implemented technology to reduce risk; validated and resolved technical issues via experiment and Modeling and Simulation; and provided the technical direction to ensure product success. A brief summary of these four critical systems will follow.

The expected —but unanalyzed in BRAC — losses to the workforce will manifest themselves in critical disruptions during the key program years, FY2007-2011. A sample of just four programs conservatively estimates cost implications of well over $1B in those years for those programs alone.

DCGS-A:

The Distributed Common Ground System-Army is a critical component of linking the Services processing of intelligence information to enable a common Joint picture to be formed. DCGS-A enables situation awareness, identification and location of enemy and estimates of his intentions to the Warfighter at all echelons. It enables exploitation and fusion of data from Army, Joint, National and Allied sensors and sources to provide critical information. It will consolidate 12 programs into an integrated Intelligence, Surveillance and Reconnaissance (ISR) capability that bridges the current force ISR programs into the Future Combat Systems.

The funding for the program during the critical BRAC window is $1.3B and the success of the program is critically tied to a government/contractor System Integration Laboratory that will evaluate "Best of Breed" software for inclusion into the various software builds and system fielding. This workforce is on the order of 100 highly skilled S&E –all with TS/SCI clearances.

During this BRAC window, the DCGS-A system will be involved in the FCS Limited User Test; will conduct its own Initial Operational Test and Evaluation (IOTE) and make a decision for full scale production.

A conservative estimate of schedule and cost impact if personnel losses occur as described in Figure 12 is a delay of 4 years and an additional cost of $300M.

DCGS-A is an integral part of the DoD Intelligence Grid and delays will significantly impact moving Army intelligence forward into a true network centric intelligence capability.

ACS:

The Aerial Common Sensor is designed to allow the Army to rapidly deploy Multi-Intelligence Systems on a long-range jet aircraft and still permit long term loitering while on station.

The total funding within the BRAC window is $2.1B and the program is currently in the SDD stage leading to DT&Es in FY 07 and FY 08 followed by a Limited User Test in FY 08 and an IOTE in FY 09.

This program will also be utilized by the Navy to replace some of their aging Intelligence platforms. Five Airborne Platform Systems are being procured as part of the SDD program and the Ground Processing component for the ACS system will be provided by the DCGS-A program. The payloads (subset only) being carried by this high speed, high endurance platform are: Moving Target Indicator Sensor; Synthetic Aperture Radar; Communications Intelligence Sensors and Radar Intelligence Sensors.

Over 70 government/contractor personnel are managing this program and consist of highly skilled experts in: airframe; aircraft installation and integration; airborne SIGINT; airborne Radar; data links; testing complex sensor system; processing complex modulations etc. Most have been in this business for over 15 years, have TS/SCI clearances and their loss would have a significant impact on program execution.

A conservative estimate of schedule and cost impact if personnel losses occur as described in Figure 12 is a delay of 3 years and an additional cost of $300M.

ACS is intended to permit the Army to rapidly deploy early entry intelligence capability and permit meaningful intelligence to be supplied to deploying forces while en-route. It will have the latest Intelligence Collection equipment that will allow the Army to "see" and "hear" everything on the modern battlefield.

<u>WIN-T:</u>

Warfighter Information Network-Tactical is a single integrating Future Force communications network. The system will have increased network capacity, speed and quality of service and be reliable and secure. One of the major features of WIN-T will be its mobility throughput for "reach" over increased distances. The system is scalable, tailorable, and dynamically adaptive to mission, task, and purpose. WIN-T will provide seamless interoperability to Joint, Coalition and Global commercial systems. The WIN-T multi-tiered network expands and contracts with the fight, truly enabling Network Centric Operations and will be deployed from Theater to Maneuver Battalion. Portions of WIN-T will be embedded in warfighting platforms and will enable the future force.

There are over 200 government personnel on the program with average years of experience of 20 years; 75% are Acquisition Certified; and all have Secret or higher clearances. The contractor workforce is over 140 people with average years of experience of 20 years, all with Secret clearance. The funding during the BRAC window for this critical program is $ 2.7 B.

During the BRAC window, WIN-T is scheduled for its IOTE and will be fielding 1 Unit of Employment (UEx); 4 Maneuver Brigade Combat Teams; and 6 support Unit of Action (UA) systems. It is also the primary support program in enabling the Future Combat System. Integration efforts with FCS fall inside the BRAC window. Program delays of at least two years with a cost impact of $300M are estimated but these delays would also impact: FCS Spirals; Interoperability with Joint, Allied, and Coalition partners; On-the-move modern communications for Modular Army forces; airborne systems capability to provide high capacity reach-back; and evolution of embedded capability in highly mobile platforms. *WIN-T is the Army tactical backbone system and its link to the Global Grid. It extends the Global Grid into the area of operations and will provide high speed, high capacity communications capability to a dynamic Army. Without the WIN-T system, the concept of Network Centric Operations is not achievable.*

FCS:

Future Combat System is being designed for the Future Force, but elements of the FCS program will be expedited to the Current Force in a series of Spiral developments, which would provide the current force with near term prioritized FCS capabilities. The plans are to start to equip a FCS evaluation brigade combat team in FY 2008 with prototypes. After evaluation, fielding is planned in two-year stages, starting by modernizing current UAs. In fiscal year 2014, the Army plans to have an operational FCS UA with all the core FCS systems and have 32 of the 43 current force UAs embedded with FCS capabilities. Advances in robotics, unmanned aerial vehicles and sensors are FCS technologies that have been quick out of the gate, and some of that gear is already in the fight. Intelligence, surveillance, and reconnaissance system advances being made by Fort Monmouth/Belvoir are at a premium. There are three phases of FCS development: concept and development; system design and development; and production. The Army has entered the system design and development phase. FCS (in addition to multiple manned and unmanned platforms) will consist of: a systems of systems common operating environment; battle command software; communications and computer systems; intelligence reconnaissance and surveillance systems; networked logistics systems; and embedded training. *These are all systems that are part of the Fort Monmouth mission area and Fort Monmouth engineers support the development of Boeing's contractors or are developing and supplying much of the needed technology.*

The PM for UA Intelligence Surveillance Reconnaissance is located at Fort Monmouth (by choice) and staffed with Fort Monmouth personnel. The WIN-T, Joint Tactical Radio System, and Unattended Ground Sensors are a few of the FCS products that are provided by Fort Monmouth as well as a significant portion of the Technology programs (over $100M/year) devoted to solving FCS technology problems.

There are approximately 500 S&E personnel devoted to the FCS program (both funded by PM-FCS and Mission funds) and losses on the order discussed previously would have a significant impact on expediting FCS Spirals to the current force plus impact the evolution of technology for the future force.

If these Fort Monmouth capabilities are eroded, then the prime contractor, Boeing, would have to duplicate these capabilities resulting in significant increases in cost and schedule.

The biggest initial impact would be to Spiral 1 and 2 capabilities and could impact those schedules by 3 years each at a cost of $500M.

FCS is more than the Future Force program, with early capabilities provided to the Current Force. Fort Monmouth is an integral part of supplying and supporting the C4ISR architecture and systems for this system and is playing an integral part of early release of capability to the current force.

SATELLITE COMMUNICATIONS - SPACE PARK FACILITY

Satellite communications is an integral part of Army Transformation and will provide the needed Global Reach Back to enable forward-deployed forces. Fort Monmouth is an integral part of that Satellite Transformation and their SATCOM Engineering Center is an integral part of Army and Joint Communications.

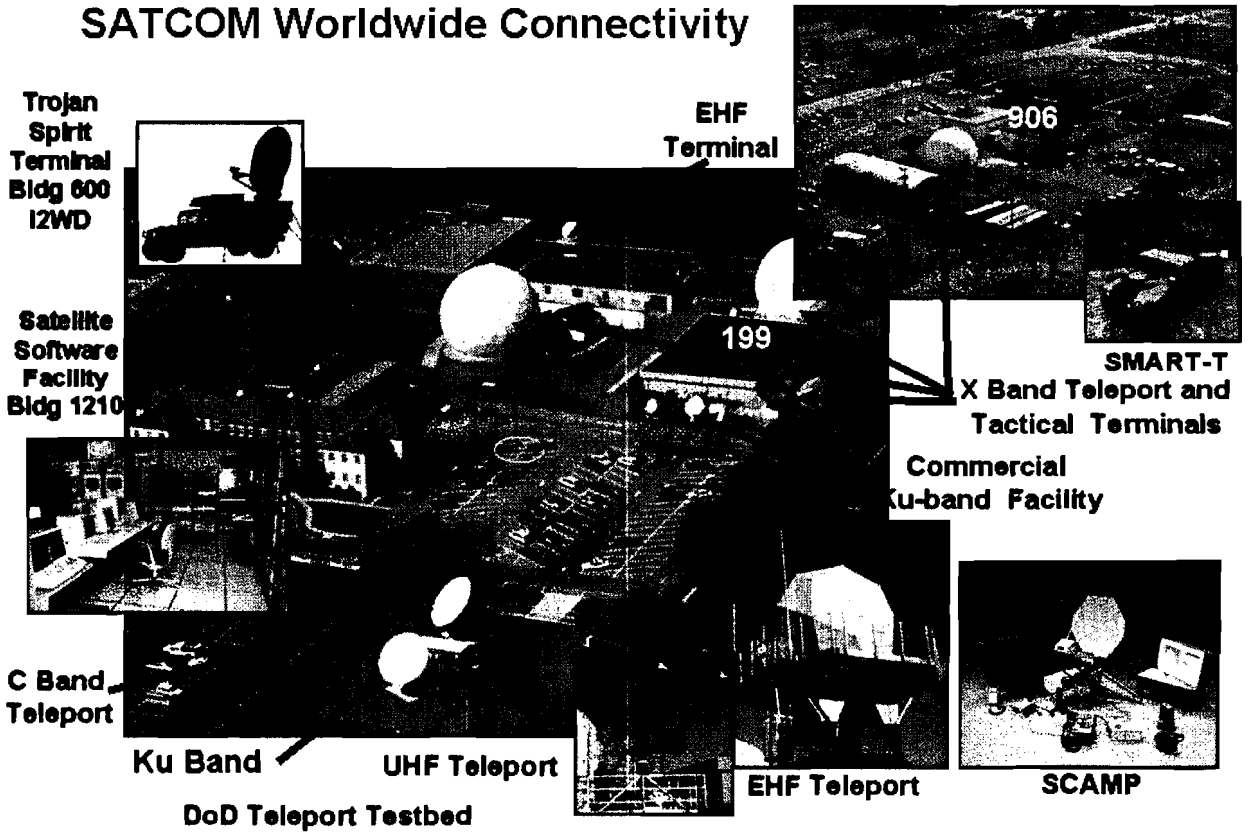


Figure 15: Satellite Space Park

FORT MONMOUTH

The Joint SATCOM Engineering Center (JSEC) has several integrated lab facilities consisting of the Control System Lab, Strategic Systems Lab, Tactical Systems Lab, and the DoD Teleport and Standardized Tactical Entry Point Testbed. For the Joint Satellite Communications mission, Fort Monmouth designs the architecture, develops the equipment and systems and performs the integration, detailed testing, fielding and lifecycle support of the entire DoD Satellite Communications Infrastructure for the DSCS and Gapfiller satellite systems. Fort Monmouth implements a worldwide network of over 100 Satellite Communications Earth Terminals at 70 sites operated by Army, Navy, and AF personnel, support the Services, Combatant Commanders, the Intelligence Community and Deployed Warfighters.

Fort Monmouth controls and monitors the satellites which are over 22K miles out into space. Each of the 5 prime satellites provides global communications coverage, costs over $300M and is very sophisticated equipment requiring highly trained personnel to keep them working. Fort Monmouth does all the research, development, testing and maintenance of ALL of the satellite control systems used in each of the 5 Worldwide Control Centers. The JSEC provides 24/7 support to all Joint SATCOM; provides teleport backup; and conducts Joint User Interoperability Communications exercises and trains troops prior to deployment.

The JSEC is funded at over $450M per year and uses 170 Government employees all of which have Bachelor or higher degrees and all have clearances. There are over 500 contractors utilized to support these activities with all having Bachelor or higher degrees and security clearances. Several of the original architects (with over 20 years experience) still work in these testbeds and provide mentorship of new employees.

