

**DEFENSE BASE REALIGNMENT AND CLOSURE COMMISSION
2521 S. CLARK STREET, SUITE 600
ARLINGTON, VIRGINIA 22202
(703) 699-2950**

MEMORANDUM OF MEETING

DATE: June 28, 2005

TIME: 10:00 am

MEETING WITH: China Lake Community Representatives

OBJECTIVE: To receive information from the community concerning the proposed realignments affecting China Lake

JCSG STAFF:
Les Farrington
Ryan Dean
Tyler Oborn

OTHER COMMISSION PARTICIPANTS:
Bill Fetzer-Navy Team

NON-COMMISSION PARTICIPANT(S):

Name/Title/Phone Number

Phil Arnold—Co-Chair, China Lake Defense Alliance, (760)382-0499
Bill Porter—Co-Chair, China Lake Defense Alliance, (760) 446-1034
Jim Wise—Consultant, PACE-Capstone, (703) 518-8600
Erik Oksala—Assistant, PACE-Capstone (703) 518-8600

Community officials gave us a draft of a presentation they are developing to Present at the upcoming LA Regional hearing. No hard copies were available, nor disks. The presentation was shown on a laptop screen. They agreed to provide us copies when it is finalized. Officials made the following points.

- 1. China Lake was given the highest ranking for military value of all Navy RDT&E facilities.**

- 2. China Lake recently received a Level 5 Software certification from the Software Engineering Institute.**
- 3. Question exists on how much of the Mugu Sea Range support should go to China Lake. Officials believed that all test planning and management should go to China Lake and 100 or less people would need to remain at the sea range for operational support.**
- 4. China Lake can handle the large influx of people expected as a result of BRAC realignments (most are from Point Mugu). At China Lake, there are presently 3,100 civilians and a total of 5,000 are expected after BRAC. There is plenty of available real estate in the Ridgecrest area for construction of housing. As for water resources, there is enough deep ground water to support 90,000 people; the population of Ridgecrest at the present time is 28,000.**
- 5. The missions of Point Mugu and China Lake are totally compatible.**
- 6. Representatives expressed an issue concerning the lack of movement of Navy program management people at Patuxent River to China Lake so that co-location with the weapons and armaments RDT&E and program management offices can exist. Community officials' belief is that the Navy decision not to relocate program executive and management offices to China Lake is not consistent with BRAC assessment criteria not the Secretary of Defense 2005 goals. As a result, officials believe that the BRAC commission should reject the Secretary of Defense recommendation for program management to remain at Patuxent River.**
- 7. According to the officials, there was no documented justification for the above recommendation in the Technical Joint Cross-Service report or in meeting minutes.**

**THE NAVY-DOD DECISION NOT TO RELOCATE PROGRAM
EXECUTIVE AND MANAGEMENT OFFICES TO CHINA LAKE IS NOT
CONSISTENT WITH BRAC ASSESSMENT CRITERIA NOR THE
SECRETARY OF DEFENSE BRAC 20005 GOALS, AND THE BRAC
COMMISSION SHOULD REJECT THE SECRETARY OF DEFENSE
RECOMMENDATION FOR PROGRAM MANAGEMENT TO REMAIN AT
PATUXENT RIVER**

Basis for Secretary of Defense Recommendation Not Documented in TCSWG Report. In the minutes of the Technical Cross-Service Working Group April 26, 2005 teleconference meeting it was noted that “the Navy’s position that the Patuxent River Program Managers will not move to China Lake”. There was no documented justification.

In the May 3, 2005 teleconference minutes a decision was noted: “The TJCSG Principals agreed to eliminate from TECH-0018DR the relocation of the PEO-PMs from Naval Air Station Patuxent River and the Pyrotechnics staff from the Naval Support Activity Crane. There was no documented justification.

No other references were found concerning the change in the proposed scenario establishing a Navy Joint Weapons and Armaments RDAT&E Center at China Lake. The change was made on the basis of an oral or internal written request not included in the report furnished to the Commission or the public. The enormous size of the data base is such that there may be a reference somewhere else, but there is no documentation given for the reasons for the decision in what would appear to be the appropriate location – the minutes of the cross-service working group engaged in evaluating the scenario or in the TCSWG report.

Departure from Army and Air Force Integrated Weapons and Armament RDAT&E Centers. Separating the program management function for weapons and armaments acquisition is a departure from the practices of the Army and Air Force which co-locate program management with their RDAT&E centers and appears to violate intent of placing “acquisition” with the other elements of the integrated centers.

Possible Arguments for Exception

Since the basis for Navy objection to moving program management from Patuxent River isn’t documented, one can only surmise the objections to the move. Two possible reasons for the Navy position are listed below with refutations.

Need for Proximity to Headquarters. One might assume that it was the “military judgment” that the Navy believed that the program management function should stay near the Washington DC area to be able to respond quickly to demands from Navy headquarters or the Office of the Secretary of the Navy or the Secretary of Defense.

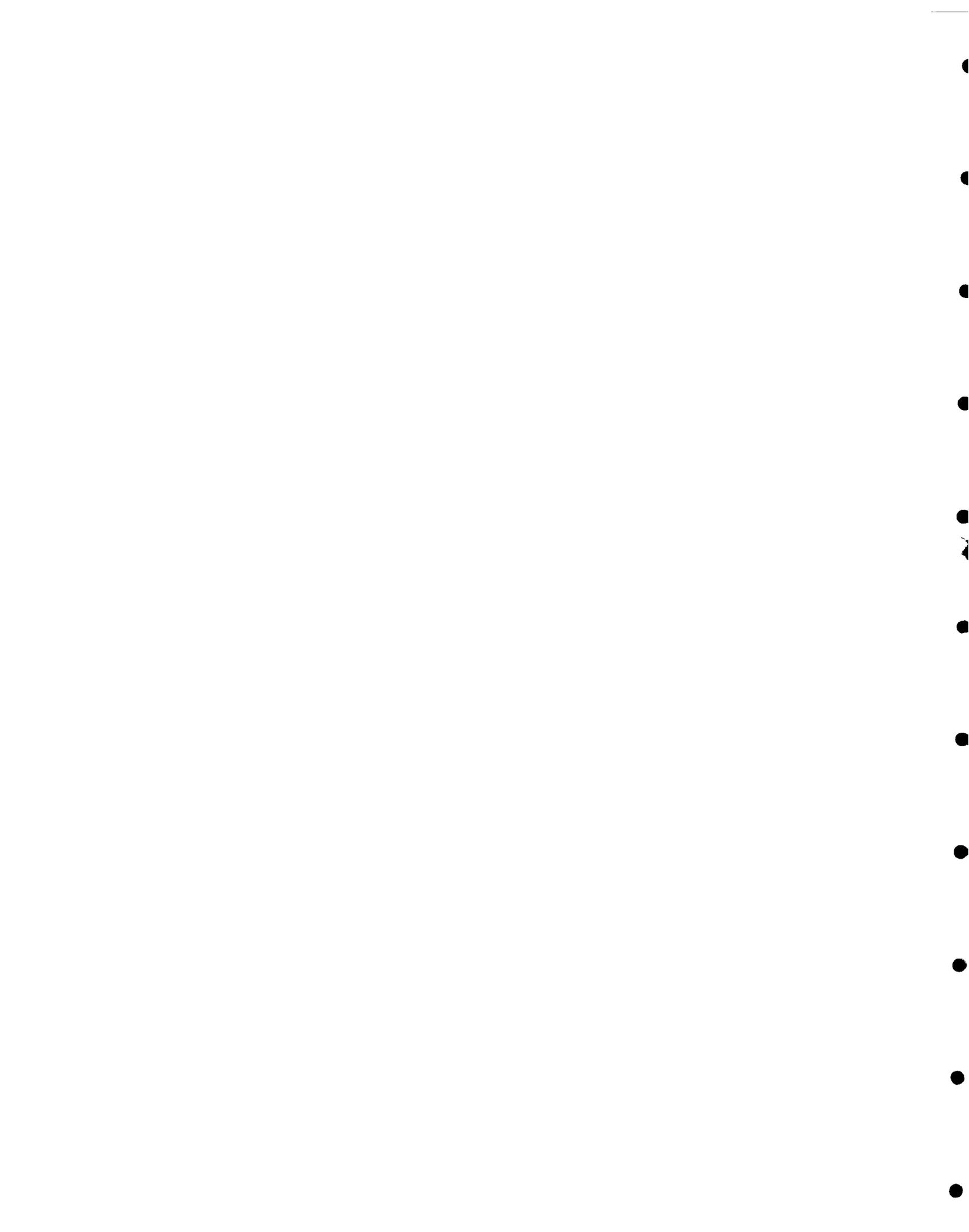
Source: China Lake Community Representatives 6/28/05

JOINT AEROSPACE RDT&E CENTER AND
PACIFIC TRAINING AND EXPERIMENTATION COMPLEX

**TRANSFORMING THE WAY
WE ARM AND TRAIN JOINT FORCES
FOR THE 21ST CENTURY**

TRI-COMMUNITY DEFENSE PARTNERSHIP
JULY 2004

*Source: China Lake Community Representatives
6/28/05*



CONTENTS

FOREWORD.....	ii
PREFACE: GETTING SERIOUS ABOUT JOINT DEFENSE RDT&E.....	iii
EXECUTIVE SUMMARY	1
PROBLEMS IN ACHIEVING TRANSFORMATION	3
RECONCILING BASE INFRASTRUCTURE AND TRANSFORMATION FOR AIR WARFARE.....	5
JOINT AEROSPACE RDT&E CENTER	7
ASSOCIATED FACILITIES.....	11
PACIFIC TRAINING AND EXPERIMENTATION COMPLEX.....	12
SOUTHWEST DEFENSE COMPLEX.....	15
MANAGEMENT OF THE JOINT AEROSPACE RDT&E CENTER.....	16
CONCLUSION.....	17

APPENDICES

APPENDIX A: Current and Future Mission Capabilities of Core Centers.....	18
APPENDIX B: Pacific Test and Experimentation Complex Bases Other Than Joint Aerospace RDT&E Center	21
APPENDIX C: Southwest Defense Complex Bases.....	23

FOREWORD

The 2005 Base Realignment and Closure (BRAC) round offers an extraordinary opportunity to support transformation of the 21st Century armed forces. Besides eliminating unneeded capacity, Secretary of Defense Donald Rumsfeld has set specific goals to:

- Use the realignment and closure process to improve efficiency and warfighting capability;
- Contribute to rationalizing the infrastructure with the national defense strategy;
- Encourage joint service activity.

