoD, provided us with quantitative analyses and evaluations of COBRA data. The audit did not use computer-generated data.

## Internal Controls

The internal controls applicable to test facility realignments were deemed to be effective as defined by DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987. No material weaknesses were disclosed by the audit. Therefore, there was no need to review implementation of the Defense Internal Management Control Program.

## Prior Review

In the Navy "RDT&E Infrastructure Reduction Study," March 21, 1992, the Vice Chief of Naval Operations directed the Navy to conduct a study to produce ideas for reducing the Navy's RDT&E infrastructure between 25 percent and 50 percent. The study concluded that a 25 percent reduction in the RDT&E infrastructure, largely in technical personnel, would not diminish essential capabilities. The cuts, if consistent with Navy program reductions, would produce capacity changes only. Such reduction levels would require Reductions In Force at almost all RDT&E centers. The study also concluded that such cuts would not necessarily trigger additional closures or mergers of organizations.

# Part II - Finding and Recommendations

# Achieving Realignment and Organizational Consolidation

The Navy's realignment and organizational functional consolidation of the Naval Air Warfare Center - Weapons Division (NAWC-WPNS) improved efficiencies and operations, but did not eliminate redundant or duplicative functions. The Navy also exempted NAWC-WPNS from consideration under the subsequent Defense Base Realignment and Closure (BRAC) process. The NAWC-WPNS exemption occurred because efforts were not directed at eliminating redundancy and the application of a very lenient interpretation of BRAC exclusionary criteria. A realignment of Point Mugu's functions with China Lake, if implemented, would streamline operations and reduce its Research, Development, Test, and Evaluation infrastructure, in accordance with Secretary of the Navy instruction. The Cost of Base Realignment Actions (COBRA) model calculated the potential net savings obtainable from these improved efficiencies would approximate $1.7 billion over a 20-year period.

## Background

NAWC-WPNS has worked extensively to implement its realignment and consolidation. Efforts include:

o The "Naval Air Warfare Center - West Consolidation Study," dated February 8, 1991, (the Consolidation Study) defined the implementation plan and the recommended management and operation of NAWC-WPNS. In the Consolidation Study, NAWC-WPNS acknowledged that its realignment and consolidation efforts would result in minimal cost savings. NAWC-WPNS states that "Because of the geographical dispersion of the four sites, most of the support functions reviewed yielded either cost neutral consolidation impacts or cost avoidances through economies of scale."

o After the Consolidation Study, each NAWC-WPNS Directorate prepared a Pre-Planning Report, dated April 19, 1991, which further examined the implementation of the NAWC-WPNS consolidation. Specifically, the Pre-Planning Reports documented the historical evolution of NAWC-WPNS, its organizational structure, and related pre-planning considerations, issues, and recommendations.

o The "Phase II Telemetry Consolidation Study," dated February 27, 1992, examined planning, results, and options required to implement consolidation of telemetry and instrumentation activities at the China Lake and Point Mugu sites. The primary focus of the study was to develop and

explore initiatives for the consolidation of weapons telemetry and instrumentation activities within NAWC-WPNS and to determine where consolidation would be desirable to reduce costs and improve efficiency in design or development and support of telemetry and instrumentation systems for weapons platforms.

o The "Naval Air Warfare Center - Weapons Division Transition Plan," dated March 1992, examined the initial implementation plan and identified further actions required during FYs 1992 and 1993 to transition to a fully consolidated and integrated Weapons Division. The Transition Plan documented background information, transition planning areas, and organizational concepts and relationships.

The FY 1991 BRAC Commission endorsed the Navy's planned consolidation of 38 test sites into 4 warfare centers. Included were the four sites creating the Naval Air Warfare Center - Weapons Division. However, the BRAC review did not address the key issues of identifying and eliminating unnecessary duplication at NAWC-WPNS. NAWC-WPNS management emphasized that its realignment and consolidation efforts were on-going and that additional organizational refinements to improve efficiency were envisioned.

Public Law 101-510, Title XXIX, "Defense Base Realignment and Closure Act of 1990," (the Act) established the BRAC Commission to provide a fair process that would result in the timely closure and realignment of military bases inside the United States. BRAC Commission's methodology included grouping bases into categories, determining the military value of bases within each category, evaluating each base's capacity to absorb additional missions and forces, and determining the overall excess capacity within the categories. Additionally, the Act allows the Office of Secretary of Defense to transfer real property or facilities located at a military base to be closed or realigned to a Military Department or other entity within the DoD or the U.S. Coast Guard.

The COBRA model is designed to calculate the costs and savings associated with proposed base realignment and closure actions, using data that are readily available to the Military Department staffs without extensive field studies. The COBRA model was used in the 1988, 1991, and 1993 BRAC Commission processes as a tool to provide a consistent method of evaluating closure and realignment options. Since its inception, the model has undergone development and modification. The General Accounting Office reviewed the COBRA model and, after recommending minor modifications, determined it was a sound tool for evaluating costs, savings, and payback periods.

## Functional Commonality and Duplication

The NAWC-WPNS organizational chart showed extensive apparent functional commonality and duplication of capabilities between the Point Mugu and China

Lake bases. For purposes of analysis, we segmented the NAWC-WPNS organization into "direct" and "indirect" functions. Direct functions were associated with RDT&E services, whereas indirect functions were associated with administrative and infrastructure support services. The direct functions consisted of 8 departments located at Point Mugu, 11 departments located at China Lake, and 3 departments that were dual-sited. The indirect functions comprised 23 departments located within the Services and Information Directorate and the two Naval Air Weapons Station (NAWS) commands. (See Appendix A for the NAWC-WPNS organization chart.)

Our review of the indirect functions determined they were clearly duplicative. We also determined that the three direct dual-sited departments, although not duplicative, would achieve better management and functional synergism if consolidated. For example, we found that in one area of the Threat, Telemetry, and Instrumentation Directorate, the department head, located at China Lake, was not aware that the deputy at Point Mugu was acquiring significant amounts of equipment from contractors going out of business. We also observed, on numerous occasions, that department managers either traveled to or conducted video-teleconferences with their counterparts at the other site. We also reviewed the eight single-sited Point Mugu departments and determined that moving the three Sea Range departments to China Lake, although possible, was impractical. We later concentrated our review on the five remaining departments. We concluded that several NAWC-WPNS departments at China Lake and Point Mugu performed duplicative functions. Therefore, we examined the mission and function within each department and branch and the type of work being performed, workload milestones, facilities and equipment, and personnel qualifications. Appendix B describes duplications between departments.

Tables 1 and 2 show the NAWC-WPNS and NAWS departments divided into the defined functional areas.

**Table 1. Duplicative Functional Areas**

| China Lake | Point Mugu |
|---|---|
| Aircraft Weapons Integration | Aircraft Weapons Integration |
| Engineering | In-Service Engineering |
| Attack Weapons Systems | Strike Weapons Systems |
| Intercept Weapons | Air Intercept Weapons |
| Naval Air Weapons Station | Naval Air Weapons Station |

**Table 2. Dual-Sited Functional Areas**

| China Lake | Point Mugu |
|---|---|
| Electronic Warfare | Electronic Warfare |
| Target Systems | Target Systems |
| Threat, Telemetry, and Instrumentation | Threat,Telemetry,and Instrumentation |
| Services and Information Directorate | Services and Information Directorate |

As shown in Tables 1 and 2, a considerable amount of functional commonality and duplication of capabilities exists between the Point Mugu and China Lake bases. The following sections discuss our review of the Fighter Aircraft Weapons Integration Department (the Fighter Department) and the Fighter/Attack Aircraft Weapons Integration Department (the Fighter/Attack Department). Management for the Aircraft Weapons Systems Directorate is located at the China Lake site, while line management is split between the two sites. The mission and functions of both departments are to provide life-cycle systems engineering for tactical aircraft (fighter, strike, attack, assault) and combat control systems, including both offensive and defensive mission systems; and perform design, development, integration, and T&E of aircraft subsystems software and hardware. The Fighter Department at Point Mugu provides support for the F-14 Tomcat, while the Fighter/Attack Department at China Lake provides support for the F/A-18 Hornet, the A-6 Intruder, the AV-8B Harrier, and the AH-1W Cobra helicopter.

The Aircraft Weapons Integration Department developed specialized computer-intensive laboratories to support its various tactical aircraft programs. These specialized laboratories were commonly referred to as Weapon System Support Activities (WSSAs). Each WSSAs contained its own simulators, work stations, and platform-peculiar equipment.

Our review determined that the types of work performed by both departments were duplicative. Additionally, Fighter/Attack Department personnel stated that no technical reasons explain why its RDT&E capabilities and expertise in four weapons programs (F/A-18, A-6, AV-8B, and AH-1W aircraft) could not be applied to F-14 aircraft. We were provided several examples in which China Lake had provided assistance to Point Mugu in its F-14 air-to-ground development efforts. Areas where assistance had been provided included F/A-18 air-to-ground algorithms, mission computer, Global Positioning System, radar upgrade, and multi-sensor integration.

The Fighter Department did not challenge its duplication of capabilities, but did raise issues it considered would adversely impact its consolidation with the

Fighter/Attack Department. The major areas were milestone schedule impacts and other support requirements. Our analysis on those issues found that the consolidation of the Fighter Department was technically feasible, as follows.

**Milestone Schedule Impacts.** The Navy plans to upgrade F-14 aircraft to a multi-mission aircraft with improved ground attack capabilities and to phase out A-6 aircraft. The Fighter Department personnel stated that consolidation and relocation would cause program milestones to be missed, thereby delaying the delivery of needed capabilities to the fleet. At the time of our review, the tactical software development milestone schedule for the proposed upgrade program was to be completed in mid-to-late FY 1996. Since the two departments could not be consolidated until after FY 1996, approved upgrades would have been completed. Figure 1 depicts the scheduled completion dates for approved F-14 upgrades, as provided by NAWC-WPNS.