CONCLUSIONS:

JSEC

- *To move PM DCATS to Fort Belvoir and the JSEC to Aberdeen breaks the synergy developed over many years of partnership and will create considerable "breakage" in these important programs.*
- *The technical talent for the JSEC comes mainly from the CERDEC and large amounts of technical capability will be destroyed.*
- *24/7 real world mission support will require redundant capabilities at both Monmouth and Belvoir during transition. This will cost an additional $200M because current equipment cannot be replicated or replaced because they are out of production.*
- *Costs of parallel operations (people/equipment) were not included in the BRAC analysis.*
- *The Wideband Gapfiller program testing and Teleport fieldings will be severely impacted by staff/facility move diversions.*

PROGRAM DISRUPTION

- *Disruption to existing programs, both the Current and Future Force, were not mentioned or calculated in any BRAC scenario or in the final recommendation.*
- *The Military Value assessment of disruption and the resultant cost implications were never considered. An assumption that people and programs would move without loss of capability and increases in cost and schedule is naïve and not borne out by history.*
- *Cost implications are in the Billions and schedule implications (dependent of phase of program) could exceed 3 years. The impact on the security of the warfigher cannot be estimated because they are so large.*
- *The BRAC recommendation to close Fort Monmouth and re-create it at Aberdeen risks serious program disruption in current abilities to support an ongoing war and to deliver priority Army and Joint C4ISR programs. Particularly at risk are programs with major development, experimentation, test and acquisition milestones in the period 2007 -2011.*
- *The loss of cleared, certified, trained, experienced DOD civilian personnel will accelerate as Fort Monmouth approaches its nominal closing date. Replacement hiring will be slow to gain momentum. One sees a major "personnel time gap" in the last half of this decade.*
- *Likewise, facilities complexity and historical evidence indicated that re-creation of technical facilities will encounter design, cost, build and outfitting delays that will prevent timely decommissioning of facilities at Fort Monmouth, thereby incurring extra costs. When new hires can be found but adequate facilities are not ready to accept them at Aberdeen, then the Army risks disruption again.*

4.0 ANALYSIS OF "RDA" AND "T&E" INTEGRATION AS A BASIS FOR RELOCATION TO APG— Deviation From "Military Value" Criteria

This section of the report shows that the synergy of co-locating R functions with D&A functions, and gaining efficiencies by co-locating an integrated RDA functions with T&E functions, while touted in the BRAC deliberations, was never accomplished with the BRAC recommendation. The preponderance of C4ISR RDA is already currently done at Fort Monmouth/Belvoir and any desired co-location should take place at those Fort Monmouth's existing facilities. Since T&E is done at many locations (virtually no C4ISR T&E at Aberdeen) there is also no benefit to integration of RDA with T&E at Aberdeen; yet that was an ill-informed conclusion added to the BRAC recommendation.

The concept of a "Land C4ISR Center of Excellence" at Aberdeen Proving Ground hinges on having a complete C4ISR capability at one location. That capability would include fundamental research, technology demonstration, systems design and development, full-scale development and production – the R, the D&A, the T&E and the Sustainment/Logistics of C4ISR. Using the "womb-to-tomb" analogy: womb and birth would represent research (6.1), youth would represent technology development and maturation (6.2), and adulthood would represent development and fielding (6.3/6.4/production/fielding). Mature adulthood through end-of-life would represent sustainment and extraction from the field. C4ISR research and early technology feasibility is the purview of ARL (Adelphi), technology maturation and demonstration is the purview of Fort Monmouth's Communications and Electronics R&D Center and its component at Fort Belvoir and development, production and fielding is the purview of Fort Monmouth's program management and acquisition offices. Independent T&E is managed by the Army Test and Evaluation Command headquarters using Fort Huachuca as the designated C4I Test Site – known as the Army Electronic Proving Ground (EPG)). When reading BRAC rationale one would conclude that its notion of a single site C4ISR Center of Excellence would be full multi-function integration of all these elements. The BRAC proposal fails to meet its stated Land C4ISR goal since it did not include the R executed at Adelphi, MD or the T&E executed principally at EPG at Fort Huachuca, AZ or the 4th Infantry Division at Ft Hood, TX, with additional T&E at various specialized sites required to determine the full robustness of C4ISR systems.

This section of the report will address the feasibility of accomplishing this goal. First to be addressed is the integration of C4ISR research (the "R") with the development and acquisition (the D&A). Next, the integration of C4ISR test and evaluation (the T&E) is addressed. Finally, this report adds the "capstone piece" sustainment. When discussing the "integration" of C4ISR R with D&A, it is illustrative to examine the budgets and where the preponderance of work is being accomplished. Figure 16 shows the funding profiles for FY06.

FORT MONMOUTH

A later section of this report will analyze several key Army Transformation programs in C4ISR and focus on the amount of money being spent and the high probability of program disruption across the life cycle resulting in increased cost, schedule delays, and lack of capability for our Joint Warfighters if the BRAC recommendation stands.

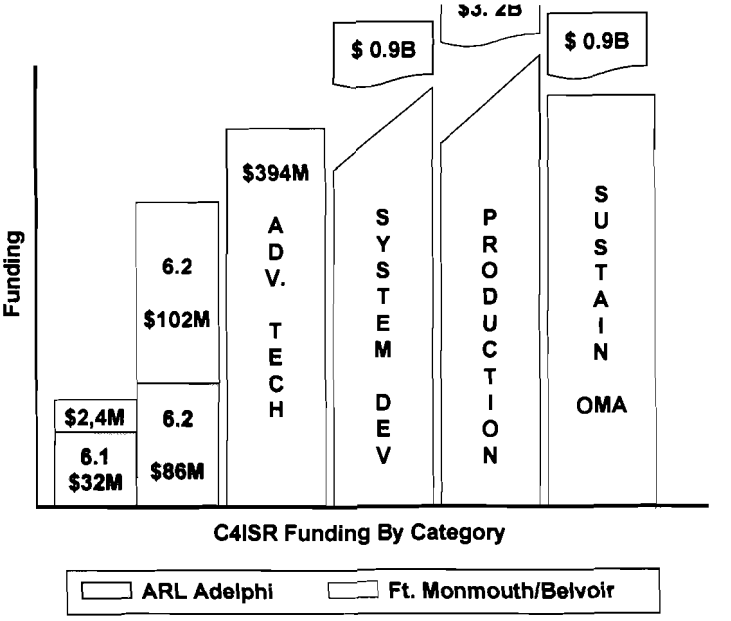


Figure 16: Funding Profiles for FY06

Funding estimates for FY06-11 for Fort Monmouth and Fort Belvoir in C4ISR are: (Source: Fort Monmouth Funding Data).

- **Basic Research 6.1 $14M**
- **Applied Research 6.2 $ 664M**
- **Advanced Development $ 2B**
- **Systems Development and Demonstration $4.4B**
- **Production $ 10.4B**
- **OMA $3B**

The BRAC recommendation did not co-locate R (Adelphi) with D&A. There is no relevant or sizeable R or D&A at Aberdeen. Moving Fort Monmouth to Aberdeen and Fort Belvoir to Aberdeen does not achieve RDA integration. It simply moves Fort Monmouth/Belvoir RD&A to a new place at nearly a $1B cost. The end result of the BRAC recommendation is to move the bulk of the people doing C4ISR work and currently integrating technology, development, production, fielding, and sustainment to a location which has no C4ISR capability and infrastructure; at considerable expense.

ARMY RESEARCH: The Army Research Laboratory was formed in October, 1992, and consolidated all research (basic and applied) within the Army. The establishment of ARL included the requirement to develop a formal process of transitioning a significant portion of ARL research to the practical applications of Fort Monmouth and other "functional" commands. The "Technology Program Annex" (TPA) process resulted and is reviewed and verified by ARL's Board of Directors (BOD) consisting of what are now the Army R&D Command directors. In addition, a "Federated Laboratory" concept was initiated combining industrial, government and university laboratories in a geographically dispersed federation in three technology areas. *The two programs (TPAs and Fed Labs/CTAs) have proven that research and transition of its products is most successful in a focused research organization with transitioning to "external" customers part of their "scorecard" for success.* The RD&E centers are responsible for technology demonstration ("late" 6.2 & 6.3) and support of the acquisition programs of the PEO/PM community.

FORT MONMOUTH

We conclude that the current approach for integrating C4ISR basic and applied research (6.1 and 6.2) done by ARL with the applied research and advanced technology development (6.2 and 6.3) being done by Fort Monmouth is working adequately and neither organization should be moved. Both organizations are technologically sophisticated and deal in a world of digital information management; if they had to be collocated to work effectively together, then there would be no hope of ever getting the less sophisticated warfighter client to use digital information management over distances to win wars.

C4ISR ACTIVITIES AT ARL (A brief summary): At ARL, C4ISR research activities are concentrated in two Directorates: Computational and Information Sciences Directorate and Sensors and Electronic Devices Directorate – *both located at Adelphi.* ARL also integrated all vulnerability assessment in one organization, the Survivability Lethality Analysis Directorate, *with C4ISR assessment located at Fort Monmouth to be close to the C4ISR development expertise.*

The Army Research Laboratory (ARL) Computational and Information Sciences Directorate (CISD) deals in information sciences and technology research. The research mission is focused on battlefield communications and networks, data fusion and knowledge management, battlespace weather and environmental effects, and computational science and engineering. The CISD mission (600 staff) areas include the operation of the ARL DOD Major Shared Resource Center (MSRC), the Army High Performance Computing Research Center (AHPCRC), and the ARL Federated Laboratory Consortia for Telecommunications and for Advanced Displays. The C4ISR staff is located at Adelphi and the personnel at Aberdeen run the Major Shared Resource Center and High Performance Computing Center and have no C4ISR expertise. There is a very small staff (6) of C4ISR personnel located at Aberdeen.

The ARL Sensors and Electronic Devices Directorate conducts research in sensors, including radar, electro-optic, night vision, radar and acoustic. Additionally, the directorate is responsible for research in power sources for sensors and other lightweight Army applications. The Directorate is also responsible for two CTA programs, Advanced Sensors and Power and Energy. The staff (360) is located at Adelphi with approximately 6 located at Aberdeen. SEDD interfaces very effectively with CERDEC Night Vision and Electronic Sensors Directorate.

Bottom Line for ARL: Very small number of personnel at Aberdeen which cannot alleviate the C4ISR personnel vacuum caused by the BRAC recommendation. Excellent research staff at Adelphi working well with Fort Monmouth and Fort Belvoir CERDEC personnel with a proven process for transitioning basic and applied research into technology development.

NATICK RDEC:

The Natick RDEC is organized into five directorates: the Mobility Directorate (MobD), the Survivability Directorate (SurD), the Sustainability Directorate (SusD), the Science and Technology Directorate (STD), and the Advanced Systems Concepts Directorate (ASCD). Research and development of C4ISR for the individual soldier is executed by *CERDEC,* along with all other C4ISR for weapons platforms such as armored vehicles and aircraft. Natick does not have any activity in C4ISR except PM Soldier support where the work is done at Fort Belvoir. They are not scheduled to move to APG. In fact, neither is PEO Soldier's PM Sensors which is located at Fort Belvoir and utilizes matrix support from NVESD. *With the proposed move of NVESD to Aberdeen without the major customer he supports, significant problems with that program will ensue.*

CONCLUSIONS:

- The Land Warfare C4ISR Center of Excellence already exists at Fort Monmouth—it has the preponderance of technical talent; the majority of the funding, by far; the highest cumulative Military scores; and a life cycle mentality that expedites products to the field with technology infusions to keep those products current. *What Army Secretary Harvey articulated as a need: "We need a technical center of excellence in Command, Control, Information Systems which is extremely important to the future Army."—Already Exists!*

- The T-JCSG philosophy and goals changed continually throughout the recommendation formulation phase. In the end, the T-JCSG did not explain the Land C4ISR Center, even though for months before it debated scenarios and made formal recommendations and received approvals from the BRAC higher level Infrastructure Steering Group (ISG). The T-JCSG report (Volume XII) makes a brief one line references to a Land Center and to closing Fort Monmouth, but do not go into detail as they do with the Maritime and Air C4ISR centers.

- The BRAC recommendations do not create an integrated C4ISR RDA.; it leaves out a large portion of R and simply moves D&A. That disrupts existing methods to integrate at a distance and will disrupt the largest site (Fort Monmouth) that is currently producing products for the Warfighter. *Insufficient recognition of the Fort Monmouth/Belvoir funding levels or military value with no analytic basis.*

- There is no C4ISR capability at Aberdeen; in fact, there are only approximately 25 ARL personnel that are classified as working in any C4ISR function at Aberdeen. The BRAC recommendation "clouded" the issue by implying there was a significant presence of C4ISR capability at Aberdeen, given the larger number of ARL employees working in Materials research and in High Performance Computing. *There is no C4ISR base of expertise at Aberdeen on which to build considering the large numbers of people that will not move from Fort Monmouth/Belvoir.*

- Analysis of the BRAC deliberations show that scenarios were "discarded" that would provide collocation of all C4ISR elements because they were considered to be too

expensive or un-executable. Why, then, would the DOD BRAC team consider as executable or affordable the movement of over 5000 technical C4ISR experts and not discuss it anywhere in the report? *Technical Military Value developed by the T-JCSG was ignored; installation military value used by the Army is not relevant to a C4ISR or a RDAT&E mission, and military judgment overrode military value too frequently.*

- Based on funding profiles alone, successful programs and the amount of C4ISR people working in this critical Army/DOD Fort Monmouth/Belvoir C4ISR should have been excluded early as a BRAC candidate.

- The linkage between the ARL research staff; other services C4ISR staff; execution of Joint programs and recipients of Joint programs and Fort Monmouth has demonstrated the ability to effectively operate with dispersed organizations. *The difficulty of transitioning basic and applied research to systems technology developers is working, coordination with other services technology is working, executing and receiving Joint programs is working—-if it is not then it is a management issue and not a relocation issue.*

An integrated RDA C4ISR Land Warfare Center is not created, and in fact one that is working is "broken" by the BRAC recommendation. There is no consolidation of R with D&A activities and the Aberdeen C4ISR resident expertise is non existent. Moving the mission of over 5000 people currently executing the C4ISR mission will result in program breakage and disruption that will cost millions and result in delays for critical products for the future.

4.2 TEST AND EVALUATION INTEGRATED WITH RDA

The integration of C4ISR RDA with T&E was never considered by the T-JCSG and was added by the Army to make a poor recommendation more palatable. The T-JCSG did consider integration of RDA with T&E but only in the areas of "platforms."

There are various forms of testing as programs go through the development cycle. See Figure 17. In the BRAC report, the testing considered was only the formal DT and OT type testing.