California can make a great contribution to the achievement of these goals. During World War II the services came to California and its neighbors in the West to establish new bases because other parts of the country could not adequately support the new weapons and training needs of the services.

In the period since World War II, California has supplied land, sea and air space, research and development laboratories and the test and training facilities needed by the services. Over the past 60 years California also has developed highly skilled and knowledgeable generations of defense work forces through its universities, industrial organizations, and the scientists and engineers who work in our military laboratories and ranges.

Recognizing Department of Defense goals, and California's capacity to meet them, this document proposes a joint service research, development, test, and evaluation center and a training and experimentation complex which is a model for transformation. Putting the unique aerospace resources and the vast available land, sea and airspace in California to use, it integrates laboratories and ranges with California's many other resources in government and the private sector to significantly contribute to the transformation of our armed forces to meet the challenges of the 21st Century.

Tri-Community Defense Partnership:

China Lake Defense Alliance – iwv2000@iwvisp.com
Edwards Community Alliance – colaero@qnet.com
VCEDA BRAC Task Force – bburatto@vceda.org

The Tri-Community Defense Partnership is an alliance of community organizations and is not affiliated with the Department of Defense nor any military service

PREFACE: GETTING SERIOUS ABOUT JOINT DEFENSE RDT&E

In Afghanistan and Iraq the military services have demonstrated significant progress in working together effectively as cohesive joint forces. Sharing assets and capabilities is working on the battlefield, but the services have a way to go in carrying this cooperative approach to developing and testing the new and improved weapon systems needed for the future.

In spite of the defense downsizing, each service continues to support its own RDT&E base infrastructure with attendant overhead costs and inability to replace old facilities as they age. The services have been unwilling to merge capabilities. In order to maintain their “independence” from other service interests they have been willing to allocate scarce revenue on duplicative capabilities. This independence wastes precious resources, which could be better spent elsewhere, and runs counter to defense transformation goals.

An unwillingness by the services to seriously consider a different business model contrasts sharply with the aerospace industry, which downsized and made major structural changes when the prospect of reduced defense appropriations became apparent. The defense RDT&E bases are not profit-oriented businesses, and one should be careful in drawing too many parallels. Yet it’s obvious that the military services haven’t accepted the reality that their current RDT&E support model is wasteful and inhibits the best allocation of limited capital investment funds.

Air warfare and related RDT&E support is a particularly egregious example of maintaining duplicate capabilities with an attendant high management load and overhead costs. This paper offers an air warfare RDT&E support model in keeping with BRAC and transformation goals. It proposes consolidating a significant portion of aircraft, weapon and related technology support now distributed across the country to three sites in the West where technical expertise and large land, air and sea space is available unencumbered by encroachment, weather and terrain issues that plague other parts of the country. These sites – Edwards Air Force Base and the Naval Air Warfare Center Weapons Division sites at China Lake and Point Mugu – would be merged into a single Joint Aerospace RDT&E Center.

Edwards, China Lake and Pt. Mugu are electronically linked and currently support numerous cross-service RDT&E and training activities. These three sites already have most of the facilities needed to perform the mission of a joint center, and the costs associated with additional hangars and other support facilities can be amortized quickly from the savings. The joint center would have the added benefits of supporting other technologies and mission areas such as space propulsion, electronic warfare test and training, and providing ranges for use by the many training installations in the Southwest.

Secretary of Defense Rumsfeld stated the objectives for BRAC in his letter to the service and agency chiefs in November 2002. Simply put, BRAC is to be more than a reduction in base infrastructure to save money. Its purpose is to maximize both efficiency and

effectiveness of our fighting forces. In pursuing these goals the services and agencies were tasked to examine and implement opportunities for greater joint activity. The BRAC 2005 process has structured joint cross-service working groups to consider opportunities for joint activity, but it isn't clear yet that major RDT&E structural changes are being considered.

It's time to abandon the old, expensive model, and BRAC 2005 offers the opportunity. Our country can no longer afford to support an RDT&E structure that costs more than necessary and is out of step with the armed forces of the future.

EXECUTIVE SUMMARY

The 2005 Base Realignment and Closure (BRAC) round is intended to support improved efficiency and warfighting capability, including fostering more joint service activity—in effect to promote the transformation of the armed forces structure.

Systemic management issues in the military services impede transformation, and without specific attention to these issues, BRAC will fail to achieve its goals and transformation will be delayed and cost far more than necessary. BRAC can be used as an instrument to promote transformation if it addresses these inhibitors. However, if BRAC 2005 follows the precedents of previous rounds:

- Bases will be assessed independently, ignoring the potential benefits of capitalizing on the complementary nature afforded by geography and mission;
- Opportunities to combine RDT&E operations at appropriate bases across service lines will be ignored;
- Expensive and inadequate measures to impede encroachment will be carried out although alternative sites are available;
- The old artificial boundaries, which separate Research and Development from Test and Evaluation from Training, will inhibit opportunities to develop innovative base structures that save money and promote improved joint system acquisition and training.

This proposal addresses the problems directly. It consolidates mission areas that would especially benefit by joint service cooperation—**air warfare and related mission RDT&E**. Edwards Air Force Base and the two facilities of the Naval Air Warfare Center Weapons Division at China Lake and Point Mugu would combine to form the **Joint Aerospace RDT&E Center**. Together these bases have the experienced scientific and engineering staff, laboratories, land, sea and air space—the most complete staff and facilities in the world for aircraft, weapons and mission avionics RDT&E.

The staff and laboratories of these three bases continue to demonstrate the **capability to solve problems in real time** as they have in Afghanistan, Iraq, and every conflict since World War II.

This realignment of functions and joint management:

- Streamlines and consolidates service air warfare and related mission RDT&E;
- Institutionally brings operators together with scientists and engineers to share knowledge and experience – operators obtain technical expertise and facilities, technical personnel obtain operational knowledge and experience in evaluating new concepts;
- Provides a vast land, sea and air arena with long-term insulation from civilian and commercial encroachment;
- Ensures joint concept evaluation, development, test and evaluation and provides a basis for joint training and joint exercises.

BRAC 2005 offers a golden opportunity to take a bold step toward achieving the Department of Defense goals of transformation.

PROBLEMS IN ACHIEVING TRANSFORMATION

Transformation is envisioned as a continuing process involving organizational, doctrinal and technological change across all military forces. The Department of Defense Transformation Plan calls for changing how we fight, how we do business and how we work with other government agencies and our allies.

The RDT&E military base infrastructure with American industry is an instrument to: apply technology to develop new systems; develop new joint tactical warfare concepts; and train our forces in joint operations. Our RDT&E capabilities are made available to other agencies and to our allies.

Operations in Afghanistan and Iraq illustrate the value of the transformation concept needed for these and similar scenarios. The use of special forces, the speed and agility of air and ground forces, the ability to bring lethal, standoff weapons rapidly on target, and the cooperative tactics of the Army, Navy, Air Force and Marines, with a major role for Special Forces, are hallmarks of transformation goals.

Much needs to be done before the vision of the transformed force structure is achieved. Systemic management problems that inhibit the transformation process include:

- Precious resources are wasted on duplicative and unnecessary infrastructure, both inter- and intra-service. The services are procuring common or interoperable systems in many cases, but insist on maintaining duplicative research, development, test and evaluation facilities even though fewer joint facilities could do the job better at far less cost.
- Testing and training is inhibited in some areas by encroachment of residential and industrial development and commercial transportation routes. Elaborate and expensive measures are being taken to use these facilities when other facilities not burdened by encroachment are available.
- Lines between testing, training and experimentation are blurring, yet out-of-date laboratory and range funding and use policies prevent efficient use of available assets.
- Research and development laboratories, test and evaluation facilities, and training ranges continue to be viewed as independent entities in spite of today's trend toward iterative development and training.

Transformation is more than sizing and aligning the base infrastructure. To be most effective, management transformation is needed as well. The services are working to deal with interoperability, joint tactical concepts and other joint operational issues, but transforming the RDT&E infrastructure management process to meet joint mission needs has received little or no attention. This paper proposes aligning RDT&E support in a particular mission area to foster efficient and effective joint development of technology and systems for joint use.

Inertia and parochialism in the armed services inhibit transformation. Many in the armed services are wedded to old ways of doing business and are oblivious to opportunities to reform the system to support transformation. Unless the BRAC process is viewed as a true transformation mechanism, the 2005 assessment process will proceed as in previous rounds:

- Bases will be evaluated as independent rather than complementary entities;
- Research and Development, Test and Evaluation, and Training will be evaluated independently;
- Encroachment workarounds will obscure long-term problems.