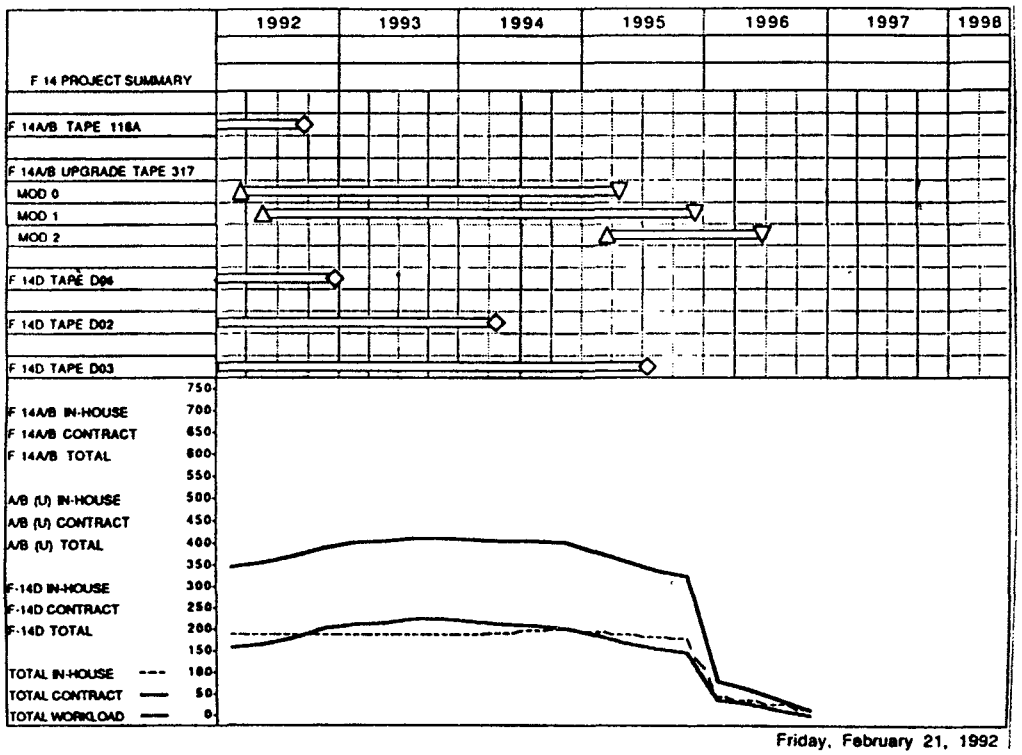
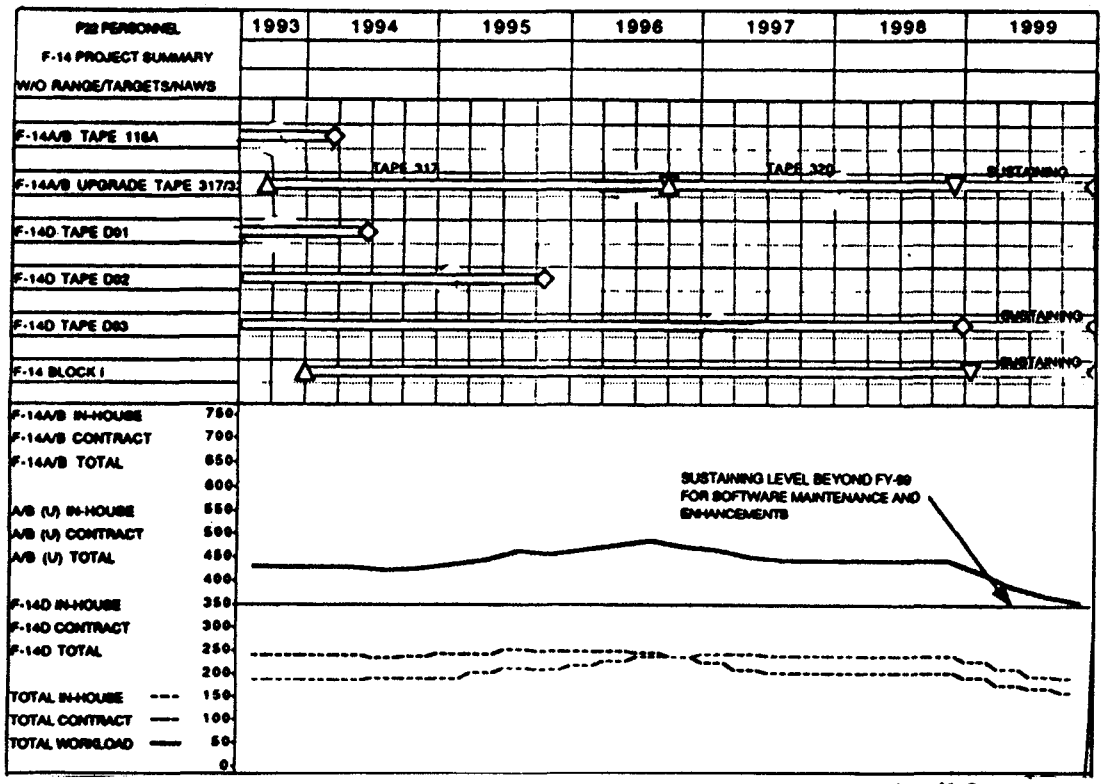



**Figure 1. Approved F-14 Milestone Schedule**

During the audit, the Fighter Department prepared a revised software development milestone schedule that depicted completion dates through FY 1999. The Fighter Department included work on the Block 1 upgrade in its milestone schedule. Figure 2 shows the Fighter Department's revised F-14 milestones.




April 2, 1992

**Figure 2. Revised F-14 Milestone Schedule**

The revised schedule is questionable. First, the Fighter Department was not able to provide supporting documentation showing that the revised schedule had been reviewed and approved by the Software Change Review Board, responsible for system software life-cycle change management functions. Software Change Review Board responsibilities include reviewing and approving tactical software development milestone schedules.

Second, at the time of our review, the Block 1 upgrade program was unfunded. Therefore, F-14 aircraft may not evolve beyond the limited Phase 1 air-to-ground capability. However, should Block 1 funding proceed, minimal disruption to the software development schedule would be incurred by phasing the Fighter Department's relocation as workload decreased for each upgrade. For example, transfers of equipment, facilities, and personnel could occur during downtime not requiring the use of WSSA laboratory facilities. NAWC-WPNS has demonstrated that entire departments can be physically moved with minimal disruption to development schedules. In June 1989, the Electronic Warfare Department moved the EA-6B Weapons Systems Support Laboratory from Building 7020 to Building 3008 at the Point Mugu base. The laboratory was partially operational in 2 weeks. Approximately 2 months later in August 1989, the laboratory became fully operational. Laboratory personnel made the move in phases between April 1989 and September 1989.

However, renegotiating the development schedule to accommodate relocation should be considered. Program milestones and Block 1 upgrade engineering technical support contracts could be negotiated to compensate for the disruption in schedule during the transfer of equipment, facilities, and personnel to meet the FY 1996 milestone deadline. We further recognize that the approved Block 1 milestone schedule may ultimately extend through the latter part of FY 1999 as depicted in Figure 2. The Block 1 development schedule would have minimal adverse impact since realignments and closures approved by the FY 1995 BRAC would have to be completed by FY 2001. Therefore, NAWC-WPNS would have a 2-year "window of opportunity" to complete the relocation of the Fighter Department since the Block 1 development would have been completed by the latter part of FY 1999.

**Other Support Requirements**. Fighter Department personnel stated that the department's support requirements were so intertwined with other departments that relocation would be impractical. The major support requirements cited were airfield access, F-14 maintenance capability, munitions storage and handling, and aerial target operating support. All support requirements except for F-14 aircraft maintenance and aerial target support exist at the China Lake base. F-14 maintenance capability could be transferred to China Lake, which would facilitate the Commander of Operations Test Forces' plans to consolidate Air Test and Evaluation Squadron Four (VX-4), located at Point Mugu, with the Air Test and Evaluation Squadron Five (VX-5), located at China Lake, in FY 1994.

The Targets Department and its aerial target support would also be relocated to China Lake. Targets Department personnel provided two reasons why aerial target operations could not be relocated to the China Lake base. First, duplicate aerial targets operations facilities were desirable. However, the Targets Department provides aerial target support to bases worldwide (for example, the Pacific Missile Range Facility, the Atlantic Fleet Weapons Training Facility, the Wallops Island Facility, and the White Sands Missile Range) without the need for duplicate facilities at the bases. Second, launching targets from China Lake to the Sea Test Range would consume fuel required for test missions. The

Targets Department has used DC-130-A aircraft for launching aerial targets. Therefore, aerial targets could be flown to the Sea Test Range before launching and have adequate fuel to conduct test missions.

Also, San Nicolas Island, California, could be utilized to a greater capacity for aerial target support. San Nicolas Island is currently used to launch supersonic sea-skimming Vandal missile target systems and to provide aerial tow-target support missions. In September 1992, NAWC-WPNS acknowledged the potential for expanding the test capabilities of San Nicolas Island in response to BRAC Data Call #16 stating that "Areas suitable for expansion include . . . San Nicolas Island [that] has the potential for siting and launching of large rockets. The isolation provided by 60 miles of ocean enhances security and eliminates noise pollution as compared to mainland sites."

## Focus of Realignment and Consolidation Efforts

NAWC-WPNS management acknowledged that the thrust of its realignment and consolidation initiatives was to maintain operations at the two bases. NAWC-WPNS management recognized that various functions at the Point Mugu and China Lake bases were similar or identical. In fact, the initial reorganization created the Weapons Systems Evaluation Directorate where two of its four departments perform functions already existing in departments at China Lake. The Strike and Air Intercept Departments at Point Mugu performed corresponding functions of the Attack and Intercept Weapons Departments at China Lake.

Former and proposed consolidations of NAWC-WPNS departments did not initiate the movement or elimination of functions or personnel. For example, during our audit, the Reliability and Instrumentation Department, located at Point Mugu, was merged into the Engineering Department, located at China Lake. However, this merger did not involve the movement or geographical consolidation of functions, facilities, personnel, or equipment; thus, only a "paper reorganization" took effect. We were also informed that a consolidation of the Engineering Department and the In-Service Engineering Department has been proposed for approval in January 1994. In-Service Engineering documentation acknowledged that duplication exists between its department and the Attack and Air Intercept Weapons Departments. The In-Service Engineering Department is currently located at Camarillo Airport, 10 miles from main base Point Mugu. This planned consolidation neither includes geographically consolidating the two existing departments nor alters the work performed at either site.

## Selection Criteria

The Act required all BRACs be built around the force-structure plan and eight selection criteria for selecting bases for realignment or closure. The first four criteria defined military value and were given preference. Military value refers to how well a base meets the mission-related needs of the organizations or functions at the base. In determining military value, bases that are militarily or geographically unique or mission-related (no other base could substitute for them) were excluded from further analysis. Table 3 lists the eight selection criteria for selecting bases for realignment or closure.

**Table 3. Selection Criteria for Realignment or Closure**

| *Category* | *Criteria* |
|---|---|
| Military Value Factors | Current and future mission requirements.<br>Availability and condition of land, facilities, and air space.<br>Contingency and mobilization requirements.<br>Cost of staffing implications. |
| Return on Investments | Potential costs and savings, beginning with the date of completion of the closure or realignment, for the savings to exceed the costs. |
| Impacts | Economic impact on communities.<br>Impact on community infrastructure.<br>Environmental impact. |

The selection criteria upon which bases could be excluded from further review were intended to protect capabilities, not facilities where redundancy and duplication of functions exist. We determined that the Navy applied a lenient interpretation of the BRAC exclusionary criteria towards NAWC-WPNS. The Navy cited the Sea and Land Ranges as unique assets for excluding Point Mugu and China Lake from further consideration under the BRAC process.

We agree that the Point Mugu Sea Test Range is a unique RDT&E capability, but its "unique" classification should not have been used to provide blanket

exclusion to Point Mugu's other RDT&E functions or facilities. To the contrary, Point Mugu's other RDT&E functions and facilities are not unique and should be subject to the same realignment and closure considerations as other bases. NAWC-WPNS operated two bases with duplicative RDT&E missions and capabilities, thereby making NAWC-WPNS the only organization within the RDT&E community with that distinction.

## Benefits of Realignment and Closure

The economic benefits of the audit were determined using the COBRA model and a realignment scenario. The COBRA calculated potential savings between $1.6 billion and $1.7 billion could be attained by combining duplicative and dual-sited functions at the NAWC-WPNS Point Mugu and China Lake bases. Further details on the COBRA calculations are in Appendix C.