At different stages of the process, experimentation, demonstration, and formal test and evaluation are conducted. During the R&D phase, this activity is principally restricted to experimentation and demonstration and could demonstrate the individual component technology or a group of technologies integrated into a system of systems context. Formal T&E generally occurs at the end of the R&D phase and is a formal process with strict rules of scoring. This testing addresses development suitability testing conducted by Independent Developmental Testers and Independent Operational Testers to determine Operational Suitability. The two separate evaluations provide for an "honest broker" evaluation of systems.

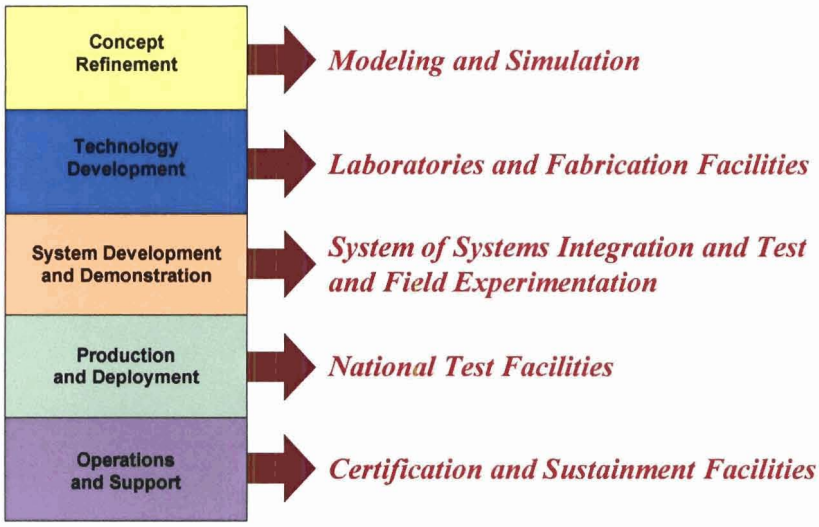


Figure 17: Various Forms of Testing

THE ARMY'S DESIGNATED C4I TEST SITE: Test and evaluation of C4ISR systems is typically performed at the Electronic Proving Ground (EPG) located at Fort Huachuca, AZ, which is the *designated site for all C4I testing.* One of the most critical features of EPG is its relatively remote location in the Arizona desert which is free from electromagnetic, i.e., radio frequency interference which is critical for effective evaluation of performance. Also, this location allows testing of systems in all aspects including electronic warfare "red team" evaluation of the systems without concern of interference of civilian electromagnetic systems. Typical regional systems of concern include radio and TV stations, commercial aircraft avionics, etc.

EPG has an extensive array of electronic system-oriented testbeds and facilities. A listing of testbeds and facilities of the *Electronic Proving* Ground demonstrates their capability to effectively test C4ISR systems:

- Antenna Test Facility (ATF)
- Battlefield Electromagnetic Environments Office (BEEO)
- COSPAS-SARSAT Test Facility
- EMI-TEMPEST Test Facility
- Environmental Test Facility (ETF)
- Fabrication Facilities
- Global Positioning System (GPS) Test Facility
- Information Assurance (IA) Test Facility

- Meteorological Team
- Radar Spoke & Resolution Facility
- Realistic Battlefield Environment (RBE)
- Tactical Radio Testbed
- Test Control Center (TCC)
- Test Technology Design & Development (T2D2) Lab

EXAMPLES OF MAJOR C4I SYSTEMS FORMALLY TESTED AT EPG INCLUDE:

- Force XXI Battle Command Brigade & Below
- Stryker C4ISR
- Army Airborne Command & Control System
- Joint Tactical Radio System
- Enhanced Position Location Reporting System
- Suite Of Integrated Infrared Countermeasures System
- Single Channel Ground & Airborne Radio System
- Global Positioning System
- Prophet Signals Intelligence & EW System
- UAVs With Sensors

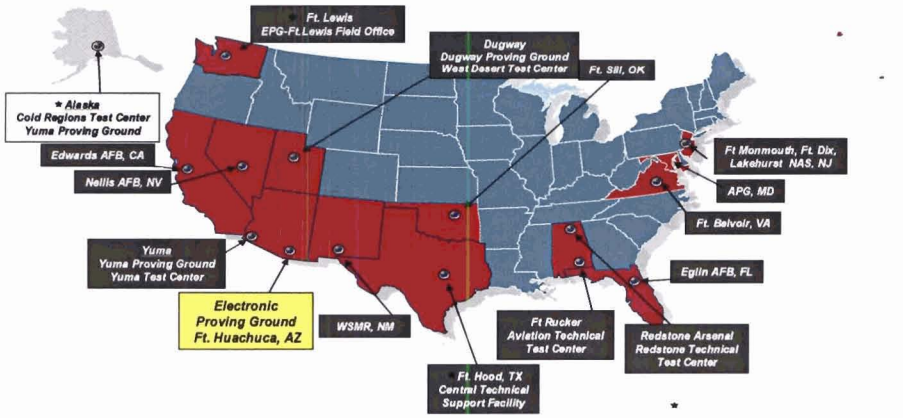


Figure 18: Test Ranges

C4ISR testing frequently utilizes other ATEC test ranges or other service test facilities: some examples include night vision & elector optics sensors at Fort AP Hill, Yuma Proving Grounds for IED jammer testing, Fort Bliss, Fort Hood, Fort Lewis, China Lake & Eglin AFB. C4 Operational Testing typically requires an active duty unit to resolve Doctrine, Organization, Training, Leadership, and Material (DOTLM) issues—testing of this type is done at Fort Hood, National Training Center (NTC), or Joint Readiness Training Center (JRTC). These other C4ISR test locations are shown in Figure 18.

ABERDEEN AS A TEST RANGE FOR C4ISR SYSTEMS

APG is a major Army test and evaluation facility with primary responsibility for Ground Vehicle (combat, tracked and other) T&E and additional, less complete capability in weapons, materials and human systems T&E. ***The site has no facilities or staff with the necessary competencies for informal or formal T&E of C4ISR systems.*** *Typically C4ISR systems see APG only when the host vehicle platform of the C4ISR system has to pass the "shake, rattle and roll" requirements.*

A partial listing of facilities and capabilities is provided to make the point.

- Automotive Facilities
  - Bridge Crossing Simulator
  - Munson Road Test
- Environment Effects
  - Accelerated Corrosion Complex
  - Environmental Chambers (Various)
- Fire Control
  - Evasive Target Firing Range
  - Tank Armament Test Range
- Firepower
  - Ballistic Range
  - Depleted Uranium Containment Facility
- Survivability/Lethality
  - Aircraft Vulnerability
  - Internal Blast Test Site
- Warfighter & Support Equipment
  - Bridge Test Sites
  - Joint Warfighter Range Complex (Drop Zones; Small Arms Ranges)
  - Examples of platforms tested at APG, which exemplifies testing at APG addresses vehicles "shock, rattle and roll" include:
    - Stryker Family Of Armored Vehicles
    - Family Of Medium Tactical Vehicles
    - Commercial Aircraft Vulnerability
    - Objective Individual Combat Weapons Systems
    - Advanced Amphibious Assault Vehicle
    - Land Warrior
    - Heavy Duty Support Bridge
    - Hybrid Electric Vehicle
    - Future Combat Systems Novel Swing Chamber Gun

Establishment of a Land C4ISR Center of Excellence at APG would require creation of electronic test facilities duplicating those existing at EPG and several other sites. Even if it were considered cost effective to duplicate, or even relocate the existing equipment, personnel and function from EPG at APG, test ranges required to support the mission are not suitable at APG. In addition, they would also need C4ISR soldiers and equipment. Many factors contribute to this assertion but the primary ones are Air Space limitation and Frequency Allocation limitations.

- The location of APG in the electromagnetically dense east coast ground and air corridor, and relatively close to urban areas. The restrictive frequency allocation issues and the inability to "emit" signals make this highly undesirable.
- Airspace limitations are also a concern. The Washington Air Defense Identification Zone begins nine miles south of Aberdeen's Phillips Army Airfield. No VFR or IFR loitering is allowed to 18000 feet altitude. Typical R&D flight profiles hover at altitude, "figure 8s" can't be performed at any substantial standoff distance starting 180 degrees south to 310 degrees northwest. Philadelphia class B airspace starts 29 miles northeast of Aberdeen. Beyond 29 miles, no typical R&D profiles are allowed from 30 degrees north to 95 degrees east. Currently night IFR approach is not authorized. Flights east of the airfield are limited due to proximity to location of active ranges. Local airspace is congested and choke areas occur by general aviation aircraft attempting to avoid Prohibited, Restricted and Class "B" airspace as well as the Washington Air Defense Identification Zone. The inability to fly R&D flight profiles and R&D aviation equipment is a severe limitation for many future technology systems.

CONCLUSIONS FOR RDA AND T&E INTEGRATION:

- Aberdeen is not now, nor should it ever become, a C4ISR Test and Evaluation facility. *The costs are too high; it would duplicate other Army test sites for no good reason; and the location is restrictive both from a spectrum and an aviation perspective.*
- Neither Army nor T-JCSG appeared to have considered airspace restrictions or to have conferred with the FAA before making recommendations to move Land C4ISR to Aberdeen. In fact, the ability of Aberdeen to support C4ISR R&D aviation testing (UAVs, Aerostats, Manned Aircraft, and Hovering Helicopters) appears to have never been considered. *This would seriously hamper the ability to do C4ISR Experimentation and Testing.*
- C4ISR formal T&E requires specialized facilities with the Electronic Proving Ground being the designated C4I test facility. *Co-location at Aberdeen will still require most testing external to Aberdeen.*
- Selected C4ISR "Platforms" may undergo some developmental testing at Aberdeen but only in the area of APG mechanical expertise.
- The T-JCSG never reached this conclusion—in fact, they recognized it only made sense for Platforms. *The recommendation made by the Army ignores the complexity of instrumenting and conducting C4ISR testing and ignores its own*

designated formal Electronic Proving Ground. In the BRAC recommendation, no cost numbers to make APG a C4ISR test site were identified.

- The T&E linkage appears to have been added by the Army to make the recommendation to move Fort Monmouth/Belvoir C4ISR activities look more attractive. It actually detracts significantly from Army credibility and from the rigor of its analysis. It reflects a disappointing understanding of C4ISR by Army personnel involved in the BRAC recommendation. *The efficiencies claimed are never quantified and in fact will add cost because all testing will still be remote—to include experimentation.*
- If the intent is to allow C4ISR experimentation (never defined in the BRAC report), then it still falls considerably short and would duplicate activities underway at the nearby DLM Joint Base discussed in another section of this report. *The existing and currently used capability at the nearby DLM Joint Base for Army and Joint field demonstrations and experimentation was not sufficiently analyzed and never mentioned in the BRAC process. In fact, the BRAC recommendation takes Land C4ISR away from Jointness, a fate worse than ignoring Jointness.*
- Indications are that Aberdeen may not be able to provide the required facilities for Fort Monmouth aviation elements (especially the lighter than air aviation elements) currently "home ported" at the Naval Air Engineering Station, Lakehurst NJ and at Fort Belvoir's Davison Army Airfield. One believes that future aviation development, demonstrations and experiments may still need to be based out of Lakehurst. *The added cost factor, either to build the necessary facilities, or to conduct R&E experimentation at a now remote site was never considered in BRAC calculations.*

The co-location of Fort Monmouth/Belvoir C4ISR programs with the Aberdeen T&E (not C4ISR qualified) activities makes no sense and only disrupts a process already working well. The majority of formal C4ISR T&E is done at Fort Huachuca's EPG and other instrumented Army and Joint test activities where a considerable investment has already been made. No Joint testing or experimentation is possible at Aberdeen because of the absence of troops, infrastructure, air and sea space, and frequency spectrum. However, Joint experimentation and testing can take place at Dix/McGuire/Lakehurst/W-170 and is being utilized now—this will be covered in another section of this report.

**T-JCSG recommended a RDA C4ISR center, finally at Aberdeen.
It separates RDA from T&E, it separates Army from Joint, and it does not consolidate R with D&A, since a large part of R (basic and applied research) stays at Adelphi. The Army attempts to add T&E back in at Aberdeen, but their conclusions about "efficiencies" are unfounded, since it is the wrong T&E.**

5.0 COSTS SIGNIFICANTLY UNDERSTATED OR NOT CONSIDERED; SAVINGS OVERSTATED -- Deviation From Criteria 4 and 5

Overview: *Fort Monmouth and its Fort Belvoir elements operate many high technology laboratories and facilities focused on their C4ISR missions. These capabilities are supplemented by aviation assets, local "outside" test facilities, highly classified and specialized facilities, and facilities that have a 24/7 mission with one-of-a kind equipment. Based on the way DOD BRAC data calls were made many of these facilities and their actual size were not adequately captured in the COBRA runs. This section also discusses "non-COBRA" items, which when added to the COBRA cost estimates, present an extraordinarily high cost.*

The analyses show that corrected COBRA estimates bring one time costs to $1.5 B ... when one adds non-COBRA considerations the one time costs rise to over $1.8B .

This report will analyze cost in the following areas:

- MILCON costs based on increased square foot estimates and functional use.
- Special Facilities that either need to be replicated to maintain mission continuity or require one time cost beyond "building" the facility and moving equipment.
- Special Equipment from 92 laboratories that need to be disassembled, moved, reassembled, re-calibrated, and put back into operation. In some cases new equipment may need to be purchased.
- Employee population errors put into the COBRA model.
- Base Operations Support costs for specialized mission support services above the "Common Level of Services."
- Relocation estimates taking into account the actual "approved overstrength" of the organizations necessary to implement their current mission.
- Recruitment and Training costs to reconstitute the lost workforce -- not a part of the BRAC considerations but for a workforce of this size and complexity represents significant costs that must be considered.
- Disruption to existing programs is also a significant cost factor that never gets considered. While cost estimates are provided in other sections of this report estimates are presented here to demonstrate the potential magnitude of this problem.