The cost of failure to reform is high. Failure to streamline the support infrastructure inhibits technological innovation and best use of scarce resources. Secretary Rumsfeld's letter to the service and agency chiefs on November 15, 2002, initiating the BRAC process, laid out specific transformation objectives. These objectives cannot be met unless creative approaches are applied to infrastructure change through BRAC.

RECONCILING BASE INFRASTRUCTURE AND TRANSFORMATION FOR AIR WARFARE

In his letter, Secretary Rumsfeld stated clear **goals** for BRAC:

1. Maximize *both* warfighting effectiveness and efficiency;
2. Contribute toward transforming the Defense Department by rationalizing the infrastructure with the national defense strategy;
3. Examine and implement opportunities for greater joint activity.

A **SOLUTION** to the infrastructure problems that inhibit achieving transformation can be implemented in BRAC by:

- Structuring military bases around functional or mission areas **across service lines**;
- Identifying and building on major functional base groupings to make maximum use of compatible functions and operations considering geography, encroachment issues, investment needs, available skill base, theater needs, and other issues.

A **MODEL** for military bases under transformation must include:

- Consolidating research, development, test and evaluation (RDT&E) in appropriate mission areas at **joint service centers**;
- Performing unit and joint military training and experimentation in geographic clusters and aligning these clusters with the joint service RDT&E centers' test facilities to the extent possible;
- Maximizing dialog between operational commands and the technical staffs of the joint RDT&E centers for mutual benefit—incorporation of operational experience and doctrine into development of technology and system concepts and insertion of technical expertise into joint training and experimentation design;
- Selecting RDT&E and training sites that possess expanses of land, sea, and air space, good climate, a broad range of terrain, the most complete set of existing and embedded facilities, a knowledgeable staff, and freedom from encroachment now and into the future.

A functional area ripe for consolidation is air warfare RDT&E. The Army, Navy, Air Force and Marine Corps share many recognized common needs in aircraft, weapons and avionic systems. Joint development programs are becoming the rule.

RDT&E in the air warfare arena requires an extensive set of skills, laboratories and range facilities with land, sea and air space, and connectivity among the ranges to accommodate development of air combat systems effectively and safely. These same skills and facilities can accommodate related systems in areas such as surface weapons, network centric systems, and directed energy.

Ideally, these same facilities and operating spaces should also support air unit training for a substantial number of operational units. To complete the requirements of the model, the RDT&E and air training facilities should be located near maritime, littoral and land training bases to allow close air support training and large-scale joint exercises and experiments.

All these requirements are met in California and adjacent states. The assets for a Joint Aerospace RDT&E Center in California already exist. This Center and Complex can:

- Support DOD goals for BRAC;
- Yield high annual operational cost savings;
- Enhance transformation at the lowest cost in the shortest period of time.

JOINT AEROSPACE RDT&E CENTER

The proposed Joint Aerospace RDT&E Center consists of Edwards Air Force Base and the Naval Air Warfare Weapons Divisions sites at China Lake and Point Mugu. Their locations are shown in FIGURE 1. There is also an auxiliary site of Edwards Air Force Base located at the Nellis Air Force Base.

These DOD centers of excellence offer the most complete set of facilities in the world for aircraft and weapons RDT&E. By combining the assets of these existing sites, the air warfare research, development, test and evaluation (RDT&E) needs of the services can be met. These bases have laboratories, test facilities, large expanses of land, sea, and air space, and a capable and experienced technical staff. These existing sites also have unmatched capabilities in all aspects of surface weapon RDT&E and space rocketry RDT&E.

Edwards Air Force Base and China Lake are located in the Mojave Desert in isolated areas that permit flight operations and testing of live ordnance in areas far from population centers. The R-2508 airspace, jointly managed by Edwards, China Lake, and the Fort Irwin National Training Center, is the largest restricted airspace in the United States, at 20,000 sq. mi. The management structure for R-2508 is already a recognized model for joint service cooperation and the management agreement for such has been in effect since 1976.

The instrumented Point Mugu Sea Range with its San Nicolas Island facility is located off the coast of Southern California. The Sea Range encompasses 36,000 sq. mi. and is expandable to 125,000 sq. mi. for long-range surface and subsurface launched missile tests. Embedded instrumentation support is provided for space launches at Vandenberg Air Force Base.

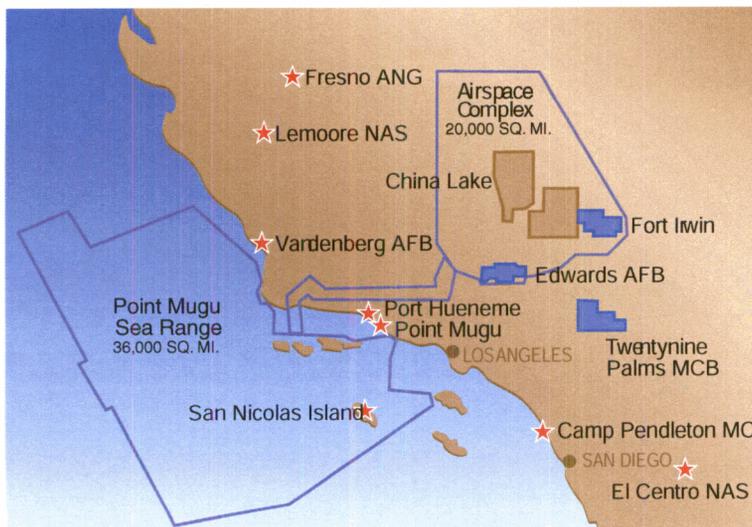


FIGURE 1. Location of the Joint Aerospace RDT&E Center Sites

Together these sites are the most complete set of air warfare related laboratories and ranges in the world. Vast land, sea and air spaces, and experienced civilian, contractor and military personnel are in the sites to perform nearly all the functions associated with supporting the research, development, test and evaluation of combat aircraft, air launched weapons and related mission avionics systems. They also have the capability to support research, development, test and evaluation of surface and subsurface launched missiles and space rockets.

The proposed Joint Aerospace RDT&E Center's technical expertise and facilities are fully capable of system development support, and supporting the development of transformation enabling technologies—UAV/UCAV working closely with the Air Force UAV installation at Indian Springs NV, directed energy systems, information operations, hypersonics, network centric warfare support systems and other new technologies.

APPENDIX A is a listing of mission capabilities of the three centers that make up the proposed Joint Aerospace RDT&E Center.

The Point Mugu Sea Range is located off the coast of Southern California with the test area located beyond commercial sea lanes and small boat operating areas. Because of the convex configuration of the California coastline, most north-south commercial air corridors run overland and there are minimal air traffic conflicts with sea routes in the outer sea range area as shown in FIGURE 2.

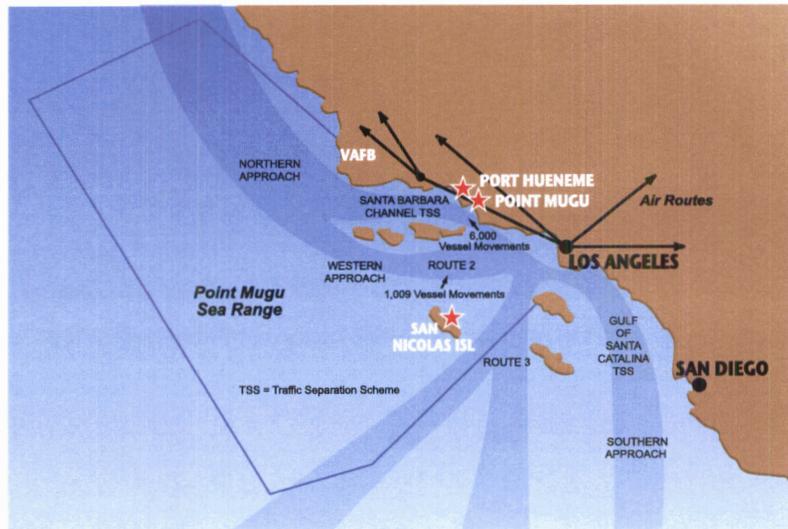


FIGURE 2. Point Mugu Sea Range with Air and Sea Routing

The huge R-2508 inland air space is restricted to military control above 20,000 feet, and the 2 million acres of ranges within Edwards, China Lake and Fort Irwin are restricted from commercial and general aviation from ground level. FIGURE 3 is a snapshot of commercial airline routes on Thanksgiving Day in 2001 when most military aircraft were not flying, showing the national encroachment pressure on military air space. Air access through R-2508 is under complete joint control of the military.