**Scenario.** The audit determined a scenario whereby efficiencies and economies could be achieved with no loss of capabilities. The scenario will move all NAWC-WPNS departments at Point Mugu and Camarillo Airport to China Lake and Port Hueneme. During the audit, we determined that departments with duplicative functions, such as Air Intercept and Intercept Weapons, Strike and Attack, In-Service Engineering and Engineering, could be consolidated. Accordingly, the Services and Information Directorate (SID) and Naval Air Weapons Station (NAWS) would consolidate with their China Lake counterparts. The audit analyzed space requirements; where possible, available facilities were utilized. The Sea Range Directorate would move personnel and equipment to the vacated Naval Civil Engineering Laboratory* at Port Hueneme. Additional space requirements were allowed and costs included. The 36,000 mile Sea Range is not being moved or reconfigured.

Facilities, personnel, and equipment at Laguna Peak, San Nicolas Island, and Santa Cruz Island will remain at their current locations. The Surface Targets Division would remain at Port Hueneme. Likewise, the airstrips and main base military family housing would remain at their current locations and would be managed by Port Hueneme. The analysis allowed for personnel to support Port Hueneme's increased workload for maintaining the Sea Range and family housing facilities. The Air Operations Department would remain to operate and maintain the airfield.

The family housing units at Camarillo will be declared as excess and be offered for sale. The audit included tenants and their movement or elimination in the realignment (Appendix D).

A quantitative analysis determined the most feasible timeframes for personnel movement and military construction completion. Although Table 4 shows that

*The FY 1993 BRAC recommended the closure of the facility.

five timeframes were considered, we determined that moving personnel in any combination involving the first or last 2 years was not feasible. Therefore, the most likely scenarios occur in the last 4 years at the stated percentages.

**Table 4. Potential Benefits Due to Realignment**

| Personnel Movement | BE[1] | ROI[2] | GS ($K)[3] | OTC ($K)[4] | NS ($K)[5] | NPV ($K)[6] |
|---|---|---|---|---|---|---|
| 15%,25%,30%,30%[7] | 9 | 2 | 2,273,053 | 517,741 | 1,755,312 | 645,513 |
| 10%,15%,30%,45%[7] | 10 | 3 | 2,194,088 | 517,712 | 1,676,367 | 601,994 |
| First 2 Years | 5 | 1 | 2,843,669 | 502,773 | 2,340,896 | 1,023,422 |
| Even | 8 | 1 | 2,469,893 | 517,627 | 1,952,266 | 772,127 |
| Last 2 Years | 10 | 3 | 2,137,370 | 517,734 | 1,619,636 | 573,340 |

[1] BE — Break even year is the fiscal year from the start of the realignment action, to generate enough savings to offset the total costs.

[2] ROI — Return on investment years are the number of years, after completion of the realignment action, to the break even point.

[3] GS — Gross Savings are the total savings before any costs are subtracted.

[4] OTC — One time costs are the amount that must be offset by the net savings generated by the realignment

[5] NS — Net savings are the gross savings less one time costs.

[6] NPV — Net present value is a measure of the total savings of the realignment in constant first year dollars over the 20-year period of analysis. A 7% Discount Rate was used

[7] Percentage of staff moving FYs 1996 through 1999.

**Data Input.** The COBRA model required three categories of data input: standard factors, static data, and dynamic data. Standard factor tables contain averages, estimates, and costs common to specific types of Naval bases. Static data are specific to each site in the scenario; this information is a "snapshot" of the base at a point in time. Static data values are expected to remain relatively constant at the base during the analysis. We received standard factor and static data from the Navy and adjusted static data to update personnel numbers. Dynamic data are specific to the closure or realignment used in the analysis. Dynamic data inputs were received from Point Mugu personnel during the audit.

Information received from Point Mugu and tenants was used in the COBRA analysis. We reviewed the information and made adjustments based on four exceptions:

o information that duplicated COBRA calculations, such as military construction of laboratory facilities, personnel reduction in force, and permanent change of station;

o information different from documentation received during the audit;

o consolidation of functions; and

o cost for replicating rather than moving a facility. An example was the F-14 avionics laboratory where the Fighter Department's cost calculations were based on acquiring all new equipment rather than transferring existing assets.

**Personnel.** Personnel reductions and movement are key data in determining whether a realignment or closure is economically feasible. We categorized personnel into direct and indirect groups. Direct personnel relate to the mission and functions of RDT&E, whereas indirect personnel are in the support functions, such as SID and NAWS. The COBRA calculated the savings based on the number of personnel being eliminated and moved. Table 5 shows the breakdown of Point Mugu personnel input to the model.

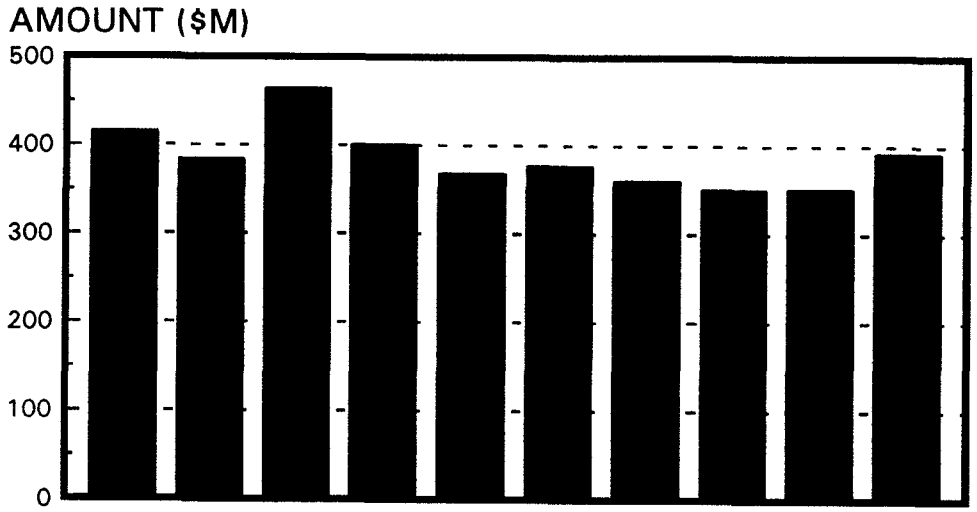
**Table 5. Point Mugu Personnel (as of August 31, 1993)**

| | Direct | SID/NAWS | Total |
|---|---|---|---|
| Personnel on Board | 2,504 | 1,601 | 4,105 * |
| Less: Eliminated at Point Mugu | 501 | 548 | 1,049 |
| Less: China Lake Offset | 614 | 323 | 937 |
| Move to Port Hueneme | 710 | 373 | 1,083 |
| Transferred to China Lake | 679 | 357 | 1,036 |

*Adjusted for Force Structure (Point Mugu 4,600 - 495 = 4,105)

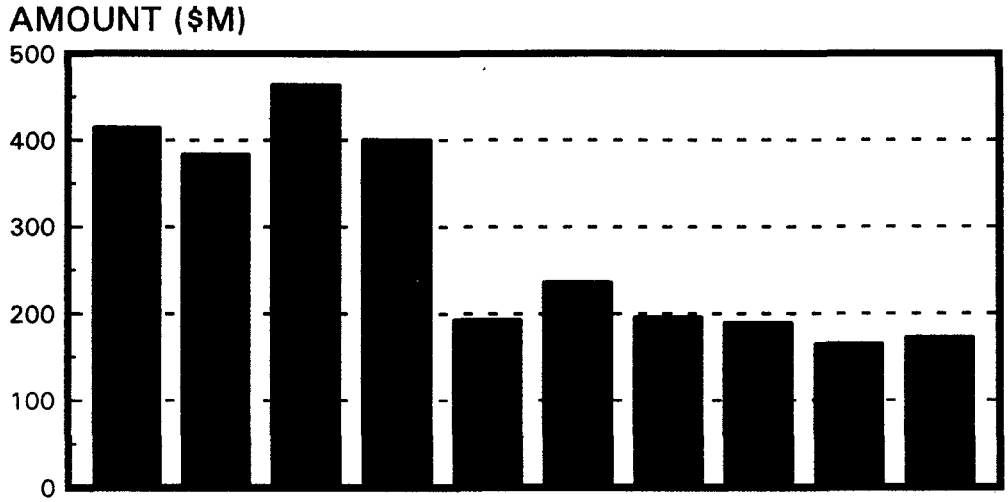
Twenty percent of the direct personnel were eliminated based on information received from the Center for Naval Analyses, which conducted staffing studies to estimate the effects of consolidation for the Navy. Our analysis included all costs for movement or elimination of tenant organizations. The military and civilian force structure reduction for FYs 1993 through 1998 were considered in determining the number of personnel to be eliminated.

Center for Naval Analyses studies state that dramatic reductions of personnel can be achieved if the workload is decreased. Although we did not use workload reduction as the basis for reducing personnel, funding information gathered from Naval Air Systems Command program offices show a downward trend in program funding. Figure 3 reflects the workload funding provided by NAWC-WPNS and Figure 4 shows the effect that budget cuts have had on planned funding for the 12 major programs providing work to the Strike, Attack, Air Intercept, Intercept Weapons, Fighter, and Fighter/Attack Departments within NAWC-WPNS.




| FISCAL YEAR | FY 90 | FY 91 | FY 92 | FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | FY 98 | FY 99 |
|---|---|---|---|---|---|---|---|---|---|---|
| TOTALS | 414.9 | 384 2 | 464.7 | 401.2 | 368.5 | 376 8 | 360.6 | 351.2 | 351.8 | 392.2 |

**Figure 3. Program Workload Funding Provided by NAWC-WPNS**




| FISCAL YEAR | FY 90 | FY 91 | FY 92 | FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | FY 98 | FY 99 |
|---|---|---|---|---|---|---|---|---|---|---|
| TOTALS | 414.9 | 384.2 | 464.7 | 401.2 | 193.5 | 237.4 | 196.7 | 189.5 | 165.7 | 172.9 |

**Figure 4. Validated Program Funding**

Appendix E shows NAWC-WPNS' actual workload funding for FYs 1990 through 1993. We validated NAWC-WPNS' FYs 1994 through 1999 funding projections with applicable program managers. At the time of our audit, the validated funding projections provided by the program managers represented their best estimates and were subject to change for any year. The analysis indicated that NAWC-WPNS funding projections were significantly overstated. For example, NAWC-WPNS was projecting funding of $368.5 million for these 12 programs in FY 1994 while the program offices were only planning $193.5 million in FY 1994. See Appendixes F and G for our analysis of FYs 1994 through 1999 funding projections.

Related to the funding issue is the growth in NAWC-WPNS unfunded personnel list. Due to earlier reductions in Defense spending, NAWC-WPNS' operating budget decreased and positions unavoidably became unfunded. To avoid reduction in force actions, NAWC-WPNS management would reassign unfunded personnel to positions that became vacant. In other instances, NAWC-WPNS would reassign unfunded personnel to sponsor-funded programs. As of February 11, 1993, the unfunded list contained 134 personnel. If the validated workload is accurate, then NAWC-WPNS will not meet personnel and dollar targets without radically altering its end-strength.

**Military Construction.** The cost of military construction calculated by COBRA was $261 million. COBRA calculated military construction based on

input of square feet in specific facility categories. Each category has a fixed dollar amount per square foot applied to the facility type, with an additional 59 percent added to the fixed amount for design, supervision, inspection and overhead, contingency, and site preparation. The model further classified those areas as either new construction or facility rehabilitation. Facility rehabilitation was used when existing buildings can be utilized but need to be configured for the new mission.