The remainder of this section will detail each of these areas. Data and calculations that support the corrected COBRA result can be found in the annex to this report.

Cost discussions are broken into two areas: (1) COBRA related and (2) Non-COBRA related but significant impact. Innovative Management Concepts (IMC) Inc. of Dulles, VA, was contracted to re-run COBRA with corrected data. IMC does considerable system engineering and information technology work for DOD and has a recognized cost effectiveness analysis capability.

5.1 COBRA Factors: Figure 19 shows a summary of our findings which is followed by a discussion in each area.

CATEGORY	COBRA	Rev. COBRA	Delta Cost	Rationale
MILCON Ft.M/B	$368M	$647M	$279M	Sq. Ft. Wrong
MILCON MAPS	$24M	$219M	$195M	1391
AVIATION	$56M	$116M	$60M	Hanger Space
Special Facility				
JSEC	UNK	$102-343M	$102-343M	Not included
Labs.	UNK	$151M	$151M	Not included
Relocate Labs	$56M	$56m	$0	Agree
Relocate People	$218M	$144M	-$74M	Less Moving
BOS & Payroll				
BOS FT.M	$93M	$49M	- $44M	Incor. Data
BOS APG	$0	$13M	$13M	Reimb. Svcs.
Payroll	-$4M	$0	- $4M	Lower Saving

Figure 19: COBRA Cost Analyses

The following is a description of the process that was followed, along with IMC, when assessing the COBRA results used by the DOD BRAC deliberators.

Step #1 – Identified a set of COBRA input parameters that were incorrect and could be varied in an initial assessment.

Step #2 – Identified the best candidate inputs based on a review of the results in Step #1. This was accomplished by detailed study of the COBRA runs, input data from data calls, actual and Fort Monmouth information at variance.

Step #3 – Made the series of COBRA runs for the parameters identified in Step #2.

Step #4 – Analyzed the results of the COBRA runs in Step #3 to identify which parameters and potential combination of parameters demonstrated any errors in the BRAC process.

Step #5 – Based on the analysis performed in Step #4, and any additional input from other stakeholders, selected a refined set of parameters that should be varied in a second set of parametric runs. This set included a more comprehensive set of "simultaneous variations" on selected parameters to determine whether there were synergistic affects that may not have been readily obvious when dealing with variations of a single parameter.

Step #6 – Made the series of COBRA runs for the parameters and combinations of parameters identified in Step #2.

Step #7 – Analyzed the results of the COBRA runs in Step #6.

MILITARY CONSTRUCTION: Laboratory and Administrative

AREA	COBRA	Revised COBRA	Cost Increase
Facilities Ft. Mon	$368M	$647M	$279M
Facilities MAPS	$24M	$219M	$195M

In analyzing the space required to be built, or modified, we utilized data from the Army Facilities Details (R-Plans) Reports (see Annex Documentation) for Fort Monmouth and Fort Belvoir. Based on feedback from the July 1, 2005, Congressional visit to Aberdeen and its review of facilities to be modified the assumption was made that all "new construction" is required. A DD Form 1391 prepared by its parent organization in June 2005 for the move of the Military Academy Prep School (MAPS) was utilized to better estimate its costs; a small standard factor for "design" was added which was not included in the DD Form 1391.

We accepted the COBRA analysis for the Intelligence Information Warfare Division (I2WD) facility which is a SCIF that houses very sophisticated equipment and employees all of whom are cleared at the SCI security level. That facility is 176,000 square feet at a cost of $375/sq. ft for a total cost of $66.5M.
However, in the other areas of both laboratory space and administrative space the DOD analysis considerably underestimated and made errors in the size and space required, based on functions to be performed. The administrative space required is 1,287,764 square feet and the laboratory square feet required is 1,161,812. Using these more correct space requirements, but using the BRAC cost data of $150/sq. ft. for

administrative space and $320/sq. ft. for laboratory yields an Administrative Facility cost of $193,161,900 and a Laboratory Facility cost (above the I2WD facility discussed above of $371,779,840) brings total C4ISR facilities costs to $564,941,740.

As indicated above, the Military Acdemy Prep School costs are considerably above (~$200M) the BRAC estimate when all factors and requirements for "separated" facilities are taken into account. The Cost Annex contains the DD Form 1391 which was the basis for the corrected estimate.

MILCON facilities are significantly larger than assumed in the BRAC analysis and supported by the corrected COBRA runs and found in the Cost Annex. DOD BRAC data calls did not "capture" all of the facilities at Fort Monmouth and Fort Belvoir, and the current condition of existing facilities will not permit refurbishment, therefore increasing new construction cost. MAPS costs were also increased based on available DD Form 1391 data. The BRAC estimate for the MILCON area was: $376.5M; the corrected data indicate costs of $866M -- yielding a cost difference of $474M.

AVIATION: Includes Replication of Existing Lakehurst Capability

AREA	COBRA	Revised COBRA	Cost Increase
Facilities	**$56M**	**$116M**	**$60M**

The Fort Monmouth/Belvoir mission responsibilities include using manned and unmanned aircraft with C4ISR equipment installed. The capabilities of the Lakehurst Naval Air Engineering Station's Army facilities will be discussed in the Main Report Section 7, but are summarized again to show the magnitude of those facilities.

The Lakehurst facility "houses" experimental aircraft including: rotary wing aircraft; fixed wing aircraft; UAVs; and lighter-than-air craft. This facility allows:

- 24/7 airfield operation capability (VFR/IFR)
- Low altitude/high altitude—day/night Night Vision flight testing
- UAV flight testing
- Blimp/aerostat R&D operations
- C-130 modification support
- Aviation support for units mobilizing at Fort Dix.
- Aviation support of C4ISR testbed
- Modifications and test flights for HH-60L and UH-60L fielding
- Jet Tracks for AH-64 laser testing

- Large secure remote test areas of Air/Ground communications projects

DOD BRAC estimates allocated $56M in C4ISR aircraft-related MILCON, however, this estimate is less than half of the requirement for aviation facilities. The DOD estimate of hanger space required at Lakehurst was low by 99,000 sq. ft. and completely omitted facilities for lighter-than-air craft. Similarly the aircraft facilities at Fort Bevoir's Davidson Airfield were underestimated by 33,000 sq. ft. for unmanned and manned aviation test facilities. Lakehurst also houses Fort Monmouth's R&D lighter-than-air craft that require appropriate hangar storage facilities to allow entry and exit from the hangar in all reasonable wind conditions. The hangar is, in fact, the launch pad and must be in visible sight of the air traffic control station for launch. NBD/ILS approvals are required for night operations. This adds an additional 125,000 sq. ft. of hanger space to the previous numbers. Using BRAC FAC Codes 2111 and 1163 and recalculating the Aviation cost yields a total cost of $116M with an increased cost of $60M.

Aviation facilities for R&D are very specialized and current facilities are focused on the complex C4ISR mission requirements. BRAC failed to consider adequately the unique requirements of C4ISR R&D aviation and failed to capture their full requirements. This was reinforced during the APG visit to Lakehurst facilities where the statement was made that APG would have difficulty replicating these expensive capabilities

Special Facilities: Special facilities cover two major areas: (1) the Joint Satellite Communications (SATCOMM) Engineering Center (JSEC) which has a world-wide mission; parts of which require continual operation with portions of that mission that must continue regardless of BRAC; and (2) a variety of laboratory facilities that have significant "embedded" equipment that cannot be moved, but must be re-built into new facilities and, therefore, included in one time cost estimates. Neither area is adequately considered in BRAC and will be covered separately below:

JSEC:

AREA	COBRA	Revised COBRA	Cost Increase
JSEC	**UNK.**	**$102M--$343M**	**$102M--$343M**

The Joint Satellite Communications (SATCOM) Engineering Center (JSEC) serves the entire DOD and several other special users. The JSEC is a one-of-a-kind $200+M facility with vital strategic and tactical SATCOM missions that demand continual 24/7 operations. It is an extraordinarily complex integration of multiple labs and a collocated antenna field of 12 SATCOM terminals. Many of the equipments/systems are classified as legacy or one of a kind that are no longer procurable, thus creating a conundrum in

selecting a method to replicate the JSEC at Aberdeen. Regardless of the alternative chosen to replicate the JSEC at Aberdeen, the JSEC's current 24/7 CONOPS dictates minimum disruption; therefore, the facilities must remain in place until new facilities are completed. Although there were several scenario data calls, those requests lacked sufficient specificity to ensure the respondents understood the ramifications of the data call questions. There are two plausible alternatives for the JSEC: (1) if DOD determines that the JSEC mission cannot be interrupted, the legacy and one of a kind out of production items must be reproduced (at considerable cost) or (2) if JSEC downtime can be incurred, then the legacy and one of a kind items will be relocated. The PEO EIS's PM for Defense and Communications and Army Transmissions Systems and the Army Communications and Electronics R&D Center have collaborated on a government cost estimate that addresses both alternatives: $343M to duplicate and $102M to relocate. Its detail is found in the Cost Annex. There are cost elements that are common to both: e.g., construct a new complex at Aberdeen, acquire new or refurbish equipment when possible, obtain Joint Staff, FCC, etc. approvals, calibrate and certify JSEC (Aberdeen) and approve a "cutover" as the labs and other installed assets are completed. The variables in the two alternatives are: reverse engineer, redesign and acquire otherwise non-procurable equipments and systems or take down legacy and one-of-a-kind equipments/systems (incurring downtime) and relocate the assets to Aberdeen. The government cost estimate concluded that the total costs to replicate the JSEC, without interruption downtime will be $343M with a cost escalation factor of 4% per year. To relocate (downtime), will cost $102M with a cost escalation factor of 4% per year. It should be noted that the costs to dual staff the parallel JSEC operations are not included. While the range costs are included in the summary table above in the above; the responsible decision is to replicate the JSEC or a large portion of it to maintain the continuity of the mission.

The Joint Satellite Communications Engineering Center is involved in real-world missions that are critical to the DOD total satellite capability. This mission was not factored into the BRAC analysis, the JSEC supports older legacy satellites ground stations that can't be replicated, and excessive down time for movement is unacceptable.

SPECIAL LABORATORY FACILITIES:

AREA	COBRA	Revised COBRA	Cost Increase
Sp. Facilities	**unk**	**$151M**	**$151M**

A survey of all the laboratory facilities at Fort Monmouth and Fort Belvoir was conducted. It concluded that at least 14 of the 92 laboratories fall under this "special

laboratory facility" category. A special laboratory facility is one with an integrated capability that cannot be simply moved and re-assembled. Generally these facilities have been built into laboratory capabilities that cannot be de-coupled and must be re-built at the new facility. A description of these special laboratory facilities is found in the Cost Annex and a brief description will be included in this section. The correct estimates for these special costs are based on replacement cost and capital investment numbers for the original facility:

- **High Frequency Tracker Lab**---HF radio network housed in a 1400 sq. ft. shielded copper enclosure. The shielded enclosure permits operation and testing of the HF Radio Network without interference from outside EMI sources and eliminates interference. **Cost --- $.5M**
- **Interactive Speech Technology Lab**—This facility is comprised of two sound chambers; a reverberant chamber and an anechoic. Both chambers are built into the laboratory facility and cannot be moved for reassembly. **Cost ----$11.2M.**
- **Power Source Lab---** Five power source laboratories exist at both Fort Monmouth and Fort Belvoir. At Fort Monmouth there are two specialized laboratories which contain specialized electrochemical material and test equipments and a custom 1% relative humidity dry room. The Test and Evaluation laboratory contains state of the art environmentally controlled systems and equipment. At Fort Belvoir there are three integrated and unique facilities that include: a Dual Room Environmental Performance Chamber, an Environmental Engine Test Chamber and a small environmental chamber. **Cost ----$25.5M**
- **Photonics/Microwave Systems Lab---** The lab includes the following capital equipment: a Femtosecond Spectroscopic Testbed, a Plasmonic Beam Characterization System, A Large Polarization Mode Dispersion Testbed, and an Anechoic Chamber---none can be moved because they are integrated with the laboratory. **Cost---$3M**.
- **Electromagnetic Interference/Electromagnetic Compatibility (EMI/EMC) Lab---** multiple chambers to address RF interference, EMI, and EMC between new and legacy systems. The lab consists of two large anechoic chambers with one fully ferrite lined to reduce radio frequency reflections. The second chamber is larger fully lined with anechoic cones. **Cost--$3.5M**
- **Cryptographic Modernization Lab**—number of specialized facilities for secure communications evaluations. It consists of a SCIF, a shielded room within the SCIF, and a tempest enclosure room to prevent emanations during testing. The lab is a Top Secret facility. **Cost---$6.7M**
- **Seeker Effect Lab and Anti Tank Guided Munitions Lab**—conducts open/closed loop testing of the susceptibility of advance IR Surface-To-Air Missile seekers. It consists of a three-axis gimbal table capable of supporting payloads up to 55 lbs. Multiple mirrors and specialized optics test systems are an integral part of the laboratory. **Cost---$2M**
- **Anechoic Chamber**—this is the largest anechoic chamber in New Jersey which is utilized for vehicle and other large platforms. It has a turntable and a digitally controlled "positioner" for use in testing. **Cost---$8.5M**

FORT MONMOUTH

- **Systems Engineering, Analysis and Integration Lab (SEAIL)**—includes a Cryogenic-Cooler Lab; and Automated Cooler Test Facility; a System Lab and a Laser Lab optically coupled to the other labs. **Cost--$25.6M**
- **Virtual Prototyping and Simulation Lab**---provides a simulation theater to evaluate night vision and sensor technologies. It has an arena with a main viewing area to seat 36 and projections on multiple large screens. **$Cost--$7.5M.**
- **Detector Fabrication Cleanroom Facility**—houses an ISO Class 5 clean room and a "white" room. The detector fabrication laboratory is one of only two II-IV clean room facilities within DOD. **Cost ---$6.3M**
- **Mine Lanes Facility**—supports countermine testing and is one of the few indoor mine lane facilities in the world. The indoor structure contains six mine lanes separated by nonmetallic barriers to prevent mixing of soils between adjacent lanes. There is also an overhead trolley system, a greenhouse structure with motorized roof and a single overhead trolley system. **Cost---$.6M**
- **IR Detector Semiconductor Microfactory**—is a manufacturing facility for micro-chips and includes capabilities for pre-growth thermal and ion cleaning of the substrate before the infrared detecting semiconductor layers are deposited. **Cost---$20.5M**
- **Fabrication and Integration Facilities**—consists of a large paint booth, a small paint booth, a sandblast booth, a powdercoat oven and three overhead cranes. **Cost---$29.7M**

The special laboratory facilities were not adequately covered in the DOD BRAC analysis partially due to a limited data call and poor inputs from the government. Corrected analysis of the above 14 items is conservative compared to the cost of C4ISR special facilities.