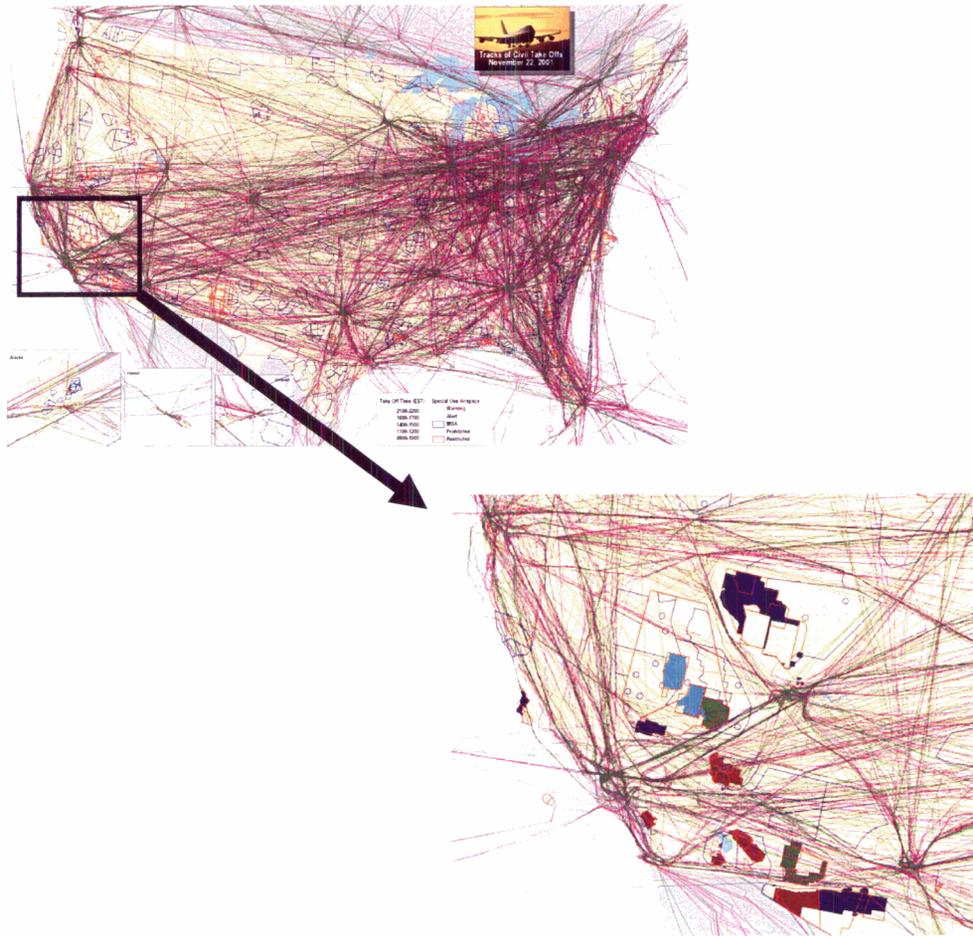


FIGURE 3. United States Commercial Air Traffic Routes on Thanksgiving Day 2001

The Joint Aerospace RDT&E Center's land areas are not only enormous in size, but they are virtually free from the civilian encroachment pressures found in other areas of the country. China Lake and Edwards Air Force Base are bordered by federal land shielded from development. Most of the air operations in R-2508 are over land owned by or withdrawn to the Defense Department, the adjacent Desert Wilderness Area or other Federal land. FIGURE 4 shows federally controlled land in the United States.

The range areas cover the widest range of climates and terrain features that can be found in any region of the country. The inland range's 360 annual clear days are the most that can be found in the United States. Similarly, the sea range area has the best climate for maritime test and training operations. These sites are important assets for our international allies and other U.S. agencies as well.

Japan and the United Kingdom deploy every year to Point Mugu and China Lake for tests and exercises. Many allies come to China Lake and Point Mugu to learn to use American systems purchased under the Foreign Military Sales program or to test and train with systems developed in their own countries.

Other agencies are important users as well. Among many examples, the Asymmetric Warfare Center at Point Mugu provides direct support to law enforcement and military agencies handling terrorist attacks. China Lake was the test site for the Predator-Hellfire attack system used with great success in the lethal attack on Al Qaida leaders in Yemen.

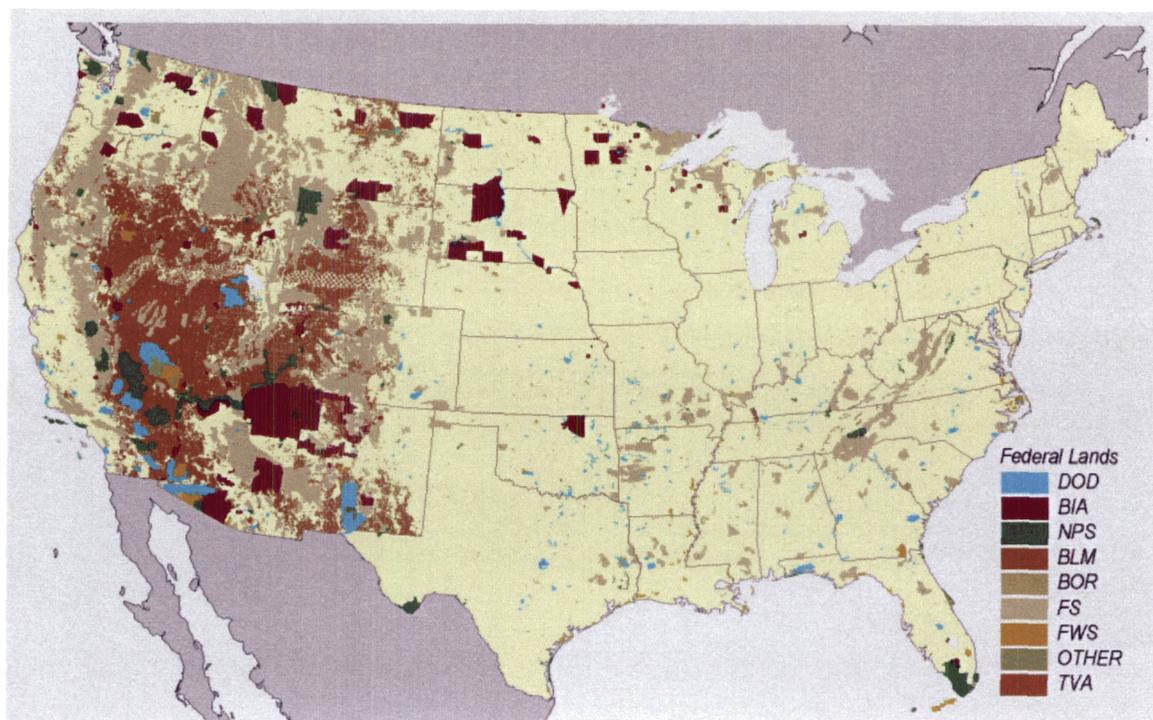


FIGURE 4. R-2508 and Federally Controlled Land

ASSOCIATED FACILITIES

The Joint Aerospace RDT&E Center has a long-standing relationship with other government and private institutions that mutually benefits the Center and the associated facilities.

Vandenberg Air Force Base. Vandenberg Air Force Base launches military and commercial space vehicles into polar orbits. It is also a primary test site for missile defense testing, and, along with the Naval Air Warfare Center Weapons Division at Point Mugu and other Pacific test sites, serves as a member of the Missile Defense Agency's Extended Test Range. Vandenberg provides launch services for both ballistic missile targets and interceptors.

Air Force Plant 42. Plant 42 and its industrial occupants have developed many of the most advanced aircraft of the past half-century. The Stealth Bomber and F-117 are products that illustrate the value of proximity between Edwards Air Force Base and a first-class aerospace industrial facility. The joint RDT&E aspects of the Joint Aerospace RDT&E Center will enhance a proven capability for the future in upgrading the capability of manned and unmanned aircraft.

NASA Dryden Flight Research Center. The Dryden Flight Research Center, located within the boundaries of Edwards Air Force Base, is dependent for its aeronautical and space flight research on Edwards and R-2508. Its close relationship with the Joint Aerospace RDT&E Center adds another dimension to the capabilities of the center.

PACIFIC TRAINING AND EXPERIMENTATION COMPLEX

California and adjacent states also have a constellation of Army, Navy, Air Force and Marine Corps military bases engaged in training and other activities which complement the proposed Joint Aerospace RDT&E Center. These existing bases, the **Pacific Training and Experimentation Complex** (APPENDIX B), make use of the Joint Aerospace RDT&E Center's air space, instrumented land and sea ranges, and technical expertise to support unit training and joint exercise needs tasked by the Joint Forces Command. The location of these bases is shown in FIGURE 5.

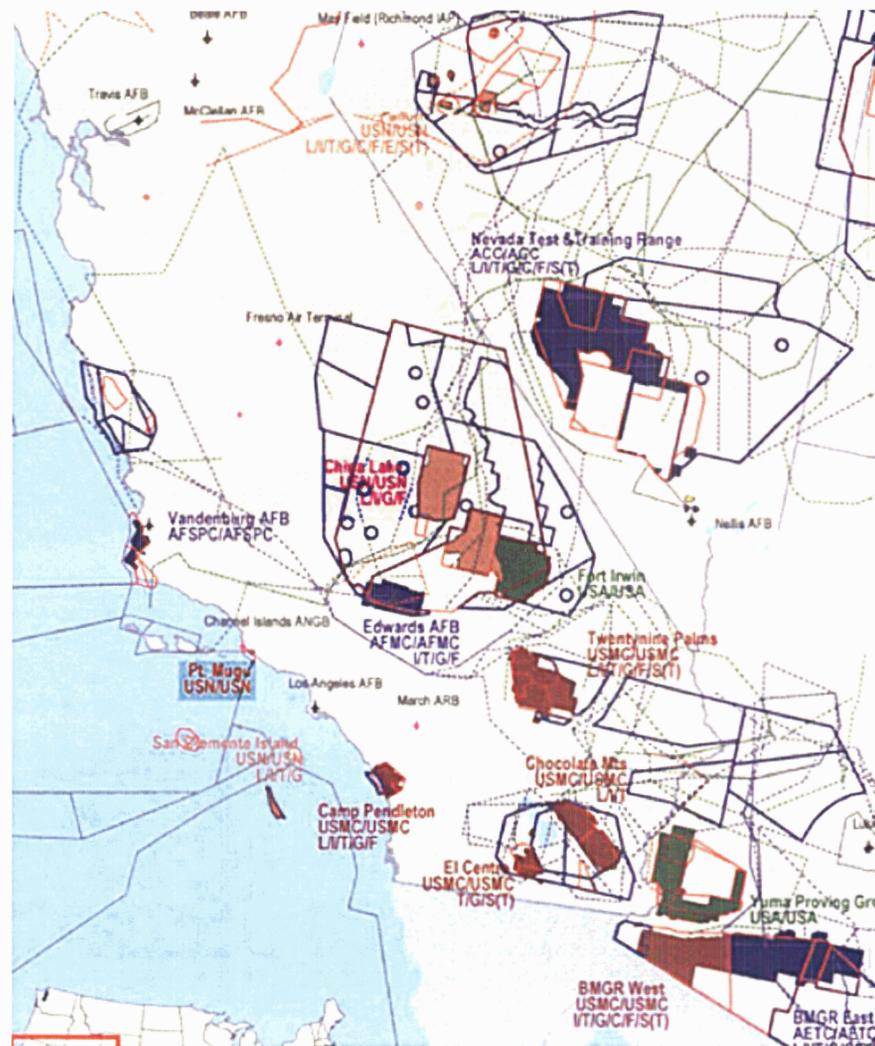


FIGURE 5. Location of Joint Aerospace RDT&E and Pacific Training and Experimentation Complex Bases

JOINT AEROSPACE RDT&E CENTER

The proposed Joint Aerospace RDT&E Center consists of Edwards Air Force Base and the Naval Air Warfare Weapons Divisions sites at China Lake and Point Mugu. Their locations are shown in FIGURE 1. There is also an auxiliary site of Edwards Air Force Base located at the Nellis Air Force Base.