The square footage requirements provided by Point Mugu were used except where utilization of existing facilities was figured instead of new construction. For example, the Fighter/Attack Department at China Lake plans to vacate the F/A-18 WSSA by mid-to-late FY 1994 and relocate into a new facility under construction. The Fighter Department at Point Mugu could utilize the vacated facility. Additional square feet were added to this facility to ensure the Fighter Department met its stated space requirements.

We compared the facilities at China Lake to requirements based on departments' transferring, staffing reductions, consolidation of functions between departments, and, where possible, the utilization of existing facilities. Construction requirements at Port Hueneme were based on Sea Range Department requirements and adjusted based on the utilization of existing facilities.

**Moving Costs.** The moving costs provided by NAWC-WPNS were grouped into four areas and adjusted based on information calculated by COBRA, incorrect classification of data, and audited data. Table 6 shows the areas comprising moving costs and the adjustments made to each area.

**Table 6. Moving Costs and Adjustments**

| Area | NAWC-WPN Estimates | Audit Adjustment |
|---|---|---|
| Weight of Equipment (tons) | 4,402 | 9,347 |
| One-Time Moving Costs | $328,587,000 | $126,583,200 |
| Other One-Time Costs | $448,344,000 | $46,721,500 |
| Miscellaneous Recurring Costs | $10,050,000 | $9,905,000 |

Examples of adjustments made to NAWC-WPNS estimates follow. The estimate for permanent change of station was reduced by $100 million because it is included in COBRA and computed on personnel data inputs. The allowance of $145 million for terminating contracts on the F-14 integration and upgrade was deleted because all funded contract work would be completed before relocation; except for one situation, contractors already have established themselves at China Lake; and contracts would not have to be terminated because the work would not have been canceled only shifted from one location to another. The Fighter Department also included $14.3 million for constructing offices and laboratory space addressed in the Military Construction section of Appendix C.

**Cost Avoidances.** The savings attained by the realignment of Point Mugu are based on several factors. We used the data submitted by NAWC-WPNS for cost avoidances. The following is a list of savings obtained from the realignment. We have classified them as one-time or recurring savings:

**One-time Savings**

o procurement avoidance - $55,000; an example is the construction of a mezzanine for the Threat, Telemetry, and Instrumentation Department.

o sale of family housing units - $22.9 million (based on the current market value of the 315 Camarillo housing units)

o salvage for office and shop benches - $5 million

**Recurring Annual Savings**

o elimination of personnel - entirely calculated by COBRA

o yearly lease of commercial buildings at Camarillo airport - $389,000

o six daily shuttle flights between China Lake and Point Mugu - $1,817,000. Not all travel between sites is by shuttle; however, savings from travel between China Lake and Point Mugu by Government or private vehicle were not supplied and, therefore, no savings were input to COBRA.

o video telecommunication conferences - $210,000

o travel between Camarillo Airport and China Lake - $104,000

o travel between Camarillo Airport and Point Mugu - $20,000

**Facility Shutdown.** The input to COBRA is for total square feet of buildings to be closed because of the realignment. The new construction and rehabilitated facility operating costs are in the COBRA algorithms. Including tenant facilities, the facilities' square footage being shutdown is 2,991,884.

**Family Housing.** Point Mugu's family housing units are utilized by NAWC-WPNS, NAWS, tenant, and Port Hueneme personnel. We considered Port Hueneme's waiting list in computing the total housing requirement of 1,831. We adjusted the requirement to 473 based on the personnel we identified to be moved or eliminated and tenant organizations that are considering relocations. The NAWC-WPNS and NAWS realignment will increase Port Hueneme's housing units by 668, which includes the 100 housing units under construction. Table 7 shows that current housing will more than meet existing requirements even after the sale of the Camarillo housing units.

**Table 7. Family Housing Requirements**

| Available Housing | | Housing Requirements | |
|---|---|---|---|
| Main Base Point Mugu | 568 | Current Housing | 883 |
| Camarillo Housing | 315 | Waiting list at Point Mugu | 515 |
| Current Housing | 883 | Waiting list at Port Hueneme | 433 |
| New Construction | 100 | Total Requirement | 1,831 |
| Total Housing Available | 983 | Military Personnel Eliminated | -369 |
| Sale of Camarillo Housing | -315 | Military moving to China Lake | -158 |
| Housing Transferable | | VX-4 Personnel | -342 |
| to Port Hueneme | 668 | VXE-6 Personnel | -446 |
| | | NAVSOC Personnel | - 43 |
| | | Adjusted Requirement | 473 |

This analysis does not include the existing housing units at Port Hueneme or the 300 units contracted for new construction at Port Hueneme.

# Conclusion

The net effect of the Navy's realignment and consolidation of NAWC-WPNS did not maximize reduction of its infrastructure and overhead or reduce its duplication, as the SECNAV directed and required when addressing these issues. We believe that the fundamental goal of base realignments and closures is the reduction of operating costs and the promotion of efficiency consolidations. We further believe that while NAWC-WPNS was excluded from an in-depth BRAC analysis, our audit results determined that closure of the Point Mugu base would have been cost-effective under the FY 1993 BRAC Commission process. Realignment of the Point Mugu base would provide improved efficiency and cost-effectiveness by integrating geographically separated RDT&E facilities. Moreover, realignment of the Point Mugu base would not degrade NAWC-WPNS' overall capability to provide RDT&E technical support and Sea Range test services. As a result, the Navy could

potentially realize a net savings of $1.7 billion over 20 years. Savings in the first 6 years are offset by realignment costs of $517.7 million. Further the Navy would be responsive to DoD's overall goal of downsizing and consolidating RDT&E infrastructure.

## Recommendations, Management Comments, and Audit Responses

**We recommend that the Secretary of the Navy:**

**1. Include the geographical realignment of functions in the Naval Air Warfare Center - Weapons Division and Naval Air Weapons Station, Point Mugu, in the FY 1995 Base Realignment and Closure evaluation process.**

**Navy Comments.** The Navy nonconcurred with Recommendation 1, but stated that the 1995 base closure process would include a review of Naval Air Warfare Center - Weapons Division at both Point Mugu and China Lake. The Navy expressed concern that the report appeared to contain findings and conclusions related to the 1993 base closure process and the proposed realignment of the Naval Air Warfare Center - Weapons Division, Point Mugu, in the 1995 base closure process according to the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, as amended [the Act]). The Navy stated that the Act is the exclusive authority for selecting military installations for closure or realignment and requires the Secretary of Defense to consider all military installations equally within the United States. Therefore, it would be inappropriate to comment on the report's independent analysis of potential 1995 base closure decisions as such actions could be viewed as violating the base closure process, in particular Section 2909(b)(1) of the Act. The Navy suggested the report's comments on the 1993 base closure process and recommendations for the 1995 process be deleted.

The Navy further stated that the draft report includes inaccuracies in technical, financial, and management analysis due to incorrect assumptions and incomplete data. The Navy provided the following examples:

o The draft report's $1.7 billion savings were based on a 50 percent reduction in the workload. This assumption was based on inaccurate data. For example, the Naval Air Warfare Center - Weapons Division received $134.1 million in FY 1994 funds for the F/A-18 program, whereas the report stated that the workload projections were $15.7 million.

o The report assumed that the Point Mugu Sea Range operational infrastructure and personnel could be moved to the vacated Naval Civil Engineering Laboratory property at Port Hueneme, California. Telemetry equipment and transmitters/antennas require large spaces for proper operation and personnel safety. Further, the Naval Facilities Engineering Command property is no longer available.

o The draft report concluded that aerial targets can be sited and launched from China Lake-based aircraft. Most aerial targets are ground-launched. Further, the launch aircraft is incapable of launching several types of aerial targets, and fuel considerations make siting aerial targets at China Lake infeasible. The full text is in Part IV.

**Audit Response.** Despite the stated nonconcurrence, the intent of the recommendation is met by the Navy's agreement to include Point Mugu and China Lake in the BRAC 1995 review process. As a technical aside, the Navy is incorrect in stating that the Act is the exclusive authority for selecting military installations for closure or realignment. Section 2909(c) identifies two exceptions to the Act. However, we believe the BRAC process to be the more appropriate avenue and made our recommendations to ensure that the potential benefits of the realignments analyzed in this audit would be brought to the attention of BRAC decision makers. We are not asking that the Navy prejudge the decision of the BRAC Commission.

We also disagree that the report contained inaccuracies due to incorrect assumptions and incomplete data.

o The savings were calculated from information provided by Naval Air Warfare Center - Weapons Division for input to the Cost of Base Realignment Actions model. The model has no data elements for workload information. The workload information provided further evidence that the declining Department of Defense budget would not support the same level of effort experienced in the past. Naval Air Systems Command program offices or Naval Air Warfare Center - Weapons Division generated all program funds cited in the draft report. We made six attempts to obtain the support for the $134.1 million claimed to have been provided to F/A-18 at NAWC-WPNS. Incomplete actual and projected funding data totaling $116.2 million for the F/A-18 was finally provided to us. However, analysis of this data identified two key points. First, only $5.4 million went to support efforts at Point Mugu and $110.8 million supported efforts at China Lake. However, the Navy's detailed breakdown only provided for $103.6 million of the $110.8 million. Second, an analysis of the $103.6 million showed that approximately $13.1 million funded effort accomplished by NAWC-WPNS technical personnel. The balance funded contractor support, flight operations, material requirements, and travel, as shown in Table 8.

**Table 8. F/A-18 Program FY 1994 Funding**

| Expenditures | Amount ($ in millions) | Percent of Total Provided |
|---|---|---|
| Contractor support | $ 68.8 | 66.4 |
| Flight operations | 15.1 | 14.6 |
| Material requirements | 6.1 | 5.9 |
| Travel | 0.5 | 0.5 |
| Subtotal | 90.5 | 87.4 |
| In-house labor | 13.1 | 12.6 |
| Total | $103.6 | 100.0 |

o The Navy needs to revalidate the availability of the Naval Civil Engineering Laboratory at Port Hueneme, California. During the audit and more recently as followup to the Navy's response to this report, the Headquarters, Naval Civil Engineering Laboratory, confirmed its availability to us. However, if the Naval Civil Engineering Laboratory property is not available, the Sea Range infrastructure could be consolidated in its current location. The Sea Range occupies portions of more than 30 buildings scattered over the base. We had informed the Navy that we expected the telemetry equipment and transmitters/antennas would remain at their present locations.

o Fuel needs were considered in the movement of the aerial targets to China Lake. The DC-130s would mainly support transporting targets from China Lake to launch facilities at San Nicholas Island. As stated in the draft report, pages 14 and 15, the Navy provided aerial target support to bases worldwide without the need for duplicate facilities. Further, the Navy noted the expansion capability of the aerial target mission at San Nicolas Island, California, for security and environmental reasons. NAWC WPNS personnel stated that the facilities and capabilities could be relocated with minimal restructuring. The refurbishment and refueling of spent targets would be done at China Lake.

If the Navy has estimates that are more current and accurate than any estimates presented in this report, we request they be provided to us in reply to the final report.