RELOCATE SPECIAL EQUIPMENT:

AREA	COBRA	Revised COBRA	Cost Increase
Sp. Equipment	**$56M**	**$56M**	**$0**

While we agree with this estimate it should be noted that there is approximately $650M of capital investment in laboratory equipment. Some of that equipment discussed in the previous section will be purchased, so have concluded that the $56M funds should be adequate for the remaining laboratory equipment.

RELOCATE PEOPLE:

AREA	COBRA	Revised COBRA	Cost Increase
Less Moving	**$218M**	**$144M**	**-$74M**

In this section deals with two Relocation issues:

- Recognition of long term overstrengths which will increase the population of people moving. This would result in an increase cost.
- Recognition that in the corrected analysis, 20% vice the 75% of the population will relocate, results in a decrease in PCS costs.

The net result from analysis is a reduction in the COBRA relocation costs.

The population data source used for COBRA analysis is the Army Stationing and Installation Plan (ASIP). Not unexpectedly, ASIP uses positions authorized to account for personnel, but it does not recognize a category known as "Approved Over-strength" that are over and above ASIP authorizations and therefore omitted from COBRA calculations that accumulated the costs to move civilian personnel. These over-strength positions are documented and approved over-authorization positions (See Cost Annex) that support customer funded programs (i.e., PM funding of engineering or logistics efforts), where the program requirement exceeds the capacity of the authorized workforce. In all cases, funding is sufficient to support the positions and is expected to continue based on out year funding profiles and acquisition schedules. The costs associated with these additional positions, not considered in the DOD COBRA analysis, is $16M (447 additional positions times the COBRA PCS factor of $35,496) and should be reflected as additional One Time Moving Costs in corrected COBRA analyses

Other sections of the report validate (using history and a recent survey) that < 20% of the people would move. Therefore, the corrected COBRA calculations reflect a decreased cost to move employees.

As shown above there is an increase in relocation caused by authorized over-strengths and a significant reduction based on a much lower percentage of personnel moving to Aberdeen. This changes the net relocation funding to be a lower number without considering the significant cost of recruitment, hiring training etc discussed in the non-COBRA calculations.

SAVINGS -- BASE OPERATIONS SUPPORT & PAYROLL:

AREA	COBRA	Revised COBRA	Saving Decrease
BOS Ft. Mon	**$93M**	**$49M**	**-$44M**
BOS APG	**$0**	**$13**	**$13**
PAYROLL	**$4M**	**$0M**	**-$4M**

This section considers two issues that influence the recurring savings and have a direct impact on the years to payback this costly move. The first deals with Base Operations Support and the second deals with errors in payroll calculations.

BOS: There are three areas where the DOD analysis incorrectly estimated the BOS Recurring Savings (at Ft Monmouth) and Recurring Costs)(at Aberdeen); COBRA did not consider Reimbursable tenant and regional support costs continuing after the Fort Monmouth closure; incorrectly handled the security force costs; and incorrectly identified the BOS costs at Fort Monmouth.

For a base that is closing, the COBRA algorithms credit as recurring savings, the direct and reimbursable BOS costs, inclusive of payroll and non-payroll, at the losing installation. To balance the costs for increased BOS at the gaining installations, the model calculates a new BOS cost and debits it as a recurring cost. COBRA identifies recurring costs based on TABS nodal analysis (for change in installation support strength) which is an algorithm that includes the change in overall personnel strength between what was, and what will be. COBRA reports this as "Delta BOS" as the difference between the starting BOS data (BOS Non-Payroll Budget) and the resulting finish BOS data. A "Unit Cost Adjustment" factor and population change are used to develop the Revised/Delta BOS, the value of recurring BOS costs at the gaining installation. For the Fort Monmouth closure scenario, $93.5M was used for the BOS cost and by definition credited as Recurring Savings. The calculated BOS increase for Aberdeen was reported as $21.5M in new BOS Non-Payroll costs, again by definition debited as Recurring Costs. However, this method fails to consider a substantial element of the new BOS cost at APG associated with the functions of Common Level of Service (CLS) and Regional Support Services at an installation. This point is summarized below.

- The delta BOS reflected in APG is only $21.5M in additional costs – YET -
- The "Above CLS cost" for the Fort Monmouth realigning organizations and the Regional Support Costs are $13M per year.

The concept of CLS is that the host installation provides a level of service in each service category for a "normal" tenant. For services exceeding that common level, the tenant is required to fund those services as unique to their respective mission and therefore, chargeable to their mission accounts vice the base operations accounts of the

host installation. Examples of this "Above Common Level of Service" may be found in the "Customer/DOIM Functional Support Agreement" [Annex 7-Cost]. Similarly any base service may have both a direct financed component (host responsibility) as well as a reimbursable financed component (tenant responsibility).

The actual annual BOS reimbursable program at Fort Monmouth is approximately $13M and there is no reason to believe or rationale that realigning to Aberdeen will decrease the requirements for "Above CLS" at that order of magnitude. The proposition that post population changes and the concept of the Unit Cost Adjustment (as used in COBRA) are accepted as a sufficient algorithm for post sponsored and paid services. However, the omission of "Above CLS" cost fails the cost realism test, for the transferred population will undoubtedly perform the same mission, therefore, place toll calls and present briefings, et al, as they previously did at Fort Monmouth. Regional Support Services will still be required, even if accomplished by a different provider. These costs are not considered in the COBRA model. [Annex 7 Cost]

The DOD analysis also incorrectly handled the costs associated with the security force at Fort Monmouth. This function was converted from military performed to contract in FY 2003 and military strength and payroll dollars were taken as savings in COBRA (DOD analysis page 64, portion applicable to 8 officers and 96 enlisted @ $8.9M.) However, COBRA also takes the entire Fort Monmouth BOS costs as savings (DOD analysis pg.13) which then "double-counts" the costs for the security force. This error is corrected in the "corrected COBRA run" by reducing the BOS Non-Pay value for 2003 (COBRA uses a three year average of BOS data to signify model costs).

The last BOS adjustment pertains to the starting BOS numbers for "Non Pay" and "Pay;" incorrectly included in the DOD COBRA analysis. The Static Base Data (DOD analysis pg 48) state the BOS Non-Pay to be $93.444M and the correct BOS Non-Pay data should be $48.6M. This includes the adjustment described above for the security force.

PAYROLL: While it is recognized that DOD's COBRA model must use a standard cost factor for civilian salary, it is noted that the actual average salary for Fort Monmouth/Belvoir is approximately $20K higher than that used by DOD in its COBRA run. Accordingly, costs (and savings for that matter) based on salary value will actually be significantly greater than those produced by COBRA's algorithms.

Operational Efficiencies. DOD's arbitrary percentages for these efficiencies presumably result from collocation of C4ISR personnel at Aberdeen. Fort Belvoir's realigning lab & acquisition workforces are reduced by 5.5% and 15% respectively. No supporting rationale is provided to explain/justify either of the reductions. There are two major components of the organizations realigning from Belvoir, the Night Vision and Electronic Sensors labs and the Project Manager Night Vision/Reconnaissance Sensors & Target Acquisition of PEO IEW&S, both are subordinate elements of their parent headquarters and do not possess "duplicative" headquarters-like staff (that apparently the DOD

efficiency reductions target). Considering the continuous downsizing, rightsizing, streamlining and reshaping of the Army workforce over the last 15 years, an unsubstantiated "efficiency savings" cannot be unchallenged. Absent any definitive substantiation of the savings, they should be ignored and expunged from Scenario 0223V5 cost savings position. [Annex 7-Cost]

Correcting BOS data is significant to the calculation of recurring savings and, hence, to a proper calculation of the payback period. The payroll factor while small is also significant because it will reduce recurring savings.

COBRA DATA CONCLUSION:

- ***The DOD COBRA analysis is flawed, does not account for major cost items and overstates savings***
  - ***The cost increase above the COBRA estimated $822M is an additional $719M bringing the total cost for this move to $1,541M.***
  - ***The BOS and payroll data are in error bringing the recurring annnual savings down from $143M to $74M .***

Using corrected COBRA data the total cost of closing Fort Monmouth/Belvoir activities and moving all elements to Aberdeen, and moving the Military Academy Prep School as yields a onetime cost of $1541M with a payback period of 21 years—well beyond the original estimate of 6 years.

5.2 NON COBRA ANALYSIS

Recruitment & Training

A significant factor ignored by the Department's "terms of reference," yet applicable to Criteria 4 and 5, is the cost of replacing the workforce at the gaining installation. The omission can perhaps be wished away by focusing on the Department's use of a low percentage (25%) of personnel that will decline to relocate. The Department's standard cost model assumes that 75% of the civilian population will follow their positions. Preceding sections this report assesses previous BRAC closures and realignments and documents the number that will move to be 20% or less; a recent survey validates the historical figures (19% will chose to move). Regardless, significant hiring must occur at Aberdeen; if history repeats there will be a need to hire vast quantities (well over 3,500) of personnel and of that number 3,000+ must be highly skilled specialized technical talent.

There are extensive studies available in the body of pertinent literature that analyze and describe the cost of recruitment, training, and lost productivity when an employee must be hired to backfill the "leaver". Various models were evaluated by the Texas Center for Educational Research in an article entitled, "The Cost of Teacher Turnover", prepared for the Texas State Board for Educational Certification. Although the study was commissioned to focus on teacher turnover, the findings of the sources cited, can be applied to professionals of any discipline at every stage of their career and for every level of complexity.

William Bliss of Bliss and Associates in his study "The Business Cost and Impact of Employee Turnover" (2000) concluded that when all turnover factors are taken into account, the cost of employee turnover is at least 150% of the leaver's annual salary. The study also concludes that there is a direct correlation between the leaver's salary and the percentage applied for total turnover costs. It is understood that other elements of DoD have adapted the Bliss results in estimating their recruitment and training costs.

Several other studies/models cite similar observations and conclusions that reinforce the Bliss conclusions. N. Sorensen (1995) in her study "Measuring HR for Success" approximates that the total turnover costs based on her model are 50% of the leaver's annual salary. Sorensen includes three primary categories of expense: (1) hiring costs, (2) training costs, and (3) lost productivity costs. Hiring costs include advertising, reading applications, job fairs, and fund visits/bonuses/relocation/interviewing costs and additional expenses subsequent to hiring. Training includes orientation and formal training to gain requisite certifications plus supervisory on the job training. Lost productivity is seen as training invested in the leaver and a decline in effectiveness caused by the performance delta between the leaver and the new hire.

B. Ettore, in an article entitled "Employee Retention: Keeping the Cream" (1997) concluded that turnover costs can reach 100% of the leaver's annual salary.

J. Fitz-enz, in his study entitled, "It's Costly to Lose Good Employees" (1997), cites a Price Water-House Saratoga Institute model which estimates that the total cost of employee turnover ranges from 100 to 200% of the leaver's pay and benefits.

Several studies have been prepared by People Sense (on-line company offering management products and services); Advantage Assessment, Inc. (on-line company assisting in hiring and employee tracking; and W. Cascio, "Costing Human Resources: The Financial Impact of Behavior in Organizations" (1987). Each study uses similar parameters (recruitment, training, productivity, etc.) and applies different numerical values for each that can be utilized to develop a range of costs.