These DOD centers of excellence offer the most complete set of facilities in the world for aircraft and weapons RDT&E. By combining the assets of these existing sites, the air warfare research, development, test and evaluation (RDT&E) needs of the services can be met. These bases have laboratories, test facilities, large expanses of land, sea, and air space, and a capable and experienced technical staff. These existing sites also have unmatched capabilities in all aspects of surface weapon RDT&E and space rocketry RDT&E.

Edwards Air Force Base and China Lake are located in the Mojave Desert in isolated areas that permit flight operations and testing of live ordnance in areas far from population centers. The R-2508 airspace, jointly managed by Edwards, China Lake, and the Fort Irwin National Training Center, is the largest restricted airspace in the United States, at 20,000 sq. mi. The management structure for R-2508 is already a recognized model for joint service cooperation and the management agreement for such has been in effect since 1976.

The instrumented Point Mugu Sea Range with its San Nicolas Island facility is located off the coast of Southern California. The Sea Range encompasses 36,000 sq. mi. and is expandable to 125,000 sq. mi. for long-range surface and subsurface launched missile tests. Embedded instrumentation support is provided for space launches at Vandenberg Air Force Base.



FIGURE 1. Location of the Joint Aerospace RDT&E Center Sites

Together these sites are the most complete set of air warfare related laboratories and ranges in the world. Vast land, sea and air spaces, and experienced civilian, contractor and military personnel are in the sites to perform nearly all the functions associated with supporting the research, development, test and evaluation of combat aircraft, air launched weapons and related mission avionics systems. They also have the capability to support research, development, test and evaluation of surface and subsurface launched missiles and space rockets.

The proposed Joint Aerospace RDT&E Center's technical expertise and facilities are fully capable of system development support, and supporting the development of transformation enabling technologies—UAV/UCAV working closely with the Air Force UAV installation at Indian Springs NV, directed energy systems, information operations, hypersonics, network centric warfare support systems and other new technologies.

APPENDIX A is a listing of mission capabilities of the three centers that make up the proposed Joint Aerospace RDT&E Center.

The Point Mugu Sea Range is located off the coast of Southern California with the test area located beyond commercial sea lanes and small boat operating areas. Because of the convex configuration of the California coastline, most north-south commercial air corridors run overland and there are minimal air traffic conflicts with sea routes in the outer sea range area as shown in FIGURE 2.

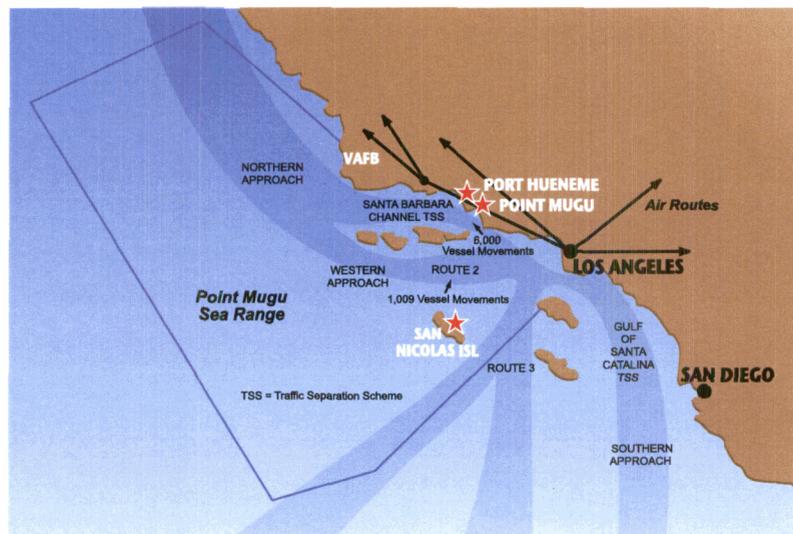


FIGURE 2. Point Mugu Sea Range with Air and Sea Routing

The huge R-2508 inland air space is restricted to military control above 20,000 feet, and the 2 million acres of ranges within Edwards, China Lake and Fort Irwin are restricted from commercial and general aviation from ground level. FIGURE 3 is a snapshot of commercial airline routes on Thanksgiving Day in 2001 when most military aircraft were not flying, showing the national encroachment pressure on military air space. Air access through R-2508 is under complete joint control of the military.

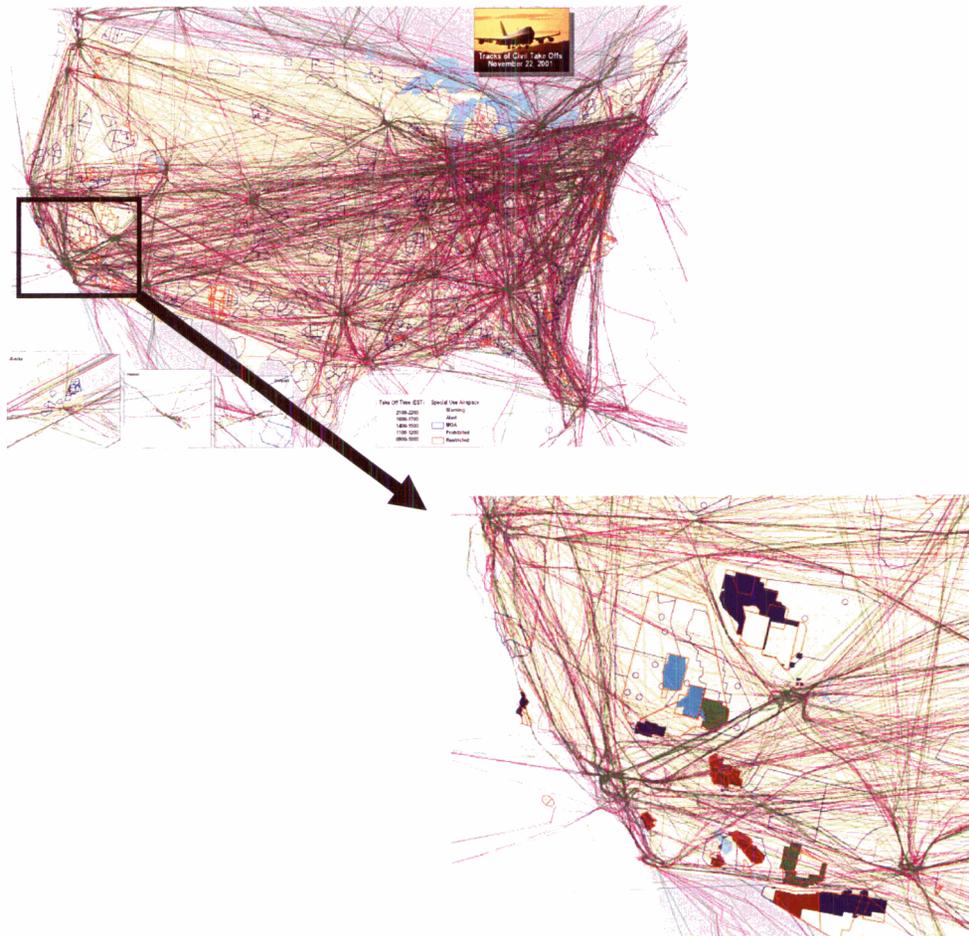


FIGURE 3. United States Commercial Air Traffic Routes on Thanksgiving Day 2001

The Joint Aerospace RDT&E Center's land areas are not only enormous in size, but they are virtually free from the civilian encroachment pressures found in other areas of the country. China Lake and Edwards Air Force Base are bordered by federal land shielded from development. Most of the air operations in R-2508 are over land owned by or withdrawn to the Defense Department, the adjacent Desert Wilderness Area or other Federal land. FIGURE 4 shows federally controlled land in the United States.

The range areas cover the widest range of climates and terrain features that can be found in any region of the country. The inland range's 360 annual clear days are the most that can be found in the United States. Similarly, the sea range area has the best climate for maritime test and training operations. These sites are important assets for our international allies and other U.S. agencies as well.

Japan and the United Kingdom deploy every year to Point Mugu and China Lake for tests and exercises. Many allies come to China Lake and Point Mugu to learn to use American systems purchased under the Foreign Military Sales program or to test and train with systems developed in their own countries.

Other agencies are important users as well. Among many examples, the Asymmetric Warfare Center at Point Mugu provides direct support to law enforcement and military agencies handling terrorist attacks. China Lake was the test site for the Predator-Hellfire attack system used with great success in the lethal attack on Al Qaida leaders in Yemen.