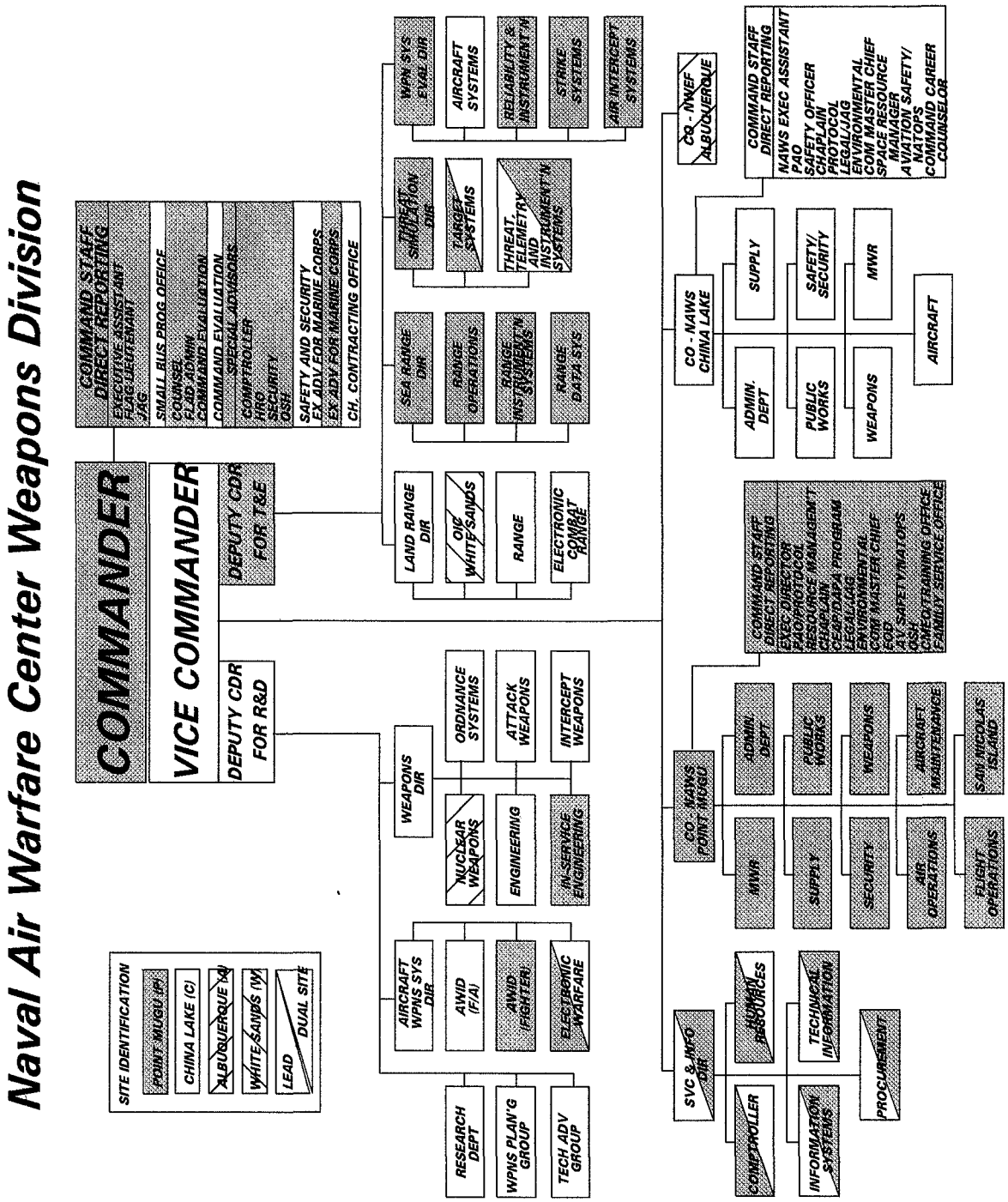
**2. Limit selection criteria upon which bases could be excluded from Base Realignment and Closure review to protect capabilities, not bases.**

**Navy Comments.** The Navy nonconcurred with Recommendation 2, stating the 1993 base closure process was performed in strict compliance with the Act and Office of the Secretary of Defense policy guidance and validated by the General Accounting Office and the BRAC Commission. Further, all technical centers, including Point Mugu, were evaluated during the 1993 process based on those criteria. No bases were excluded because of geographic or mission-related characteristics.

**Audit Response.** We agree that the Navy was complying with the Act and Office of the Secretary of Defense policy guidance but disagreed with the Navy's interpretation of the selection criteria contained in the Act. The General Accounting Office and BRAC Commission validation reviews did not analyze the Navy's interpretation of the selection criteria. We determined the Navy's interpretation of the selection criteria served to exclude both Point Mugu and China Lake in the initial phases of the BRAC process (pages 16 and 17 of the draft report). Finally, we identified the potential benefits DoD will lose if this same interpretation is applied in the 1995 BRAC process. Accordingly, we request that the Navy reconsider its position in its response to the final report.

# Part III - Additional Information

# Appendix A. Organizational Chart



# Appendix B. Areas of Duplication

**Strike Department Versus Attack Department.** The missions and functions of Point Mugu's Strike Systems Department and China Lake's Attack Weapons Department were unnecessarily duplicative. For example, both departments develop laboratory simulations and perform systems engineering, software development and support, and RDT&E for missile systems such as the Standoff Land Attack Missile, Joint Standoff Weapon, High-Speed Anti-Radiation Missile, Advanced Interdiction Weapon System, and Tomahawk. We believe that geographically consolidating the Strike Systems Department and the Attack Weapons Department would eliminate the overlap of assets. For example, both departments utilize the VAX 8350 computer, hardware-in-the-loop facilities, laboratory facilities, and mobile facilities. Additional efficiencies could be achieved for technician support, resource support, and training.

**Air Intercept Systems Department Versus Intercept Weapons Department.** Point Mugu's Air Intercept Systems Department and China Lake's Intercept Weapons Department should be consolidated to eliminate duplication of functions. Both departments perform RDT&E on Advanced Medium Range Air-to-Air Missile, Sparrow, Sidewinder, Standard, and Advanced Air-to-Air Missile weapon systems. China Lake maintains a Missile Simulation Laboratory that can perform Point Mugu's Hardware-in-the-Loop work when a Target Presentation System is acquired. However, the bistatic radar cross-section test capability at Point Mugu is not duplicative of tests performed at China Lake and could be relocated to China Lake. The Missile Simulation Evaluation Laboratory at Point Mugu has recently moved into a new facility. That move caused a 3-month break in operations.

**Engineering Versus In-Service Engineering.** The Engineering Department located at China Lake* is responsible for engineering and logistics support of specific weapons systems from the research phase through production and into the predeployment-to-fleet phase. The In-Service Engineering Department at Point Mugu provides support to the same weapon systems after deployment into the fleet and through life cycle. As the weapon systems progress into the fleet, transitional overlap occurs. Duplication could be minimized by consolidating the two departments. NAWC-WPNS is reviewing proposals and awaiting approval to consolidate the two departments to form the Weapons Engineering and Logistics Department in January 1994. This planned consolidation will not involve movement of functions and personnel to China Lake.

*During the audit, the Reliability and Instrumentation Department at Point Mugu merged into the Engineering Department. This merger did not involve the relocation of facilities, equipment, or personnel.

# Appendix C. Cost of Base Realignment Actions Model

We identified areas of efficiency obtainable by closing Point Mugu and relocating functions to China Lake and Port Hueneme while ensuring that the Navy maintained all current RDT&E capabilities. All costs applicable with the relocation of NAWC-WPNS, NAWS, and SID functions as well as tenant organizations were in our analysis. We categorized data into areas of personnel, military construction, and moving costs. COBRA required we identify the number of personnel to be eliminated and moved for each year of the scenario.

## Personnel

Our analysis designated personnel as direct or indirect. Personnel identified as direct are employed in departments whose functions and missions are directly related to RDT&E. Indirect personnel function in a support capacity. All departments in SID and NAWS were identified as indirect. Examples of indirect functions include Supply, Public Works, and Comptroller departments. Our analysis accounted for Point Mugu personnel as shown in Table C.1. We cross-referenced Table C.1. to our calculations using "A" to designate Point Mugu and "B" to designate China Lake.

**Table C.1. Personnel Analysis**
**(personnel data is as of August 31, 1993)**

| | Direct | Indirect | Total |
|---|---|---|---|
| Total Personnel | 2,806 | 1,794 | 4,600 |
| Force Structure Adjustments | -302 1A | -193 2A | -495 |
| Adjusted Personnel | 2,504 3A | 1,601 4A | 4,105 |
| Personnel Eliminated | -501 5A | -548 8A | -1,049 |
| Current Location or Port Hueneme | -710 9A | -373 10A | -1,083 |
| China Lake Offset | -614 5B | -323 8B | -937 |
| Transfer to China Lake | 679 | 357 | 1,036 |

**Force Structure Changes (1A and 2A).** NAWC-WPNS personnel provided the expected force structure changes through 1998. Force structure changes are excluded from COBRA because they are independent of the scenario. Point Mugu will decrease its staff by 495 personnel and China Lake's staff will be decreased by 557. We calculated the percentage of direct personnel to indirect

personnel. Adjustments for force structure were made based on the percentages calculated. Table C.2. shows the calculations to adjust for force structure reductions.

**Table C.2. Adjustments for Force Structure Reductions**

| Personnel | Point Mugu | China Lake |
|---|---|---|
| Total Direct Personnel | 2,806 (61%) | 3,437(65.54%) |
| Total Indirect Personnel | 1,794 (39%) | 1,807(34.46%) |
| Total Personnel | 4,600 (100%) | 5,244(100%) |
| Total Force Structure Reductions | 495 | 557 |
| Percentage of Direct Personnel | x0.61 | x.6554 |
| Direct Force Structure Reductions | 302 1A | 365 1B |
| Total Force Structure Reductions | 495 | 557 |
| Percentage of Indirect Personnel | x0.39 | x.3446 |
| Indirect Force Structure Reductions | 193 2A | 192 2B |
| Total Direct Personnel | 2,806 | 3,437 |
| Direct Force Structure Reductions | -302 | -365 |
| Direct Personnel | 2,504 3A | 3,072 3B |
| Total Indirect Personnel | 1,794 | 1,807 |
| Indirect Force Structure Reductions | 193 | 192 |
| Indirect Personnel | 1,601 4A | 1,615 4B |

**Personnel Eliminated.** We determined that personnel efficiencies from the geographical consolidation of Point Mugu and China Lake would result in the elimination of 20 percent of direct NAWC-WPNS personnel. Table C.3. shows our calculation of direct personnel eliminated.

**Table C.3. Direct Personnel Eliminated (5A, 5B, 8A, and 8B)**

| | | |
|---|---|---|
| Total Direct Personnel | 2,504[3A] | 3,072[3B] |
| 20 percent to be eliminated | x0.20 | x0.20 |
| Direct Personnel Eliminated | 501[5A] | 614[5B] |

Accordingly, support personnel in SID and NAWS were also decreased, but on a proportional basis. We used the percentage of indirect personnel to the

number of direct personnel in NAWC-WPNS departments. Our analysis kept the ratio of indirect personnel to direct personnel consistent with personnel totals currently at China Lake. Our calculations of indirect personnel eliminated are provided in Table C.4.