The Acquisition Review Quarterly (Spring 2000), published an article entitled "Private Sector Downsizing: Implications for DoD" by Michael L. Marshall and J. Eric Hazell that discusses the cost of employee turnover. The article provides a lengthy list of parameters which apply to replacing personnel, not the least of which are advertising

and marketing; recruitment, hiring and training; overtime to personnel taking up the slack; productivity losses; and lost training for departed workers. The article cites the Saratoga Institute study previously referenced. The Bliss conclusions are further supported by the work of Kwasha Lipton (150% of salary for exempt workers, 175% for non-exempt workers). The article concludes, "Regardless of the exact number of businesses, there is widespread agreement that turnover costs are somewhere between high and Olympian."
The COBRA model reflects an increase of just over 5,000 personnel at Aberdeen from various relocation sites at the conclusion of the base-closing exercise. After considering the elimination of spaces and transfers to and from various locations, DoD's analysis reflects a transfer of 3,879 civilians from Fort Monmouth and 767 from Fort Belvoir to APG for a total of 4,646 civilian personnel. Of this total, a maximum of 20% of employees are expected to transfer to their new location. This percentage is a reasonable application of experience data from several previous moves of a parallel nature. The remaining 80%, (3,717 employees), will have to be hired at APG. For most administrative/clerical personnel, the cost of recruitment and training will be negligible. Therefore, a pool of qualified, non-professional applicants is assumed to exist at all locations. For purposes of this analysis, 15% of the personnel are considered administrative/clerical and the remainder skilled professionals. Given the differences of the functional knowledge required to develop, acquire, test and field C4ISR systems and equipments, the professional skills domain is split into two subsets; Scientists/Engineers (SE) and Acquisition/Logistics (AL). However, as described above, the effort to recruit experienced, specialized, engineering, scientific and acquisition personnel will be substantial and drawn out. It is unlikely that the recruitment process will succeed in acquiring fully experienced C4ISR technical and acquisition personnel, therefore training will be required.

COBRA used a single salary factor for civilians of $59,959. For purposes of recruitment and training of senior and journey-person SE and AL personnel, this number is totally unrealistic and, as a result, other outlets were searched for better and more realistic cost data. The source decided upon was the Bliss study with adjustments to tailor the calculations and then results were generated for both ends of the cost spectrum. For costing purposes, the salary of a GS-14/Step 5 was chosen as representative of senior employees and for journey-person (JP) employees, GS-13 and below, the salary of a GS-12/Step 5. In all cases 28.9% is applied for cost of benefits.

High End of the Cost Spectrum.

a. Recruiting Cost Factors. The Bliss study percentage of full salary (150%) was applied for senior SEs and adjusted down for JP SEs (75%), Senior AL (100%) and JP AL (75%) positions.

b. Training Costs Factors. Training is conservatively estimated to be required for at least a three-year period. The assumption is that the newly hired SE employee will be in a training environment three months of each year for three years and

for an AL employee two months for three years. That is the time considered necessary to bring the newly hired individuals to a level where they are able to perform and contribute commensurately with the individuals they are replacing. Training costs are calculated as a percentage of full salary, by assumption - that training time is non-productive in the year of training.

c. Based on the set of assumptions above, total high end recruiting and training costs approach $400M, $214M and $185M respectively.

Low End of the Cost Spectrum.

a. Recruiting Cost Factors. Drawing on other conclusions from other studies, the Bliss study percentage of full salary was adjusted significantly downward to establish a lower bounding for the range; senior SEs - 75%, for JP SEs - 50%), senior AL - 50% and JP AL - 30% .

b. Training Costs Factors. Again training is conservatively estimated to be required for at least a three year period. The assumption is that the newly hired SE/AL employee will be in a training environment one month of each year for three years to bring the newly hired individuals to a level where they are able to perform and contribute commensurately with the individuals they are replacing. Training costs are calculated as a percentage of full salary, by assumption - that training time is non-productive in the year of training.

c. Based on the set of assumptions above, total low end recruiting and training costs slightly exceed $200M, $128M and $76M respectively.

By not considering the cost of recruitment and training for C4ISR personnel to replace those from Fort Monmouth/Belvoir, who choose not to relocate to APG, the DoD analysis has ignored costs that include lost productivity that can be estimated in a range of $200M to $400M. [Annex 7-Cost]

Clearances

As discussed earlier in this report, the C4ISR mission requires not only personnel with experience and high tech skill sets, it also demands a high percentage of the workforce to have security clearances, virtually all career positions require a Secret clearance and most of the high tech positions as well as a significant portion of the acquisition professionals must cleared Top Secret. That, coupled with the loss of personnel due to a much smaller percentage of the workforce actually transferring (discussed above) will result in a significant additional cost for securing clearances for new employees as well as supporting new contractors. We estimate this to be an additional $2.4M in additional One-Time Cost and note that this factor, given the 12 to 18 months lead time, too, will exacerbate disruption described below; the "new"

workforce will be unable to complete their responsibilities until all required clearances are granted. (Annex C -Cost]

NON COBRA CONCLUSIONS:

- ***The cost of recruiting, hiring, clearing and training, a workforce of the size required to fill the voids for the thousands or skilled people not electing to move is conservatively estimated to be $300M.***

COST CONCLUSIONS

The total COBRA and Non COBRA costs are estimated at $1.99B with a payback of over 21 years. This estimate does not even consider program disruption cost caused by program delays and inefficiencies and contractor workforce cost passed on to the government—these would make this already dismal cost to implement the BRAC recommendation even more unattractive.

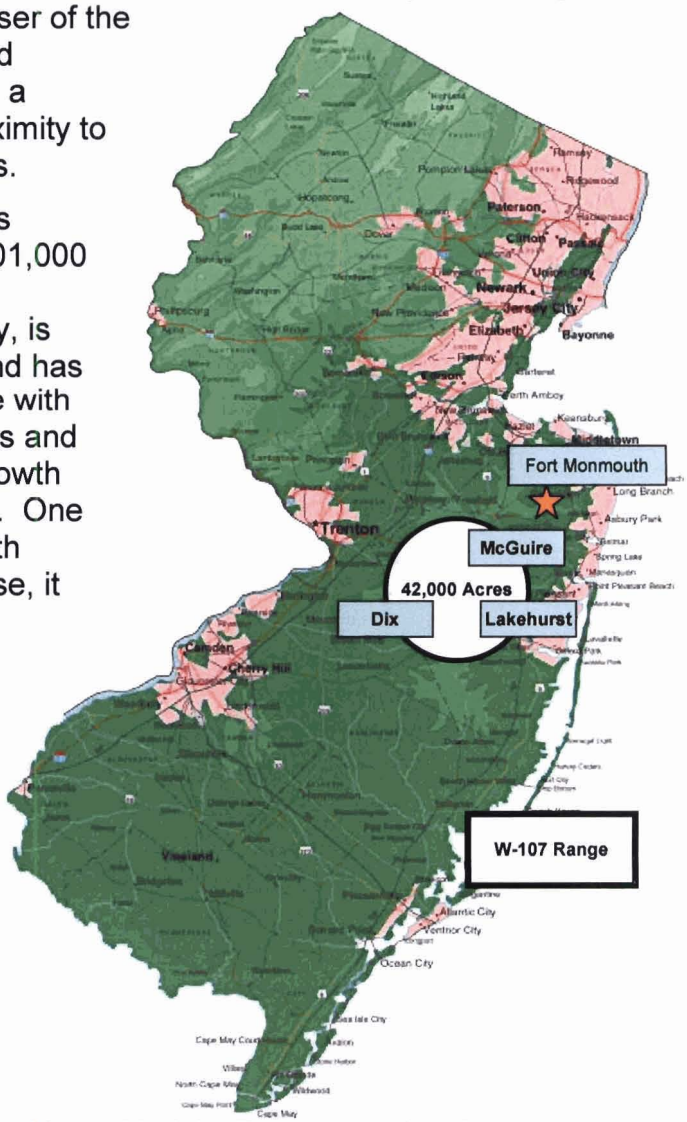
6.0 EXISTING AND JOINT OPPORTUNITY LOST: Deviation from Criteria 1

One of the major reasons for the BRAC process was to increase Joint activities. We assert that in the C4ISR area insufficient recognition was given to current Joint use opportunities using the Joint Base (Dix/McGuire/Lakehurst) nearby Fort Monmouth NJ. These experimentation activities are helping to answer many of the technical and operational issues associated with Joint operations.

Thirty miles from Fort Monmouth is a Joint Base at which the Naval Air Engineering Station Lakehurst, the Army's Fort Dix and the McGuire Air Force Base are co-located. Fort Monmouth has been using this — unique in America — Joint neighbor for development, demonstrations and experimentation in pursuing its Army and Joint C4ISR products. The synergy/connectivity of Fort Monmouth leverages the Fort Dix, McGuire Air Force Base and Lakehurst Naval Air Engineering Station facilities and test ranges. Altogether, the Joint Base has over 42,000 acres available for developmental work, experimentation, test, and training purposes. See Figure 20.

The ranges, the connectivity of the facilities and the central location in the Northeast corridor make it an ideal location for testing, prototyping, and providing operational communications that could impact the National capability to respond to a HLS/HLD or a lesser local, State, or Federal incident. While Fort Monmouth, with key technologies applicable to HLS/HLD, is a tenant and user of the Joint Base, so are several other State and Homeland Security related agencies. It is a unique facility, only enhanced by the proximity to Fort Monmouth and its C4ISR capabilities.

When one includes State managed acres surrounding the Joint Base, the total is 101,000 acres. This Joint Base concept, with one contiguous piece of Federal/DoD property, is unique within the 48 contiguous states and has built-in "*Jointness.*" The concept is in line with DoD leadership's transformation initiatives and provides a tremendous opportunity for growth potential in conducting Joint experiments. One should also note that while Fort Monmouth leverages capabilities within the Joint Base, it also uses the nearby offshore military operating area (W-107) for its own development work. When one considers the complex satellite ground station at Fort Monmouth, instrumented C4ISR ranges at Dix, high performance runways at McGuire and Lakehurst, technical ground facilities, simulation battle labs, an expeditionary air warfare center, access to combat air support



Fort Monmouth and its Fort Belvoir C4ISR Elements

Figure 20: Joint Experimentation Already in Place

gunnery ranges in nearby the USAF's Warren Grove range, and access to naval and supersonic aircraft operations in the nearby W-107 offshore operating area, one has all the ingredients for comprehensive sea, air, space and land Joint experiments. This confluence of Joint capability and "maneuver space" is not available elsewhere.

Admiral Harold W. Gehman, Jr. USN (Retired) in Defense Horizons December 2004 wrote: "A sound joint experimentation program plays a crucial role in making genuine progress toward the goal of force transformation. A clear understanding of the scope and concept of transformation and joint experimentation is essential to useful discourse" ....."For the purposes of this discussion, we can accept that Joint refers not only to operations involving two or more services, but also to military activities that are uniquely joint. Just as services have experimentation and transformation imperatives, so should the joint work. Just as there are joint forces and joint operations, there should be joint experimentation" ..... "The joint experimentation program can be driven by those things we presently do but need to do better and by a requirement to prepare for future capabilities we can only imagine. The United States has an enormous advantage in having all the ingredients necessary to operate a truly effective joint program of experimentation. The question is, will it?"

With the leadership of Fort Monmouth, significant joint experiments have been conducted, are scheduled and can be expanded to provide meaningful opportunities to link Army ground units (current and future) with other Joint activities and headquarters. The facilities are in place in central New Jersey; the external high bandwidth connectivity is in place; the infrastructure is in place; technical personnel are available; and a quantifiable repeatable process has been established. This is an opportunity that the DOD BRAC process did not examine or mention. The current DOD BRAC recommendation would remove Army C4ISR from this Joint opportunity and move to a locale where no Joint opportunity or future promise exists. BRAC Commissioners should strongly consider this capability to comply with a top BRAC selection criterion.

FACILITIES IN PLACE: Figure 21 shows the Joint Infrastructure already has been put in place at a considerable cost. It includes high bandwidth connectivity to outside DOD elements to support Joint virtual experiments. All the connections are high speed, high bandwidth connections that permit classified and unclassified connections. These field connections are also connected to the Fort Monmouth laboratories allowing lab and field experiments to be conducted. Central communications control is at Fort Monmouth, which establishes the connectivity to JFCOM; the Boeing/FCS; US Army TRADOC Battlelabs; and others.

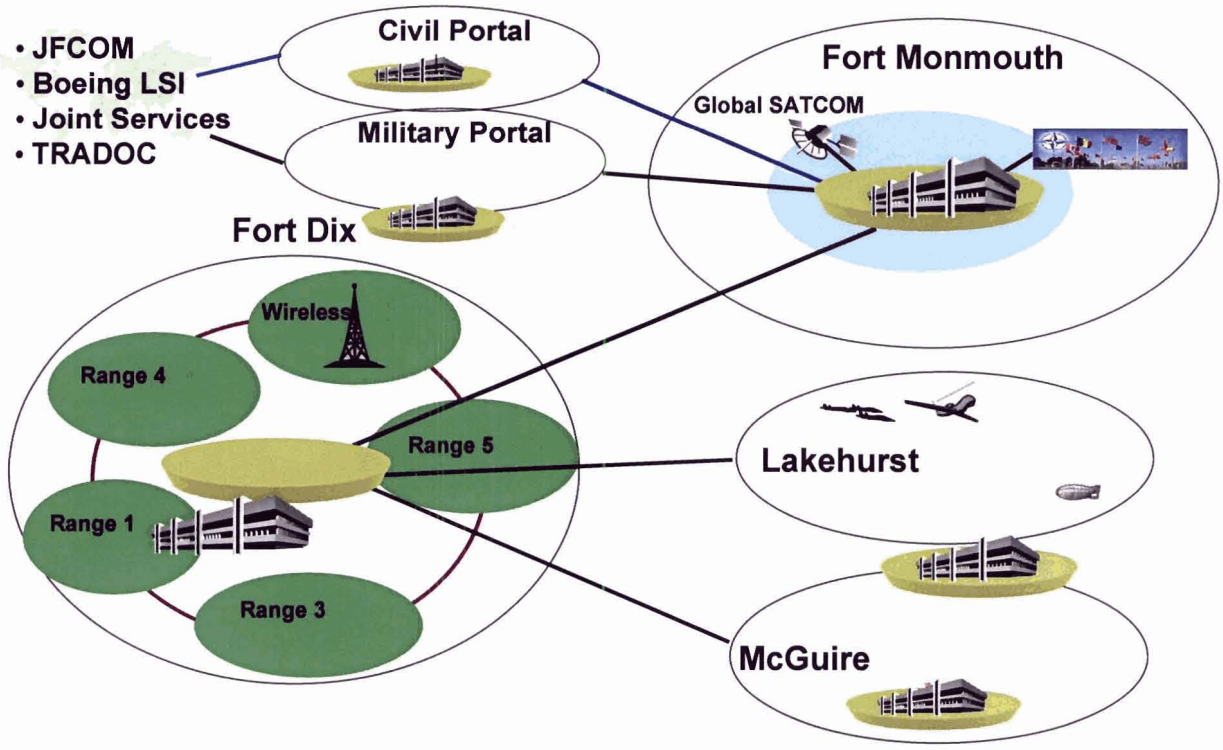


Figure 21: Fort Monmouth and Joint Base Connectivity

The Lakehurst facility "houses" the experimental aircraft; this includes rotary wing aircraft; fixed wing aircraft; UAVs; and aerostats. This facility allows:

- 24/7 airfield operation capability (VFR/IFR)
- Low altitude/high altitude—day/night Night Vision flight testing
- UAV flight testing
- Blimp/aerostat R&D operations
- C-130 modification support
- Aviation support for units mobilizing at Fort Dix.
- Aviation support of C4ISR testbed
- Modifications and test flights for HH-60L and UH-60L fielding

- Jet Tracks for AH-64 laser testing
- Ramp area of 1,400,00 square feet
- Hangar space of 240,000 square feet with 33,000 square feet of office space
- Large secure remote test areas of Air/Ground communications projects

In addition, the Army has a GUARDRAIL Signals Intelligence system (aircraft and sensors) at Lakehurst to develop upgrades and/or software/hardware improvements to the fielded systems. The GUARDRAIL test profiles are typically flown in the military operating area W-107's nearby unrestricted airspace. These profiles are flown at 25,000 feet to a max range of 120 NM unobstructed.