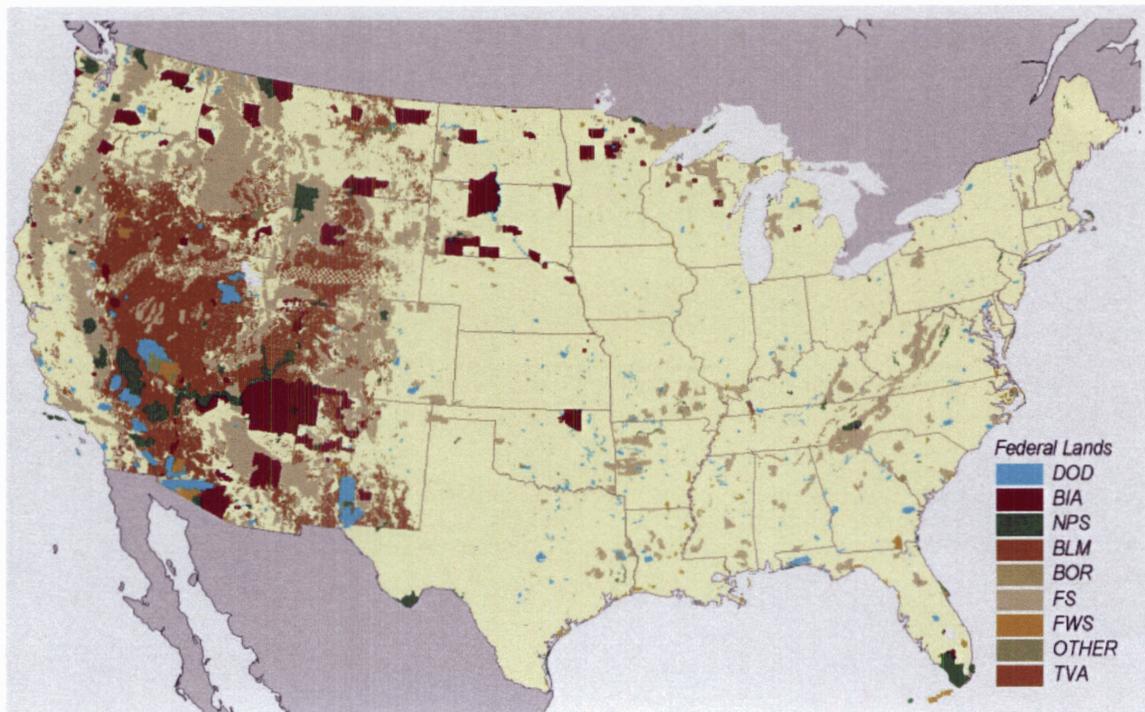


FIGURE 4. R-2508 and Federally Controlled Land

ASSOCIATED FACILITIES

The Joint Aerospace RDT&E Center has a long-standing relationship with other government and private institutions that mutually benefits the Center and the associated facilities.

Vandenberg Air Force Base. Vandenberg Air Force Base launches military and commercial space vehicles into polar orbits. It is also a primary test site for missile defense testing, and, along with the Naval Air Warfare Center Weapons Division at Point Mugu and other Pacific test sites, serves as a member of the Missile Defense Agency's Extended Test Range. Vandenberg provides launch services for both ballistic missile targets and interceptors.

Air Force Plant 42. Plant 42 and its industrial occupants have developed many of the most advanced aircraft of the past half-century. The Stealth Bomber and F-117 are products that illustrate the value of proximity between Edwards Air Force Base and a first-class aerospace industrial facility. The joint RDT&E aspects of the Joint Aerospace RDT&E Center will enhance a proven capability for the future in upgrading the capability of manned and unmanned aircraft.

NASA Dryden Flight Research Center. The Dryden Flight Research Center, located within the boundaries of Edwards Air Force Base, is dependent for its aeronautical and space flight research on Edwards and R-2508. Its close relationship with the Joint Aerospace RDT&E Center adds another dimension to the capabilities of the center.

PACIFIC TRAINING AND EXPERIMENTATION COMPLEX

California and adjacent states also have a constellation of Army, Navy, Air Force and Marine Corps military bases engaged in training and other activities which complement the proposed Joint Aerospace RDT&E Center. These existing bases, the **Pacific Training and Experimentation Complex** (APPENDIX B), make use of the Joint Aerospace RDT&E Center's air space, instrumented land and sea ranges, and technical expertise to support unit training and joint exercise needs tasked by the Joint Forces Command. The location of these bases is shown in FIGURE 5.

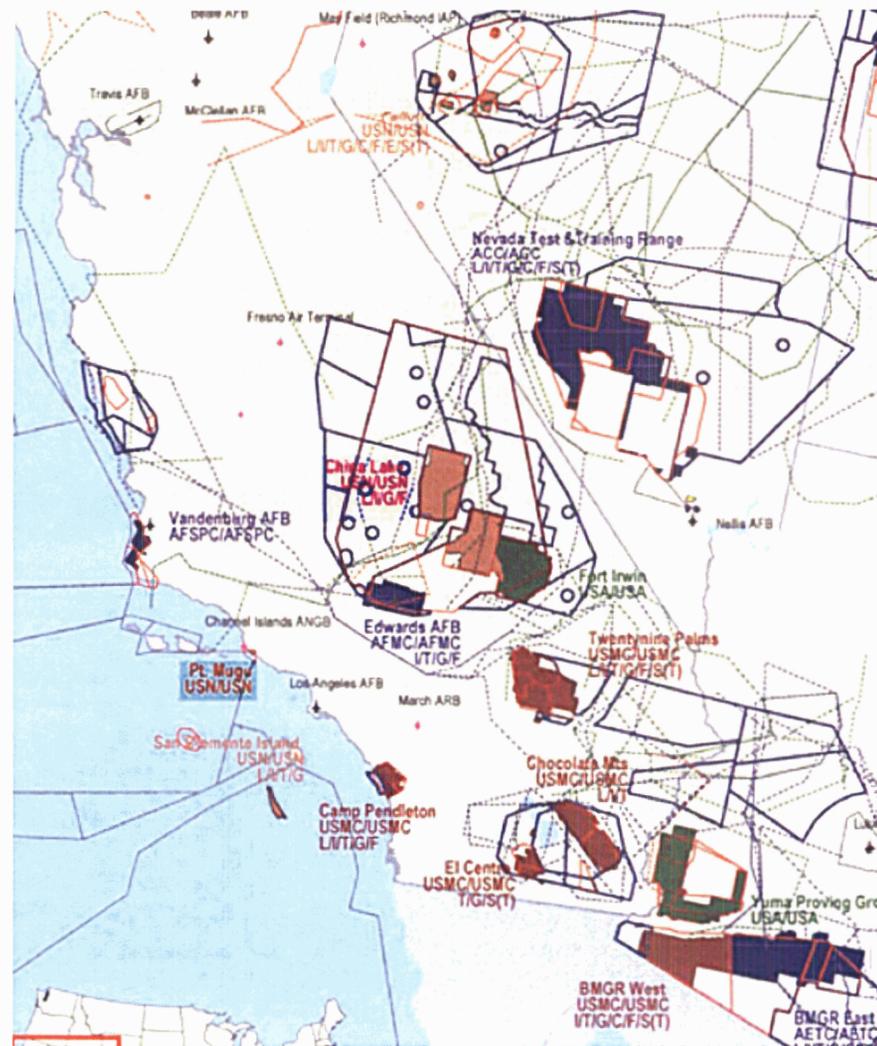


FIGURE 5. Location of Joint Aerospace RDT&E and Pacific Training and Experimentation Complex Bases

Together the Joint Aerospace RDT&E Center and Pacific Training and Experimentation Complex offer a full menu of services to support the joint needs of the armed forces in the 21st Century.

China Lake 1) has a range—Superior Valley—exclusively devoted to live air-ground weapons training by Navy and Marine Corps units; 2) offers use of its electronic warfare range for operational training to all services; and 3) has specialized ground ranges for numerous training needs not met elsewhere in the United States.

The Point Mugu Sea Range provides fixed and mobile sea targets for live air to surface training to Navy, Air Force, Marine Corps and Air National Guard units.

Fort Irwin partners with Edwards Air Force Base and China Lake in managing the R-2508 air space. It works closely in the joint training arena with Nellis Air Force base for air support of ground forces training. Its location and working relationship with China Lake, which has expertise in weaponization of aircraft, and Edwards, which has Air Force lead for UAV RDT&E, offer opportunities for future partnerships in joint development and training for operations involving manned and unmanned aircraft air support of ground forces. Operation Iraqi Freedom's experience with on-the-fly coordination between air and ground forces was a harbinger of the future under transformation. The Pacific Training and Experimentation Complex is an ideal air-ground operations training asset to meet that need.

In transformation military services develop joint tactical concepts and jointly train in their use in major exercises not encompassed on any single base. Very large exercises conducted by the Joint National Training Capability depends upon bases from all the services in a large sea, littoral, land and air arena with space asset support. The Joint Aerospace RDT&E Center and Pacific Training and Experimentation Complex offer an ideal arena for large exercises and experiments which require a large joint battle space with a variety of terrain features and mission capabilities.