**Table C.4. Indirect Personnel Eliminated (Proportional)**

| | Point Mugu | | China Lake | |
|---|---|---|---|---|
| Direct Personnel | 2,504 | 3A | 3,072 | 3B |
| Direct Personnel Eliminated | -501 | 5A | -614 | 5B |
| Adjusted Direct Personnel on Board | 2,003 | 6A | 2,458 | |
| | | | | |
| Adjusted Direct Personnel on Board | 2,003 | | 2,458 | |
| Percentage of Direct Personnel at China Lake | /65.54 | | /65.54 | |
| Total Adjusted Personnel on Board | 3,056 | | 3,750 | |
| | | | | |
| Total Adjusted Personnel on Board | 3,056 | | 3,750 | |
| Adjusted Direct Personnel on Board | -2,003 | | 2,458 | |
| Adjusted Indirect Personnel on Board | 1,053 | 7A | 1,292 | |
| | | | | |
| Indirect Personnel | 1,601 | | 1,615 | |
| Adjusted Indirect Personnel | -1,053 | | -1,292 | |
| Indirect Personnel Eliminated | 548 | 8A | 323 | 8B |

Personnel at nine tenant orgainzations were also eliminated because they functioned in a support capacity or were also located at China Lake. Table C.5. shows the tenant personnel to be eliminated.

**Table C.5. Tenant Personnel Eliminated**

| Tenant Personnel | Number Eliminated |
|---|---|
| Resident Officer in Charge of Construction | 30 |
| Personnel Support Activity Detachment | 45 |
| Branch Dental Clinic | 10 |
| Branch Medical Clinic | 39 |
| Naval Aviation Engineering Service Unit Detachment | 1 |
| Scheduled Airlines Traffic Office | 6 |
| Marine Aviation Detachment | 41 |
| Special Intelligence Command | 2 |
| Naval Investigative Service | 2 |
| Total Tenant Personnel Eliminated | 176 |

**Table C.6. Total Personnel Eliminated**

| | Point Mugu | | China Lake | | Total |
|---|---|---|---|---|---|
| Direct Personnel Eliminated | 501 | 5A | 614 | 5B | 1,115 |
| Indirect Personnel Eliminated | 548 | 8A | 323 | 8B | 871 |
| Tenant Personnel Eliminated | 176 | | 0 | | 176 |
| Total Personnel Eliminated | 1,225 | | 937 | | 2,162 |

**Movement of Personnel.** The number of personnel at Point Mugu subject to transfer to China Lake was based on the number of personnel eliminated; the number of personnel in the Sea Range Directorate who will be moved to Port Hueneme; the number of personnel on San Nicholas Island and in the Surface Targets Division at Port Hueneme who will remain in their present location; and the number of support personnel/billets from SID and NAWS that will be transferred to Port Hueneme to support the Sea Range Directorate, operation of the airfield, and the operation and maintenance of family housing at Point Mugu. Personnel numbers were adjusted for the 20 percent personnel reduction applied to NAWC-WPNS.

Personnel regulations state that each agency must establish competitive areas that are used as boundaries within which employees compete for retention under Reduction in Force procedures. Employees in a competitive area compete only with each other; they do not compete with employees in another competitive area. Point Mugu and China Lake are located in separate competitive areas. Therefore, consistent with personnel regulations, all employees eliminated from NAWC-WPNS are from the Point Mugu site. The 937 personnel at China Lake who have been identified as eliminated would be used to offset billets transferable from Point Mugu. Table C.7. shows our calculation of Point Mugu personnel to be transferred to China Lake.

the current facility requirements of the departments to be moved based on personnel reductions, consolidation of functions, and utilization of existing facilities where possible. The adjusted square footage requirements were input to the COBRA model to calculate military construction costs.

**Personnel Reductions.** NAWC-WPNS provided force structure changes to be implemented FYs 1994 through 1998 for both civilian and military personnel. By FY 1998 NAWC-WPNS staff will be reduced by 1,052 civilian and military personnel. In addition, we identified 1,986 personnel to be eliminated. The reductions decrease NAWC-WPNS' current facility requirements and allow for utilization of vacated facilities at China Lake.

**Consolidation of Functions.** We also identified duplication of functions between departments that, if consolidated, would reduce military construction requirements. For example, the Air Intercept Systems Department at Point Mugu and the Intercept Weapons Department at China Lake have Hardware-in-the-Loop test facilities that perform similar functions. Analysis showed that duplicating the Point Mugu Hardware-in-the-Loop test facilities was not necessary because the facilities at China Lake could accommodate the additional workload from a consolidation of the two departments. However, we did include construction requirements for the bistatic radar cross section facility to be built at China Lake.

**Utilization of Existing Facilities.** The utilization of existing facilities at Port Hueneme by the Sea Range Directorate would also minimize construction costs. The Naval Civil Engineering Laboratory will vacate more than 223,000 square feet of facilities by FY 1997. Costs will be incurred to rehabilitate the facilities and for some military construction projects required to meet all facility requirements of the Sea Range Directorate. In addition, Point Mugu has a planned military construction project for the Sea Range Operations Center for FY 1997. As part of the Military Construction project, an addition to the Range Operations Center of 32,920 square feet has been approved to be built. The purpose of the addition is to consolidate more Sea Range personnel onto one area of the base. The costs for this project could be transferred to off-set the funds needed for construction for the new Sea Range facility at Port Hueneme.

**Calculation of Construction at China Lake.** Based on information received from Point Mugu, we calculated the total current square footage requirements of the departments to be moved to China Lake. The data was grouped into requirements for office, storage, shop, laboratory, hangar, and other.

**Office Space.** We determined that office space was directly related to the number of personnel to be transferred to China Lake. We computed that 1,036 personnel are subject to transfer (23 percent of Point Mugu's current

**Table C.7. Personnel Subject to Transfer to China Lake**

| | | |
|---|---|---|
| Adjusted Point Mugu (Direct on Board) | 2,003 6A | |
| Adjusted Point Mugu (Indirect on Board) | 1,053 7A | |
| Personnel at Point Mugu Subject To Move | 3,056 | |
| Personnel at Point Mugu Subject To Move | | 3,056 |
| Less: Number of Sea Range Personnel | 629 | |
| San Nicholas Island Personnel | 37 | |
| Targets Department Personnel | 44 | |
| Sub Total | 710 9A | |
| Indirect (710/65.54 percent -710) | 373 10A | -1,083 |
| Total Point Mugu Personnel Subject to Move | | 1,973 |
| Less: China Lake Billets | | -937 |
| Total Point Mugu Personnel to Transfer to China Lake | | 1,036 |

In addition to the 1,036 personnel transferred to China Lake, we determined nine tenant organizations could also be transferred to various locations. Tenant personnel to be transferred are shown in Table C.8.

**Table C.8. Tenant Personnel to be Transferred**

| Tenant Organization | Number of Personnel |
|---|---|
| Naval Audit | 9 |
| Naval Telecommunications Center | 21 |
| Explosive Ordnance Disposal Unit | 11 |
| Navy Research Laboratory | 20 |
| Federal Bureau of Investigation | 12 |
| Navy Campus Field Activity | 2 |
| Bureau of Naval Personnel | 23 |
| Command 3rd Fleet Representative | 2 |
| Total Tenant Personnel To Be Moved | 100 |

# Military Construction

Point Mugu personnel provided the current square footage requirements of each department and tenant organization. The requirements were identified in categories of office, storage, shop, laboratory, hangar, and other. We adjusted

population [1036/4600]). We allowed an additional 2 percent of office space for common areas. Therefore, we allowed 25 percent of Point Mugu's current office space requirements to be constructed at China Lake.

**Storage, Shop, and Other.** We allowed for 50 percent of the requirements identified in the categories of storage, shop, and other to be in construction estimates. We determined those facilities to be partly related to the number of personnel to be transferred. We also considered the consolidation of departments with similar functions. For example, the square footage requirements of the Public Works Department at Point Mugu should not be entirely duplicated at China Lake. China Lake has its own Public Works Department, and efficiencies will result from the consolidation of the two departments.

**Laboratory.** Laboratory space requirements were estimated to be 80 percent of current requirements at Point Mugu. We recognized that the size of some laboratory space, such as anechoic chambers, is specific to the types of tests conducted and not related to the number of personnel. However, some space identified as laboratories consists of computer systems or are workbench areas. We determined that spaces such as those are related to the number of personnel.

**Hangar.** We included all identified hangar space associated with the departments to be moved to China Lake in construction estimates. We determined the amount of hangar space required is directly related to the number of aircraft supported by the base. We found no evidence that the total number of aircraft supported by NAWC-WPNS would be reduced due to the transfer of functions to China Lake. Table C.9. shows the amount of construction required at China Lake.

**Table C.9. Construction Requirements at China Lake** (Square Feet)

| Office | Storage | Shop | Laboratory | Other | Hangar |
|---|---|---|---|---|---|
| 428,793 | 134,250 | 298,916 | 307,650 | 65,627 | 173,237 |
| x 25% | x 50% | x 50% | x 80% | x 50% | x 100% |
| 107,198 | 67,125 | 149,458 | 246,120 | 32,814 | 173,237 |
| + 27,599 [1] | | | + 6,777 [2] | | + 22,300 [3] |
| + 7,433 [4] | | | + 28,500 [5] | | |
| 142,230 | 67,125 | 149,458 | 281,397 | 32,814 | 195,537 |

[1] Office space allowed F/14 Aircraft Weapons Integration Department

[2] Laboratory space allowed for F/14 Aircraft Weapons Integration Department

[3] Hangar space allowed for BUPERS (tenant organization at Point Mugu)

[4] Office space allowed for BUPERS (tenant organization at Point Mugu)

[5] Laboratory space allowed for Bistatic Radar Cross Section Facility

**Calculation of Construction at Port Hueneme.** Sea Range personnel provided their space requirements in categories of office, laboratory, and storage space. Table C.10 shows the construction required for the Sea Range Directorate at Port Hueneme.

**Table C.10. Construction Requirements for Sea Range (Square Feet)**

| | Office | Laboratory | Storage |
|---|---|---|---|
| Sea Range Requirements | 72,670 | 228,907 | 11,962 |
| Planned Military Construction | | -32,920 | |
| Existing Office Space at Port Hueneme | -72,670 | | |
| Existing Storage Space at Port Hueneme | | | -11,962 |
| Adjusted Requirements | 0 | 195,987 | 0 |
| Existing Space Rehabilitated | | -139,130 | |
| Military Construction Required | | 56,857 | |

**Tenants.** The analysis also included square footage requirements for the tenant organizations we identified as moving to Port Hueneme. We allowed for all current requirements identified for tenants. Those total square footages are office 6,046; storage 400; shop 8,273; laboratory 1,040; other 1,528; and hangar 2,600.

# Moving Costs

Point Mugu submitted information to be input into the COBRA model for calculating moving costs of facilities and equipment. This information was categorized as total tons of mission and support equipment, one-time unique moving costs, other one-time costs associated with a move, and recurring costs directly associated with a move. Those costs are in addition to standard packing and shipping costs. All estimates received were based on assumptions and algorithms developed by Point Mugu personnel. The algorithms were used as a guide to estimate all unique costs associated with moving general or specialized equipment based on a percentage of the original acquisition cost. The assumptions and algorithms were also used to estimate the total weight of mission and support equipment.

We analyzed and adjusted all information based on documentation received during the audit, data COBRA calculated, replication of facilities and equipment, and consolidation of functions.

**Movement of Mission and Support Equipment.** Point Mugu personnel estimated total tons of mission and support equipment based on the square footage of specific types of facilities. In addition, the weight of security safes was estimated to be 600 pounds empty or 1,000 pounds full. The assumptions used to calculate weight of equipment are provided in Table C.11.