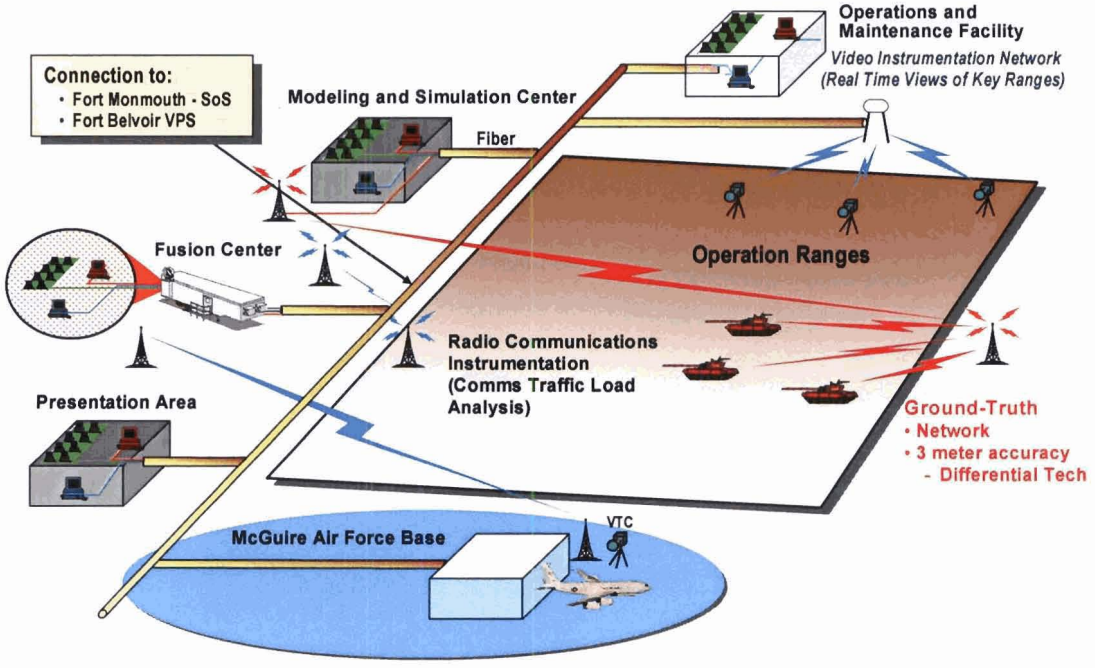


Figure 22: Fort Dix Infrastructure

When comparing the comprehensive New Jersey capability to the Aberdeen aviation ground support and flight profile capabilities, one concludes that BRAC MILCON costs are significantly (more than $30M) understated. More importantly, the Aberdeen airspace restrictions will severely limit R&D testing.

The Fort Dix C4ISR facilities are shown in Figure 22.

The Joint Base facilities and their instrumented ranges permit data collection and analysis and have been utilized in conjunction with: Army Test and Evaluation Command; Reserve Units; "TRADOC Future;" USAF C4ISR programs from Hanscom AFB, to name a few. Ongoing and planned upgrades to the facilities include:

- Creation of a new modeling and simulation facility.

- Improved presentation and control center
- Extended High-speed access for external agencies to Fort Dix
- Upgrading networking between Fort Dix and Lakehurst NAES
- Collaboration with Fort Dix to instrument a newly funded Military Operations in Urban Terrain (MOUT) facility

JOINT AND ARMY EXPERIMENTS CONDUCTED:

Figure 23 shows the experiments conducted to date—most are Joint and are focused on providing critical answers to both technical and operation issues that characterize connecting the land force unit with other Joint units, Joint headquarters or Joint/National sources of intelligence information.

The C4ISR On-The-Move STO "JINEX 04" Capstone experiment was conducted with two primary objectives. The first objective was the exploration of precision targeting of moving targets. This exploration leveraged Air Force JSTARS radar and an Army-organic Moving Target Indicator radar to collaboratively fix and track a moving enemy. The resulting precise targeting information was fed to a Joint weapons-target pairing process for the purpose of engaging the target with cross-service indirect fire with minimal latency. The second objective focused on enabling interoperability between the modernized Air Force Tactical Air Control Party Close Air Support System and current Army Battle Command Systems.

As part of its ongoing mission, the CERDEC On-The-Move Testbed conducts experimentation in support of Tech Base programs' testing and exit criteria validation. These experiments provide an integrated system of systems venue that enables participating programs to be exercised in a relevant environment. This integrated

ACTIVITY	STAKEHOLDER / MANDATE
C4ISR On-The-Move STO "JINEX 04" Capstone	**PM FCS** - FCS risk reduction via system-of-systems discovery experimentation
CERDEC Tech Base SoS Testing & Exit Criteria - RDECOM	**ASAALT** - Facilitate CERDEC STO exit criteria requirements. Provide facility & service resource for related DoD programs.
JEFX (Air Force)	**Air Force** (ESC Hanscom) - Support PM FCS participation via engineering, GIC support and material
JRAE (Navy)	**Navy SPAWAR** - Joint initiative to explore horizontal interoperability across the Services' next generation tactical architectures i.e., with PEO C3T)
DevEx '04 Events (UAMBL)	**UAMBL** – Spt. human-in-loop, virtual/constructive sims. to C4ISR functions for leaders at all levels.
DCEE (Joint)	**JFCOM** - Establish permanent network lab capable of continuously conducting events focused on military transformation through live or virtual exp.
Air Assault Expeditionary Force (AAEF)	**TRADOC Futures Center** - Selecting, vetting and using "FCS-like" C4ISR into current forces

Figure 23: Joint and Army Experiments Conducted to Date

system of systems has been extended to Joint planning, fires, and situational awareness.

The CERDEC On-The-Move Testbed has supported the Army's participation in the Air Force Joint Expeditionary Force Exercise. The Testbed has provided surrogate combat vehicles equipped with a complement of C4ISR capabilities that were exercised in Joint operational mission threads. The completion of these operational threads provided key insights into the future integration and interoperability of the Army Future Combat System program in a Joint environment.

In 2004, The CERDEC On-The-Move Testbed began C4ISR explorations with the Navy. These initial efforts were made in conjunction with Navy SPAWAR during their JRAE experiment. The Testbed leveraged its growing expertise in the area of Joint fires and relationship with the Army PEO C3T to facilitate the exploration of the horizontal integration necessary to conduct Joint targeting and fires using the emerging C4ISR architectures of the Air Force, Navy, and Army.

An additional milestone activity was completed in 2004. During 2004, the Testbed worked closely with Joint Forces Command to become a member of their Distributed Continuous Experiment Environment (DCEE). This integration enabled the Testbed to participate as a headquarters element in a distributed Joint experiment and to exchange situational awareness information.

In a major undertaking, the CERDEC C4ISR On-The-Move Testbed was selected as the Lead Technical Integrator (LTI) for the Army TRADOC Air Assault Expeditionary Force study and experiment. As the LTI for this experiment, the Testbed completed the integration of an Infantry Platoon with a full complement of C4ISR capabilities. This platoon became the focus of an experiment to determine the impact of advanced C4ISR capabilities on the lethality and survivability of that platoon operating in a Joint environment.

In addition to those sampled above, the following experiments are planned:

- Hosting an Air Force Tactical Air Command Post Close Air Support System as part of the Army' Warfighter Information Network Tactical.
- Target mensuration using UAVs.
- Airborne/Space Communications for Range Extension.
- Air mobility operations from McGuire for Advanced Airborne Expeditionary Force.
- Integrate the FCS C4ISR capability into JEFX 06.
- Conducting FCS Experiment 1.1.
- HLS/HLD experimentation.

CONCLUSIONS:

- A networked facility exists and provides significant capability for increased Joint Experimentation. *Infrastructure exists and considerable investment has already been made.*

FORT MONMOUTH

- Instrumentation and data analysis capability exists and permits quantifiable data on experiment metrics. *Skilled personnel exist to establish, structure experiments, and provide meaningful data.*
- Lakehurst "aircraft" capabilities are extensive, on the ground and in terms of airspace, and are an integral part of any Joint experiment. UAV, aerostats, helicopters and high performance aircraft can be part of any Joint experiment.
- High bandwidth connections to JFCOM exist and the Testbed is already integrated as a remote, distributed node of the Distributive Continuous Experimentation Environment (DCEE). *An opportunity exists for increased interaction between the testbed and JFCOM.*
- The Testbed participated as a remote site, in the JFCOM Command Collaborative Information Environment (CIE) Limited Objective Experiment (LOE), demonstrating the capability of short-fused integration of distributive nodes into the CIE.

Joint Experimentation is currently being conducted by Fort Monmouth in conjunction with the nearby Joint Base Dix /Lakehurst/McGuire; more is planned. Combining Joint operational facilities with nearby laboratories, with ranges, with air and sea space, with satellite access, creates an environment rich for expanded JFCOM sponsored experiments. Current facilities at Aberdeen are not able to duplicate this capability. The Army and BRAC do not mention duplicating this capability. Even if a duplicative investment is made, Aberdeen is still unable to overcome its airspace and other maneuver space limitations and the absence of Joint opportunity.

7.0 MANEUVER AND AIRSPACE WAS NOT CONSIDERED BY THE BRAC RECOMMENDATION—Deviation from Criteria 2

The Joint Base of Fort Dix, Lakehurst Naval Air Engineering Station, and McGuire AFB (DLM) offers considerably better maneuver and airspace than Aberdeen plus an opportunity for Joint Experimentation that doesn't exist at Aberdeen.

Fort Dix consists of 31,065 acres of land, of which 13,765 acres are range and impact areas and 14,000 are classified as a contiguous maneuver area. The remainder of the installation is the cantonment area. Fort Dix training areas are bordered by the Lebanon State Forest (26,000 acres), Lakehurst Naval Air Engineering Center (2,100 acres) and selected Wildlife Management Areas (34,900 acres) which enable this installation to simultaneously support combat, combat support, and combat service support training. Fort Dix has mobilized more Reserve troops than any other Army base in the nation. It has almost 60,000 acres of state forests, and is surrounded by another 35,000 acres of preserved farmland. Another 20,000 acres in farmland is targeted for preservation. Fort Dix has mobilized more than 23,000 troops for Operation Iraqi Freedom, operation Noble Eagle and the post typically has more than 2000 reserve troops in the mobilization process.

Lakehurst presents a unique opportunity to utilize an aviation R&D capability central to any R&D experimentation. Its West Field facility has no restrictions on hours of operations. The airfield is used for both fixed wing and rotary wing operation for: Navy; Air Force; Army; Army Reserve; and Department of Justice.

The Lakehurst facility "houses" the experimental aircraft which includes: rotary wing aircraft; fixed wing aircraft; UAVs; and Aerostats. This facility allows:

- 24/7 airfield operation capability (VFR/IFR)
- Low altitude/high altitude—day/night Night Vision flight testing
- UAV flight testing
- Blimp R&D operations
- C-130 modification support
- Aviation maintenance support for mobilization efforts at Fort Dix
- Aviation support of C4ISR testbed
- Modifications and test flights for HH-60L and UH-60L fielding
- C-12 airframe which houses the GUARDRAIL Joint Theater/Army surveillance system
- Jet Tracks for AH-64 laser testing
- Ramp area of 1,400,00 square feet
- Hangar space of 240,000 square feet with 33,000 square feet of office space
- Large secure remote test areas of Air/Ground communications projects

McGuire AFB is the home of the 305th Air Mobility Wing and several tenant organizations including the 21st Air Force and the Air Mobility Warfare Center (actually located at the adjacent Fort Dix). Supporting "home-based" new transformational strategic-tactical lift C-17 aircraft, KC-10 Extenders, and KC-135 Strato-tankers, McGuire missions support the transportation of troops, passengers, equipment and cargo, and provides aerial refueling throughout the world. McGuire AFB has been utilized for Joint Experimentation with Fort Monmouth and has hosted Tactical Air Command Post (TACP) and experimental Air Space Command and Control platforms from Hanscom AFB.