Operational Army, Navy, Air Force and Marine Corps bases in the Pacific Training and Experimentation Complex are:

- National Training Center, Fort Irwin
- Lemoore Naval Air Station
- Miramar Marine Corps Air Station
- Naval Air Facility, El Centro
- North Island Naval Air Station
- Fallon Naval Air Station NV
- Naval Air Station, Point Mugu
- Channel Islands Air National Guard
- Nellis Air Force Base NV (Air support of ground forces at Fort Irwin)
- Yuma Marine Corps Air Station
- Edwards Air Force Base (Marine Corps Reserve Helicopter Squadron)
- Air National Guard Fresno
- Camp Pendleton Marine Corps Base
- Marine Corps Air to Ground Combat Center, Twentynine Palms
- Naval Space and Warfare Systems Command facilities at San Diego
- Naval Amphibious Base Coronado
- Port Hueneme Division
- Naval Submarine Base, San Diego
- Quantum Leap Laboratory, San Diego (Special Forces Lab)
- March Air Force Base (Air Force Reserve)
- Third Fleet (San Diego)

The ability to deploy and maintain forces around the globe cannot take place without support functions. California bases are important contributors to logistics and other support functions and are important to transformation. They are:

- Marine Corps Logistics Center, Barstow
- Naval Construction Battalion Center, Naval Base Ventura County
- Beale Air Force Base
- Travis Air Force Base

SOUTHWEST DEFENSE COMPLEX

The Joint Aerospace RDT&E Center and Pacific Test and Experimentation Complex are part of a larger constellation of major RDT&E and training centers, the Southwest Defense Complex. The Southwest Defense Alliance, a consortium of communities and state and local governments in the Southwest, has identified these centers as providing core capabilities to the armed forces for joint RDT&E or test and training operations. These bases (APPENDIX C) are located in Arizona, California, Nevada, New Mexico, Texas and Utah.

MANAGEMENT OF THE JOINT AEROSPACE RDT&E CENTER

The service sites in the proposed Joint Aerospace RDT&E Center and the Pacific Training and Experimentation Complex have worked cooperatively and effectively for over a half-century. Because of their complementary missions and mutual interests, the managers of these facilities already understand the value of working together to make best use of each other's complementary capabilities to meet their own and the country's needs.

The management of the individual bases of the Pacific Training and Experimentation Complex is the province of the individual services. A management policy that specifies close coordination with the Joint Aerospace RDT&E Center is important to assure that the benefits in sharing expertise and facilities is realized.

Selection of a management structure for the Joint Aerospace RDT&E Center is the province of the Department of Defense and the military services. Although a number of management structures are available, it is important that joint service needs are met.

It is essential that individual service interest not conflict with best joint service interests. For example, individual service budget-related decisions could lead to resource allocations harmful to joint service interests if the management structure failed to assure a joint perspective.

The management structure for the Joint Aerospace RDT&E Center should assure that a technical interchange is guaranteed with the Pacific Training and Experimentation Complex and the Joint Forces Command.

Transformation could structure the core centers as a joint command with protected appropriations as a joint center reporting to the Office of the Secretary of Defense or under the Joint Forces Command. Another approach could structure management of the Joint Aerospace RDT&E Center as a joint command with rotating commanders from each service with deputies from the other services. A single manager with joint service interests would make resource allocation decisions in the best interests of all the services.

CONCLUSION

The current military service RDT&E and training infrastructure inhibits transformation by:

- Functional duplication by the services in the RDT&E base structure;
- Expensive encroachment workarounds;
- Outdated policies on laboratory and range usage and funding artificially segregating research and development from test and evaluation from training;
- Consideration of RDT&E and training bases as independent, rather than as interdependent entities;
- Making decisions based on individual service interests that can override legitimate joint service interests.

Transformation is facilitated and joint service RDT&E is expedited and made more efficient, by unifying Edwards Air Force Base and the Naval Air Warfare Center Weapons Division facilities at China Lake and Point Mugu into a proposed Joint Aerospace RDT&E Center.

Consolidation of air warfare and related RDT&E missions for all of the services at this Center would promote joint service programs, improve efficiency, and consolidate long-term capital improvements in these mission areas, provide long-term encroachment protection, and promote transformation.

The staff and range resources of the three sites of the proposed Joint Aerospace RDT&E Center already support joint training and exercises for the many military bases in California and adjacent states. These bases, termed the Pacific Test and Experimentation Complex, taken together are major contributors to joint training and tactics development. Direct contact between the military personnel of the Pacific Test and Experimentation Complex and technical personnel of the Joint Aerospace RDT&E Center would facilitate direct input into system concept development and provide technical support to training and exercise design.

It is believed that these proposals directly relate to, and advance the transformation goals of the Department of Defense and, as such, should be carefully considered in all force structure analyses to be conducted in 2004 and 2005.

**APPENDIX A:
CURRENT AND FUTURE MISSION CAPABILITIES OF CORE CENTERS**

Part I: Missions

Mission	Mission Area
Tactical Air Warfare RDT&E	Combat Aircraft
	Surveillance Aircraft
	Air to Air & Air to Surface Weapons
	Directed Energy Weapons
	Electronic Warfare
	Aircraft System Integration
	Aircraft-Weapon Integration
	Uninhabited Air Vehicles
	Uninhabited Combat Air Vehicles
Strategic Warfare RDT&E	Strategic Aircraft
	Strategic Missiles
	Space Vehicle Propulsion
	Space Launch Instrumentation Support
Surface Weapons RDT&E	Surface Missiles
	Gun Testing (National Range)
Special Forces Warfare	Cave Warfare
Homeland Defense RDT&E	Weaponry
	Missile Launch Detection and Location
Homeland Defense Support	Asymmetric Warfare Center

Part II: Assets and Facilities

Airfields	Edwards Air Force Base
	China Lake
	Point Mugu
	San Nicolas Island
Space Landing Fields	Edwards Air Force Base Rogers Dry Lake
Restricted Air Space	R-2508: 20,000 sq. mi.
Sea Space	Point Mugu Sea Range: 36,000 sq. mi.
	San Nicolas Island Instrumentation

Part II: Assets and Facilities (continued)

Aircraft Weapon Integration Laboratories	Edwards Air Force Base
	China Lake
	Point Mugu
Electronic Warfare Ranges	China Lake Echo Range
	Edwards Nellis Air Force Base Annex
Propulsion Static Firing Facilities	Edwards Air Force Base Rocket Lab
	China Lake Sky Top Strategic Rocket Test Sites
	China Lake Ramjet Test Site
	China Lake Hypersonic Rocket Site
Ranges	Point Mugu Sea Range
	China Lake Air and Ground Ranges
	China Lake Aircraft and Weapon Survivability Range
	Edwards AFB ...
	China Lake Etcheron Valley Low Observables Range
	China Lake Etcheron Valley Directed Energy Test Range
	Point Mugu Air-to-Air Missile, F-14, EA-6B, and Tactical Air Warfare Facilities ...
	Edwards Air Force Base Facilities at Nellis Air Force Base
Simulation Facilities	China Lake Integrated Battlespace Arena
	Edwards Integrated Facility for Avionics System Test
	Edwards Benefield Anechoic Facility
Attached Activities	Air Operational Test and Evaluation Squadron VX-9 (China Lake and Point Mugu)
	Marine Corps Helicopter Reserve Squadron (Edwards Air Force Base)
	Navy Pacific E-2 Wing (Point Mugu)
	Channel Islands Air National Guard (Point Mugu)

Part III: Associated Activities

Edwards Propulsion Directorate	Space Rocket RDT&E
Vandenberg Air Force Base	Military and Commercial Space Launches, Primary Site for Missile Defense testing (Both Targets and Interceptors), Member of Missile Defense Agency's Extended Test Range
Air Force Plant 42	Boeing Phantom Works, Space Research
	Lockheed Martin Skunkworks B-2, JSF, other
	Northrop Grumman JSF, Global Hawk, B-2
NASA	Dryden Flight Research Center

**APPENDIX B:
PACIFIC TEST AND EXPERIMENTATION COMPLEX BASES
OTHER THAN JOINT AEROSPACE RDT&E CENTER**

Part I: Air Bases

Base	Mission
Lemoore Naval Air Station	Navy's West Coast Home for All Navy Versions of F/A-18 Aircraft
	Proposed West Coast Home for Navy Joint Strike Fighter
Miramar Marine Corps Air Station	West Coast Home of Marine Corps Helicopters and All Versions of Marine Corps F/A-18 Aircraft
North Island Naval Air Station	West Coast Home for All Navy Antisubmarine Warfare Helicopters
Naval Air Facility, El Centro	Realistic gunnery, Bombing, Carrier Landings and Air Combat Training to Naval Aviation Units
Air National Guard, Fresno	Home of California Air National Guard 144 th Fighter Wing
Air Reserve Air Base, March Field	Home of 452 nd Mobility Wing
Fallon NV Naval Air Station	Naval Strike Warfare Center (Strike U), Naval Fighter Weapons School (Top Gun), Air Wing Training Center
Nellis Air Force Base NV	Fighter Weapons Training, Electronic Combat Training, Tactics Development and Operational Test and Evaluation
Yuma AZ Marine Corps Air Station	Marine Corps Aviation Training Base, Supports 80% of Marine Corps Air-to-Surface Training
Channel Islands Air National Guard (Based at Point Mugu Naval Air Station)	Home of 115 th Airlift Squadron

Part II: Army, Surface Navy and Marine Corps Bases

Base	Mission
Army Fort Irwin National Training Center	Armored Warfare Training, Air-Ground Training (with Nellis AFB)
Camp Pendleton Marine Corps Base	Amphibious Warfare Training
Naval Surface Warfare Center, Port Hueneme Division	Test and Evaluation, In-Service Engineering, and Integrated Logistics Support for Surface Warfare Combat Systems
Naval Space and Warfare Systems Command Facilities, San Diego	Command, Control, Communications, Surveillance and Intelligence RDT&E
Naval Amphibious Base, Coronado	Amphibious Warfare, Special Warfare
Naval Submarine Base, San Diego	Submarine Warfare
Naval Quantum Leap Laboratory, San Diego	Special Warfare
Third Fleet, San Diego	Headquarters, US Third Fleet
Twentynine Palms Marine Corps Base	Air-Surface Operations Training
Marine Corps Logistics Center, Barstow	Logistics
Beale Air Force Base	Surveillance, Intelligence Collection
Travis Air Force Base	Air Transport