**Table C.11. Weight of Equipment**

| Facility Type | Weight of Equipment Per Square Feet |
|---|---|
| Laboratory | 1 ton per 1,000 square feet |
| Large Machine Shop | 21 tons per 1,000 square feet |
| Light Equipment | 2 tons per 1,000 square feet |
| Heavy Equipment | 10 tons per 1,000 square feet |
| Environmental Laboratory | 10 tons per 1,000 square feet |

Point Mugu's estimate of total tons of mission and support equipment to be moved for NAWC-WPNS departments was 4,402.4 tons. In this estimate was 748 tons of administrative equipment. We omitted this figure because COBRA allows for costs to move administrative equipment based on the number of personnel identified to be transferred. We included an additional 5,693 tons of equipment for the NAWS and SID departments that have been identified to be moved to China Lake. We based our calculations on the assumptions used by Point Mugu personnel. The total weight of equipment used in the analysis was 9,347 tons.

**One-time Unique Moving Costs.** One-time unique moving costs are costs that are in addition to standard packing and shipping costs. Examples include re-calibration and special reinstallation of equipment or additional costs to prepare equipment for the move. Point Mugu personnel estimated unique moving costs to be 10 percent of the original acquisition cost of general equipment and 20 percent of the original cost of specialized equipment. Actual costs were provided if a department had recently moved. Point Mugu's estimates totaled $328,587,000. We analyzed the data provided and adjusted the one-time unique moving costs to $126,583,200.

We made adjustments based on documentation received during the audit. For example, the Electronic Warfare Department estimated $350,000 to move the Iron Crow. The Iron Crow is a metal mock-up of an aircraft on which electronic warfare systems can be placed for testing purposes. During the audit, we received documentation that stated that the Iron Crow was relocated from one site to another on Point Mugu in 1993 at a cost of $53,000. All costs involved in the movement of the Iron Crow, such as disassembly, packing, and reassembly, would be incurred regardless of whether the Iron Crow was moved to another site on Point Mugu or relocated to China Lake. The only additional

cost incurred would be an increase in standard shipping costs due to the difference in distances. COBRA calculated standard shipping costs based on the distance of the move and weight of equipment to be relocated. The additional shipping costs in our analysis were from Point Mugu's estimate for total tonnage of equipment used to calculate all standard moving costs. Therefore, we changed the cost to move the Iron Crow to $53,000.

In addition to adjusting the one-time unique moving costs provided by NAWC-WPNS, we also determined that some costs in the schedule should be eliminated. NAWC-WPNS identified personnel Reduction in Force costs, Permanent Change of Station costs, and estimates to move administrative equipment. We omitted those costs from our analysis because COBRA automatically included costs for those areas based on the number of personnel eliminated or moved.

We analyzed the mission and functions of each NAWC-WPNS department and identified cost efficiencies that could be realized from the consolidation of departments that perform duplicative functions. The Air Intercept Systems Department claimed a cost of $5.6 million to move the Hardware-in-the-Loop Anechoic Chambers and Shielded Rooms. We determined this cost was unnecessary and omitted it from our analysis. The Intercept Weapons Department at China Lake is capable of performing the same Hardware-in-the-Loop functions as the Air Intercept Systems Department. However, to accommodate all functions currently performed at Point Mugu, the Target Presentation System currently operating at Point Mugu would be transferred to the Intercept Weapons Department at China Lake. Based on Point Mugu's algorithms, we calculated a cost of $204,000 to move the Target Presentation System to China Lake, as in Table C.12.

**Table C.12. Moving Cost for Target Presentation System**

| | |
|---|---|
| Acquisition Cost | $1,020,000 |
| Percentage of Cost To Move Special Equipment | x 0.20 |
| Estimate To Move Equipment | $ 204,000 |

**Cost to Move the Sea Range Directorate.** The Sea Range Directorate did not estimate moving costs based on the NAWC-WPNS algorithms. Instead, it estimated all moving costs based on square feet of facilities. The first estimate provided was calculated at $2,000 per square foot to move all laboratory facilities within the directorate. The Sea Range Directorate was unable to provide documentation to support the cost of $2,000 per square foot. We were later informed that Sea Range personnel changed the estimate to $1,000 per square foot. Again we received no documentation. We then asked Sea Range personnel to estimate the moving costs based on the assumptions and algorithms used by the other departments. We were informed by NAWC-WPNS personnel that it was difficult to estimate moving costs for the Range Communications Building and Range Operations Building. When told not to consider the

estimates to move these two facilities, Sea Range personnel changed the estimate to $200 per square foot. Also, we found a Military Construction proposal for a new Sea Range Operations Building that calculated $3.6 million as the cost to move equipment. Thus, we concluded that Sea Range personnel were improperly applying the $1,000 per square foot estimate to all facilities when this estimate should have only been applied to the Sea Range Communications Building. All other facilities should have been calculated based on $200 per square foot. Therefore, we revised the estimated cost to move the Sea Range Directorate Buildings as shown in Table C.13.

**Table C.13. Cost to Move Sea Range Directorate**

| | |
|---|---|
| Operations Building | $ 3,555,000 |
| Communications Building (13,968 sq ft x $1,000) | 13,968,000 |
| All Other Sea Range (141,846 sq ft x $200) | 28,369,200 |
| Total One-time Cost To Move Sea Range Facilities | $45,892,200 |

We did not include the square footage requirements to estimate moving costs for office or storage space. The COBRA model calculated those square footage requirements based on the number of personnel to be moved and the weight of equipment.

**Other One-Time Unique Costs Associated With a Move.** This category included unique expenditures that have not been included elsewhere in the model. Point Mugu determined other one-time unique costs associated with a move to total $448,344,000. We analyzed the data provided and adjusted this figure to $46,721,500.

Adjustments were made, where applicable, to estimates that included the purchase of new equipment. We determined that almost all purchases of new equipment were unnecessary. The transfer of existing equipment would provide NAWC-WPNS with the same capabilities that currently exist and avoid unnecessary procurement costs. For example, the Aircraft Weapons Integration Department at Point Mugu estimated a one-time unique cost to replicate avionics laboratories to be $135.3 million. Based on discussions with department personnel, we determined this estimate was based on purchasing all new equipment. The transfer and utilization of existing equipment was not considered. However, we determined that transfers of equipment and facilities could occur during time not requiring laboratory facilities. Therefore, we revised the estimate to relocate the avionics laboratories to $23,677,500 using NAWC-WPNS assumptions and algorithms. We determined that 75 percent of all equipment in the Aircraft Weapons Integration Department was specialized and 25 percent was general laboratory equipment. The algorithms estimated

moving costs to be 20 percent of the acquisition cost for specialized equipment and 10 percent of the acquisition cost for general laboratory equipment. Our revised cost was calculated in Table C.14.

**Table C.14. Cost to Move Fighter Department**

**Calculation To Move Specialized Equipment**

| | |
|---|---|
| Acquisition Cost | $135,300,000 |
| Percentage of Specialized Equipment | x 0.75 |
| Acquisition Cost of Specialized Equipment | $101,475,000 |
| Percentage of Cost To Move Equipment | x 0.20 |
| Cost To Move Specialized Equipment | $ 20,295,000 |

**Calculation To Move General Equipment**

| | |
|---|---|
| Acquisition Cost | $135,300,000 |
| Percentage of General Equipment | x 0.25 |
| Acquisition Cost of General Equipment | $ 33,825,000 |
| Percentage of Cost To Move Equipment | x 0.10 |
| Cost To Move General Equipment | $ 3,382,500 |

**Total Cost To Move Avionics Laboratory**

| | |
|---|---|
| Cost To Move Specialized Equipment | $ 20,295,000 |
| Cost To Move General Equipment | $ 3,382,500 |
| Total Cost To Move Equipment | $ 23,677,500 |

In addition, the Electronic Warfare Department provided a cost estimate to replicate the EA-6B ICAP-2 Weapon System Support Laboratory of $42.5 million. Department personnel stated that replication of the laboratory was necessary to avoid program slippages. In June 1989, the EA-6B moved the Weapon System Support Laboratory to its current location. The laboratory was able to begin partial operations after 2 weeks and was fully operational within 2-1/2 months. Although we recognize that some program slippage will occur, we do not believe it to be enough to warrant the additional procurement costs to purchase all new equipment.

**Miscellaneous Recurring Costs.** All costs under miscellaneous recurring costs are in addition to costs currently being incurred. Point Mugu personnel estimated miscellaneous recurring costs to be $10 million. We adjusted this amount to $9.9 million. The Electronic Warfare Department included a cost of $100,000 for additional travel to range test sites. However, department personnel conceded that the amount of travel between test sites would not increase. Based on this, we omitted the $100,000 from our analysis. In addition, the Electronic Warfare Department estimated $45,000 per year for additional cooling costs for laboratories. We determined this estimate should also be eliminated from our analysis because this overhead expense is not a recurring cost to the department. Further, overall electricity costs should decrease for departments currently at Point Mugu because rates for electricity at China Lake are lower due to the utilization of geothermal power.

# Appendix D. Proposed Disposition of Point Mugu Tenants

Tenants Eliminated

Branch Dental Clinic
Branch Medical Clinic
Marine Aviation Detachment
Naval Aviation Engineering Service Unit Detachment
Naval Investigative Service
Personnel Support Activity Detachment
Resident Officer In Charge of Construction
Scheduled Airlines Traffic Office
Special Intelligence

Tenants Staying At Current Location

Naval Air Reserves Forces, Point Mugu
Patron 65 Squadron, Point Mugu
Strike Fighter Squadron 305 (VFA-305), Point Mugu
Branch Medical San Nicolas Island
Naval Facility Centerville Beach Detachment, San Nicolas Island

Tenants That Have Plans To Move On Their Own

Defense Printing Service Detachment Office
Navy Satellite Operations Center
Operational Test and Evaluation Squadron (VX-4)
Antarctic Development Squadron (VXE-6)

Tenants Relocated to Port Hueneme

Command 3rd Fleet Representative
Explosive Ordnance Disposal Unit
Naval Audit Office
Naval Telecommunications Center
Navy Campus Field Activity
Navy Research Laboratory

Tenants Relocated to California Air National Guard
(Located Adjacent to Point Mugu)

Federal Bureau of Investigations

Tenant Relocated to China Lake

Bureau of Naval Personnel

# Appendix E. NAWC-WPNS Prior Year Workload Funding (in millions)*

| Aircraft | FY-90 | FY-91 | FY-92 | FY-93 | Program Total |
|---|---|---|---|---|---|
| A6E | $28.6 | $32.1 | $49.0 | $39.4 | $149.1 |
| AH-1 | 5.5 | 4.5 | 4.5 | 7.9 | 22.4 |
| F/A-18 | 51.9 | 54.8 | 71.5 | 61.1 | 239.3 |
| F-14 | 53.1 | 72.5 | 107.4 | 67.3 | 300.3 |
| AV-8B | 19.7 | 22.8 | 42.4 | 42.8 | 127.7 |
| EA-6B | 12.9 | 15.8 | 19.3 | 17.9 | 65.9 |
| JSOW | 10.9 | 10.3 | 10.3 | 18.2 | 49.7 |
| AMRAAM | 20.2 | 22.9 | 22.6 | 31.6 | 97.3 |
| Harp/Slam | 34.3 | 44.4 | 26.6 | 21.6 | 126.9 |
| Phoenix | 84.2 | 16.7 | 15.5 | 8.7 | 125.1 |
| Sidewinder | 59.8 | 67.9 | 67.7 | 51.8 | 247.2 |
| Sparrow | 33.8 | 19.5 | 28.4 | 32.8 | 114.5 |
| Total | $414.9 | $384.2 | $465.2 | $401.2 | $1,665.4 |

*All totals were rounded.

# Appendix F. NAWC-WPNS Workload Projections for Selected Programs (in millions)*

| Aircraft | FY-94 | FY-95 | FY-96 | FY-97 | FY-98 | FY-99 | Program Total |
|---|---|---|---|---|---|---|---|
| A6E | $33.1 | $27.1 | $25.9 | $25.3 | $25.8 | $28.2 | $165.4 |
| AH-1 | 11.7 | 15.2 | 14.6 | 14.2 | 14.5 | 15.8 | 86.0 |
| F/A-18 | 70.1 | 71.1 | 68.2 | 66.4 | 67.9 | 74.2 | 417.9 |
| F-14 | 60.4 | 79.8 | 76.5 | 74.4 | 76.1 | 83.2 | 450.4 |
| AV-8B | 48.6 | 39.0 | 37.4 | 36.4 | 37.2 | 40.6 | 239.2 |
| EA-6B | 26.6 | 29.4 | 28.1 | 27.4 | 28.0 | 30.6 | 170.1 |
| JSOW | 2.3 | 2.9 | 2.5 | 2.4 | 2.4 | 2.7 | 15.2 |
| AMRAAM | 24.0 | 23.9 | 22.6 | 22.0 | 22.5 | 24.6 | 139.6 |
| Harp/Slam | 23.5 | 22.5 | 21.5 | 21.0 | 21.5 | 23.5 | 133.5 |
| Phoenix | 2.0 | 1.7 | 1.6 | 1.6 | 1.6 | 1.7 | 10.2 |
| Sidewinder | 32.8 | 31.6 | 30.5 | 29.7 | 30.3 | 33.1 | 188.0 |
| Sparrow | 33.4 | 32.6 | 31.2 | 30.4 | 31.0 | 34.0 | 192.6 |
| Total | $368.5 | $376.8 | $360.6 | $351.2 | $358.8 | $392.2 | $2,208.1 |

*All totals were rounded.

# Appendix G. Auditor Validated Workload for Selected NAWC-WPNS Programs (in millions)*

| Aircraft | FY-94 | FY-95 | FY-96 | FY-97 | FY-98 | FY-99 | Program Total |
|---|---|---|---|---|---|---|---|
| A6E | $21.8 | $21.2 | $0.0 | $0.0 | $0.0 | $0.0 | $43.0 |
| AH-1 | 6.5 | 14.9 | 6.3 | 6.2 | 3.9 | 2.3 | 40.1 |
| F/A-18 | 15.7 | 12.4 | 16.4 | 7.5 | 4.4 | 3.3 | 59.7 |
| F-14 | 30.6 | 53.9 | 39.7 | 27.3 | 25.4 | 27.6 | 204.5 |
| AV-8B | 7.7 | 8.5 | 2.4 | 2.4 | 2.4 | 2.4 | 25.8 |
| EA-6B | 11.3 | 23.0 | 24.1 | 25.4 | 25.4 | 22.2 | 131.4 |
| JSOW | 13.0 | 25.0 | 25.2 | 31.0 | 28.5 | 40.5 | 163.2 |
| AMRAAM | 20.9 | 21.6 | 22.5 | 22.9 | 23.3 | 23.6 | 134.8 |
| Harp/Slam | 30.6 | 30.2 | 29.5 | 29.2 | 24.7 | 19.0 | 163.2 |
| Phoenix | 0.8 | 1.9 | 1.9 | 1.6 | 0.0 | 0.0 | 6.2 |
| Sidewinder | 18.5 | 13.9 | 17.9 | 24.6 | 20.0 | 22.6 | 117.5 |
| Sparrow | 16.1 | 10.9 | 10.8 | 11.4 | 7.7 | 9.4 | 66.3 |
| Total | $193.5 | $237.4 | $196.7 | $189.5 | $165.7 | $172.9 | $1,155.7 |

*All totals were rounded.

# Appendix H. Summary of Potential Benefits

| Recommendation Reference | Description of Benefit | Amount and/or Type of Benefit |
|---|---|---|
| 1. | Economy and Efficiency. Eliminate duplication of functions and streamline operations. | Funds Put to Better Use. No monetary benefits will be saved in the first 6 years of the realignment. However, net savings of $1.7 billion will be obtained for FYs 1994 through 2013 for Family Housing, Operations and Maintenance, and Military Personnel Appropriations.* |
| 2. | Economy and Efficiency. Focus selection criteria on capabilities, not bases. | Nonmonetary. |

*No monetary benefits are in the first 6 years because of one-time costs of $517.7 million. The $1.7 billion is net savings received over 20 years after the realignment costs are incurred. Therefore no potential monetary benefits will be attributed to the audit report in the Inspector General semiannual report to the Congress.

# Appendix I. Organizations Visited or Contacted

## Office of the Secretary of Defense

Director, Test and Evaluation, Washington, DC
Director, Base Closure and Utilization, Washington, DC

## Department of the Navy

Director of Navy Test and Evaluation and Technology Requirements, Washington, DC
Naval Air Systems Command, Arlington, VA
Headquarters, Naval Air Warfare Center, Arlington, VA
  Naval Air Warfare Center Weapons Division, China Lake, CA
  Naval Air Warfare Center Weapons Division, Point Mugu, CA
  Naval Air Warfare Center Weapons Division, White Sands, NM

## Department of the Air Force

Air Force Space Command, Peterson Air Force Base, CO
  30th Space Wing, Vandenberg Air Force Base, CA
  Edwards Air Force Base, CA

## Non-DoD Organization

U.S. General Accounting Office, National Security and International Affairs Division
  Technical Information Center, Washington, DC

## Contractor

Center for Naval Analyses, Alexandria, VA

# Appendix J. Report Distribution

## Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
Director, Test and Evaluation

## Department of the Navy

Secretary of the Navy
Headquarters, Naval Air Warfare Center
  Naval Air Warfare Center, Weapons Division

# Part IV - Management Comments

# Department of the Navy Comments

THE ASSISTANT SECRETARY OF THE NAVY
(Research, Development and Acquisition)
WASHINGTON, D.C. 20350-1000

24 MAR 1994

MEMORANDUM FOR THE DEPARTMENT OF DEFENSE INSPECTOR GENERAL

Subj: DEPARTMENT OF DEFENSE INSPECTOR GENERAL DRAFT AUDIT REPORT ON TEST FACILITY REALIGNMENT (PROJECT NO. 3AB-0012)

Ref: (a) Department of Defense Inspector General memo of 14 January 1994

Encl: (1) Analysis of Draft Report

I am responding to the Draft Audit Report forwarded by reference (a) concerning Test Facility Realignment. The stated objectives of the audit were to evaluate the mission assignments, workload, and capabilities at Naval Air Warfare Center - Weapons Division and the Air Force's 30th Space Wing. The Draft Report includes findings and conclusions related to the 1993 base closure process as well as recommendations regarding the realignment of Naval Air Warfare Center - Weapons Division, Point Mugu, in the 1995 base closure process.

The Navy is concerned with the fact that the report contains what appear to be findings and conclusions regarding a proposed realignment at one Navy activity pursuant to the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510, as amended (the Act)).

We believe the Act is the exclusive authority, through December 31, 1995, for selecting military installations for closure or realignment. It requires the Secretary of Defense to consider all military installations within the United States equally, in light of a force structure plan submitted with budget documentation and selection criteria which the Secretary shall define. The Act also provides a process for consideration and review throughout the Department of Defense and Congress prior to approval by the President.

In the 1993 round of base closure and realignment, the Secretary of Defense provided to the Military Departments and Department of Defense Agencies the force structure plan and selection criteria against which all installations were evaluated. All technical centers, including Point Mugu, were evaluated in the course of the 1993 process on the basis of those criteria. No activities were "excluded," from this evaluation because of their unique geographic or mission related characteristics. The Navy process was performed in strict compliance with The Act and policy guidance, and was validated by both the General Accounting Office and the Commission after extensive review.

Subj: DEPARTMENT OF DEFENSE INSPECTOR GENERAL DRAFT AUDIT REPORT ON TEST FACILITY REALIGNMENT (PROJECT NO. 3AB-0012)

In addition to the issues associated with the base closure and realignment process addressed above, we believe the Draft Report includes inaccuracies in technical, financial, and management analysis due to incorrect assumptions and incomplete data. For this reason the Navy does not concur with 19 of 22 findings and 5 of 6 conclusions. Three examples of our concerns are provided as enclosure (1).

While the 1995 base closure process will certainly include a review of Naval Air Warfare Center - Weapons Division at both China Lake and Point Mugu, which might very well satisfy the intent of the Draft Report recommendations, we do not consider it appropriate to comment on the report's independent analysis of potential 1995 base closure decisions. Such action could be viewed as violating the base closure process, in particular, Section 2909(b)(1) of the Act. Thus, we recommend that comments on the 1993 base closure process and recommendations for the 1995 process be deleted.

Nora Slatkin

Analysis of Draft Report

1. The Draft Report predicts $1.7B savings over 20 years and is based on a forecast of workload decreasing by roughly 50 percent. This assumption is based on inaccurate data. The Draft Report generated F/A-18 workload projections for the Naval Air Warfare Center Weapons Division for FY 94 as $15.7M. The actual FY 94 funds already provided to Naval Air Warfare Center Weapons Division, with more anticipated, for the F/A-18 Program is $134.1M. Similar discrepancies were found for other programs.

2. The Draft Report assumes that the Point Mugu Sea Range operational infrastructure and personnel could be moved to the vacated Naval Civil Engineering Laboratory at Port Hueneme, California. The Naval Civil Engineering Laboratory property is located at the entrance of the Port Hueneme harbor. Telemetry equipment and transmitters/antennas require large "clear spaces" for proper operation and personnel safety to support live ordnance operations on the 36,000 square mile Sea Test Range. The entrance to a major commercial harbor would not allow safe or effective operation of sea range equipment. Furthermore, Headquarters, Naval Facilities Engineering Command has verified that the Naval Civil Engineering Laboratory property is no longer available.

3. The Draft Report also concludes that all aerial targets can be sited at China Lake and launched from a China Lake based aircraft and therefore, do not need to be based near the Sea Range. Actually, most aerial targets are ground launched. Furthermore, the launch aircraft (DC-130) is incapable of launching the AQM-37C, MQM-8 and QF-4N aerial targets. Due to fuel considerations, ground-launched aerial targets cannot be based at the China Lake site and used for operations on the Point Mugu Sea Range. Therefore the siting of aerial targets at China Lake to support Sea Range operations is infeasible.

Enclosure (1)

# Audit Team Members

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|---|---|
| Donald E. Reed | Director, Acquisition Management Directorate |
| Raymond A. Spencer | Audit Program Director |
| Steve Hughes | Audit Project Manager |
| Earl Van Field | Senior Auditor |
| Delesta Ware | Senior Auditor |
| Jackie Wicecarver | Senior Auditor |
| Barbara Moody | Auditor |
| Cindi Miller | Auditor |
| Eva Daniel | Auditor |
| Sterling Malcolm | Auditor |
| Bob King | Auditor |
| Mary Ann Hourclé | Editor |
| Frank Ponti | Statistician |