**APPENDIX C:
SOUTHWEST DEFENSE COMPLEX BASES**

The following major military bases located in six southwestern states have been identified by the Southwest Defense Alliance as providing critically needed broad capabilities for joint RDT&E and training operations:

Arizona

- Army Proving Grounds, Yuma
- Fort Huachuca
- Mesa Research Center

California

- Air Ground Combat Center, Twentynine Palms
- Camp Pendleton
- Edwards Air Force Base
- National Training Center, Fort Irwin
- Naval Air Weapons Warfare Center Weapons Division, China Lake
- Naval Air Weapons Warfare Center Weapons Division, Point Mugu
- Southern California Offshore Range
- Vandenberg Air Force Base

Nevada

- Naval Air Station, Fallon
- Nellis Air Force Base

New Mexico

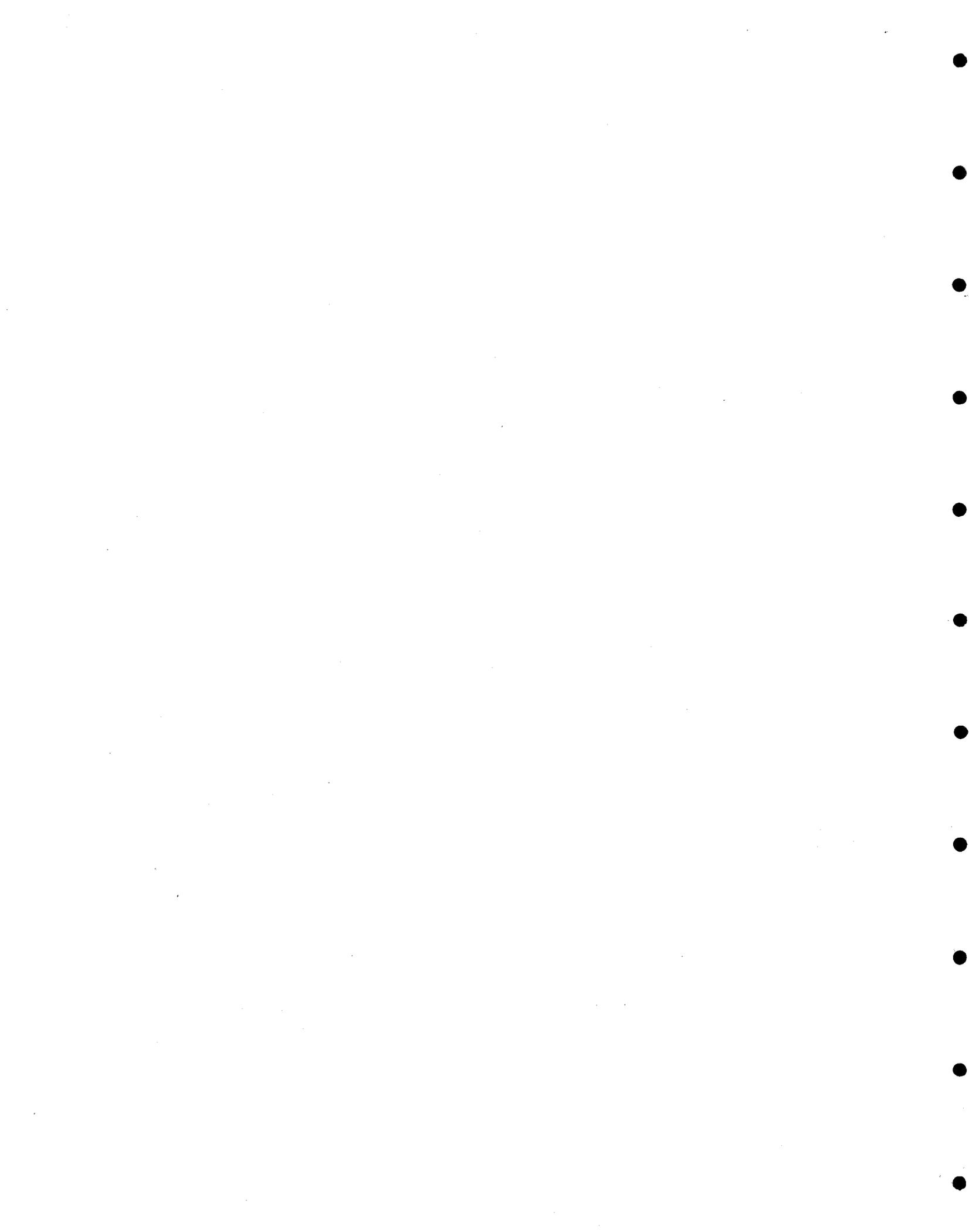
- Cannon Air Force Base
- Holloman Air Force Base
- Albuquerque Laboratories, Kirtland Air Force Base
- White Sands National Range

Texas

- Fort Bliss

Utah

- Dugway Proving Grounds
- Utah Test and Training Range



TRANSFORMATION VIA JOINT AEROSPACE RDT&E CENTER

August 27, 2004

One of the pillars of transformation of the armed force is identifying and implementing joint activities. The military services are making great strides in fighting together supported by joint concept development and joint training exercises. They are actively engaged in RDT&E programs to develop common systems or improved interoperability, particularly in air warfare systems, yet each service maintains its own set of RDT&E bases. The Joint Aerospace RDT&E Center proposal offers an approach toward extending joint service activities in air warfare into the RDT&E infrastructure, thereby taking an important additional step in transformation.

Scope. A Joint Aerospace RDT&E Center would be established at three existing sites - Edwards Air Force Base and the Naval Air Warfare Center Weapons Division sites at China Lake and Point Mugu. Combat aircraft test and evaluation and tactical weapon research, development, test and evaluation would be consolidated at the new joint center.

Most aircraft system research and development would continue at existing Eastern sites as would weapon testing at sites with special capabilities not already existing at China Lake or Point Mugu. Examples of special capabilities include catapult and arrested landing facilities at Patuxent River, MD, and Lakehurst, NJ; RATSCAT cross-section measurements at Holloman AFB in New Mexico, ship surface missile testing at White Sands Missile Range in New Mexico; and cruise missile impact ranges at the Utah Test and Training Range. Construction of additional hangar and other aircraft support facilities may be required. A more detailed determination of the scope of transfer of activities could be accomplished as part of the BRAC 2005 scenario process.

The center also has the staff, resources, and connectivity to support training, joint exercises and experimentation for the many military bases in California and other southwestern states; for example, Twentynine Palms, Fort Irwin, Camp Pendleton, Nellis AFB, and NAS Fallon.

Benefits. Consolidation of a significant portion of air warfare and related RDT&E programs into the proposed joint services center would offer the following advantages:

1. Cost and Efficiency. Reduction of defense appropriations combined with improvements in weapon system technology has greatly reduced the number of acquisition programs since the end of the Cold War. It costs a great deal to maintain the facilities needed for research, development, test and evaluation of modern warfare systems, and it seems foolish to maintain duplicative capabilities. Funds for investing in replacing or upgrading old and outdated facilities are scarce and spread across too many bases, leading to higher maintenance costs. Consolidating reduces overhead and permits more effective investment in modernization of facilities. If RDT&E facilities are consolidated, programs are implemented in fewer locations, saving the cost of inter-base deployments and duplicate program offices and personnel.

2. Recruitment and Training of Technical Personnel. Effective in-house RDT&E support requires first-rate technical personnel. Consolidation of RDT&E

centers permits more focused placement of human resources, more effective recruiting and retention programs, and focused investment in education and training. Competition for graduating scientists and engineers is again becoming intense. Consolidation can help the services stay more competitive in the job market.

3. Encroachment. As the population grows, encroachment pressures on military bases will intensify. Residential and industrial developments press the boundaries of many military bases, airline traffic increases on the borders of bases and in shared air space, and conservationists press harder to inhibit operations on land that hasn't been developed. In areas where encroachment is a threat or where existing facilities can't accommodate modern military systems, acquisition of buffer land or purchase of new range space is being considered with federal investment required. Consolidation across service lines to unencroached bases such as China Lake, Edwards and Point Mugu saves money and assures future availability of land, sea and air space.

4. Commonality Issues. Attempting to specify and develop common systems involves time, money and compromise on the part of the services. Consolidating RDT&E support across service lines offers the potential of building in-house teams that have the technical expertise, intimate knowledge of service needs, and incentive to assist the services and prime contractors in developing requirements and specifications that yield acceptable solutions to joint service system development programs early in the cycle.

5. Transforming the Acquisition Process. Transformation of our armed forces involves more than technology or new warfighting concepts. The Secretary of Defense's goals for BRAC included examining and implementing opportunities for joint service activity. Developing new ways of doing business is stated as part of the DOD transformation strategy. In system acquisition, operational commanders are being brought into the process of evaluating new concepts, testing prototype hardware in force-level exercises with existing systems, and bringing improvements on line in a more systematic way. The consolidated RDT&E center is an effective way to channel technical know-how to the operational commander and to impart operational savvy into concept development. The operational units can go to one source to help set up experiments and integrate simulations and models into the process. The scientists and engineers, who will be involved in developing technology or working with industry and academe, will have direct access to operational commanders and involvement in the experiments in their mission areas.