When comparing Aberdeen capabilities with the maneuver space and air space capabilities of the nearby DLM Joint Bases, one finds considerable limitations that were not mentioned or considered in BRAC deliberations:

- Inadequate airspace for R&D Testing and experimentation.
- Poor maneuver testing driven by the absence of troops.
- Lack of C4ISR range instrumentation or specialized connectivity.
- Airfield capabilities that are considerably less capable than DLM.
- No dedicated sea and air military operating areas like W-107 nearby off the coast of NJ.

CONCLUSIONS:

- *BRAC Criteria 2 directs consideration be given to airspace and maneuver for ground, naval and air forces. Scenarios leading up to the BRAC recommendation and the BRAC recommendation itself do not consider the ground maneuver space at Fort Dix, better maneuver space than Aberdeen because it is instrumented for C4ISR events. It does not consider airspace available over the DLM Joint Base or the nearby air and sea space in military warning area, W-107. It does not consider the highly restricted nature of airspace in and around Aberdeen. It does not consider the restricted sea space in the northern reaches of Chesapeake Bay.*
- *Scenarios seemed simply to assume that because vehicle and ordnance are tested at Aberdeen, that it would be a better maneuver space than the Fort Monmouth access to the DLM Joint Base. Further, the Aberdeen recommendation never discusses Joint maneuver space, because it is not possible there. Finally, the DLM Joint Base is nearly equal in size to the usable maneuver space at Aberdeen. The second highest priority selection criteria was ignored.*

8.0 OTHER CONCERNS

8.1 HOMELAND SECURITY/DEFENSE

DOD policy directed that effects on homeland defense and support for civil operations be considered in BRAC recommendations, including sharing of technology. BRAC information that was released does not discuss sharing technology that will support civil operations in the case of Fort Monmouth. This is strange in view of its close proximity to the "911 Commission's" top priority (New York City), Congressional testimony referring to Fort Monmouth by "911 Commissioner" Lehman on 3 August 2004, and an April 19, 2004 National Research Council report cited the Army's C4ISR technology as most relevant to critical homeland security interoperability needs.

Immediately following 911 and the collapse of World Trade Center towers, Fort Monmouth personnel were deployed to Ground Zero providing equipment and technical support to the 22 Federal agencies mobilized at the scene. Equipment included thermal cameras to search for survivors within the rubble pile, radio frequency surveillance equipment to locate victim cell phones, and LASER Doppler vibrometers to help assess the stability of buildings in the area in which relief workers were situated. In addition, Fort Monmouth coordinated aircraft fly-overs using sensitive EO/IR and spectral measuring equipment to make digital maps of the site to assist first responders in locating gas leaks and to detect burning hot spots beneath the rubble pile. Because of its expertise, Fort Monmouth has evolved into the "C4ISR Expert" for the Tactical Force and has a proven record of providing information superiority to the Warfighter and, by extension, is well suited to leverage its capabilities in defense of the Homeland.

Due to its central location within the state of New Jersey and its ability to offer both limited access and secure facilities, Fort Monmouth was selected to serve as Continuity of Operations (COOP) facilities for FEMA Region II and the Army Corps of Engineers, North Atlantic Division. The FEMA Region II COOP has been activated a number of times, most notably in support of the August 2003 NY City Blackout and during multiple regional floods. In April 05 Top Official (TOPOFF) 03 was conducted in **New Jersey and Connecticut simulating a biological attack and a chemical attack in each state respectively.** During the same timeframe, 1st Army established its Joint Task Force for Consequence Management (JTF CM) at Fort Monmouth to support US Northern Command (NORTHCOM) for the TOPOFF and the Ardent Sentry exercises.

Fort Monmouth's critical location in the heart of the Northeast Metropolitan region, with its extensive communications infrastructure, is the logical choice when selecting a staging area for both exercises and real-world Homeland Security mobilizations that support local, state and Federal First Responders.

Specifically, Fort Monmouth/Belvoir C4ISR team is engaged in the following:

- For the Port Authority of NY/NJ – Developing prototype information sharing network and Radiological Surveillance system consisting of C2, Situational Awareness, radiological sensor networks, and video assets. This effort will ensure that the critical assets of Pennsylvania, New York, and New Jersey are protected as well as the millions of citizens that it serves. *Leveraging dual-use C4ISR and radiological technologies is the key to the success of this GWOT effort.*
- For the National Guard Bureau (NGB) – NGB is finalizing Fort Monmouth's role as system engineer for the Joint Contingency Communications Support Environment (JCCSE) to ensure that this critical capability is effectively utilized by the NGB. *The C4ISR testbed assets of both at Fort Monmouth and Fort Dix will be leveraged to test/develop this critical system.*
- For the State of NJ – Fort Monmouth is developing/ transitioning intrusion detection systems and technology to protect the State's critical infrastructure and the systems involved in meeting the needs of the State and its citizens. Steps to secure the State's critical networks and databases against terrorist attacks/compromise include surveys of networks and critical information assets as well as the development/transition of dual-use host intrusion, network intrusion, and security management technology. *Fort Monmouth has been designated by the Governor, by Executive Order, as the New Jersey Homeland Security Technology Systems Center. Further, the State has indicated that Fort Monmouth will be its site for its emergency medical stockpile. One must note that in case of NY-NJ disaster, Fort Monmouth is the most accessible, secure facility for establishing command headquarters and dealing with injured and evacuees.*
- For the NYC Dept. of Environmental Protection – Fort Monmouth, in partnership with the Army Corps of Engineers, is providing an Electronic Security System (ESS) to protect the vast NYC water supply infrastructure that is key to meeting the basic water needs of 8 million citizens. A broadband communications system is being developed to support communications by First Responders and waterways security system operations personnel.
- For the NYC Dept. of Transportation – Fort Monmouth, in partnership with the Corps of Engineers, is protecting several of the bridges in NYC by developing design criteria and C4ISR systems implementations for an electronic security system to counter threats/vulnerabilities to this critical infrastructure. In partnership with FEMA, NYPD, NYFD, USACOE, and DOT, C4ISR/IT technology (IP network switches, video servers, and special sensors) will be deployed by Fort Monmouth to ensure the safety of NY's bridges and to allow their safe use by the citizens of NY.
- For the City of New York – The CIO of NYC has asked Fort Monmouth to provide assistance in their Citywide Mobile Wireless Network project. This project will provide critical data and voice communications for first responders, vehicle location, and modernization of both police call boxes and the traffic control system throughout the five boroughs of NYC. Expertise from the Fort Monmouth community will be provided in the areas of Radio Frequency (RF) communications,

networking, information security, and applications. The expertise is being provided during the critical evaluation phase of down-selecting from two vendors during live pilot demonstrations in NYC with expertise to continue during deployment of the selected systems.

- For City University of New York – The CIO of the City University of New York (CUNY) has asked Fort Monmouth to provide assistance securing the records and transactions processed by the CUNY Data Center. The center supports CUNY's 19 colleges and over 100 research centers with a student population in excess of 208,000 in both degree programs and continuing education. Intrusion Detection System (IDS) experts are assisting CUNY to design a security architecture, down select a vendor, and validate IDS deployment.
- For OSD/RDECOM – Fort Monmouth is serving as the technology transition advisor to ensure that the (dual use) technologies developed for the Warfighter that are applicable to HLS/HLD needs are being identified and leveraged for the emergency responders.

CONCLUSIONS:

- *Fort Monmouth is engaged in a broad range of Homeland Security/Homeland Defense (HLS/HLD) efforts. Many of the same technologies and System Engineering skills utilized for the Warfighter are now finding "dual-use" in protecting our most critical domestic national assets and in making the American public safer. This is all part of Team C4ISR's expanded contributions to the Global War on Terror (GWOT).*
- *Fort Monmouth plays a pivotal role in helping the various federal, state, local and private agencies achieve the goal of a common infrastructure through the development of a common architecture for telecommunications, voice and data systems that will allow various HLS/HLD systems to be interoperable and to interact more effectively and efficiently. Because all the separate systems must function as a single integrated environment, the development of an HLS/HLD communications/information environment must be seen as an inherently governmental function. Unfortunately, the private, state, local and federal agencies that make up the Homeland Security/Homeland Defense apparatus have developed, or are developing, independent information system initiatives. The varying agencies which make up this apparatus also employ differing acquisition strategies and life cycle support methodologies. The result is a disjointed collection of systems that may work well in isolation, but which function poorly, when needed, as a regional or national enterprise. Likewise, there are no strategies or mechanisms in place that might allow these agencies or organizations to move toward a more unified or "common" infrastructure, (i.e., a shared set of equipment, software and interoperable processes). In the absence of an Executive Agent, Fort Monmouth has taken the lead in an effort to bring about a single unified environment.*
- *The State of New Jersey offers a number of strategic advantages, including a large base of experienced scientists and engineers and a geographic location*

which sits astride every critical infrastructure in the Northeastern United States. New Jersey also plays a key role in both the domestic and international economy. New Jersey possesses a number of unique State and regional facilities and installations, as well as a number of civilian institutions of higher learning that are involved in research related to HLS/HLD. A number of local agencies, such as the Port Authority of New York & New Jersey, have served in the "real world" role of crisis response & consequence management.

- *Because of its close proximity to New York, Fort Monmouth is well positioned to act as a bridge between the private and public sector. This relationship is absolutely essential for addressing the complex issues that must be considered in the totality of a single integrated system rather than isolated domains. Infrastructures must be based on real data about the nature of vulnerabilities, the evolving reliability challenges, and the real-world, real-time environment in which information networks operate. Cost, performance, and reliability objectives must all be balanced through an engineering process of analysis and informed tradeoffs in order to build effective systems. Applying its system engineering talent and dual-use technologies on critical nation issues such as HLS/HLD is a workforce "force multiplier". If Fort Monmouth is closed or realigned, it will be a significant detriment to HLS/HLD initiatives that are in their infancy, but which provide promise of great rewards to the nation as a whole.*

"9/11 Commissioner" Lehman specifically called out Fort Monmouth in Congressional testimony, citing the Fort's skill in communications interoperability, but also its proximity to critical homeland security responders in New York. Further, the National Research Council cited the Army's Fort Monmouth experience and capability in "Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) to be most relevant to the needs of homeland security organizations."

8.2 DEMOGRAPHIC INACCURACIES

BRAC miscalculated medical services per patient ratios for the Monmouth/Ocean counties area, when it inaccurately used an 11 million population for the Monmouth/Ocean area. Monmouth/Ocean has better health access than the Aberdeen (Harford/Cecil) area. Annual medical premiums in NJ are only $200/year more than MD.

In addition to the miscalculation, we offer the following for consideration: (New Jersey Commerce Economic Growth & Tourism Commission: Fort Monmouth Analysis Report, New Jersey/Maryland Comparison). Extracts from that report, as provided in the following pages, show that:

- The Monmouth County region offers a larger, more highly skilled and educated workforce than Harford/Cecil County MD.

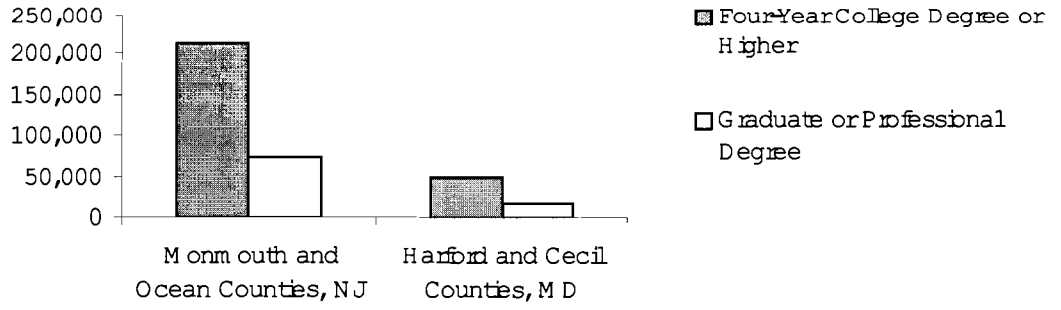
- The Monmouth County region is home to more than three times the number of people with professional and technical services backgrounds than Harford/Cecil County. (A smaller pool of qualified workers in Maryland will drive up labor costs more than expected by BRAC)
- The Monmouth County region features access to more than 19,000 business establishments versus Harford/Cecil County, which offers approximately 4,800.
- The Monmouth County region is home to six times the number of "information" and almost five times the number of "Professional and Technical Services" establishments than Harford/Cecil County MD.

The following charts are Source: United States Census Bureau, 2000 Decennial Census

Figures 24 and 25 compare the number of individuals with a college or advanced degrees and the number of civilians employed in selected industries and occupations within the two counties surrounding Fort Monmouth and Aberdeen Proving Ground. Figures 26 and 27 expand the comparison to include the number and density of specialized and technical firms located in those same counties. Figure 28 compares the number of new hires in specialized industries in those same counties during 2003-2004.

Figure 24. Number of Individuals Aged 25 and Older with a Four-Year Degree in Counties Surrounding Bases

	Monmouth and Ocean Counties, NJ	Harford and Cecil Counties, MD
Four-Year College Degree or Higher	212,677	48,224
Graduate or Professional Degree	74,583	16,672

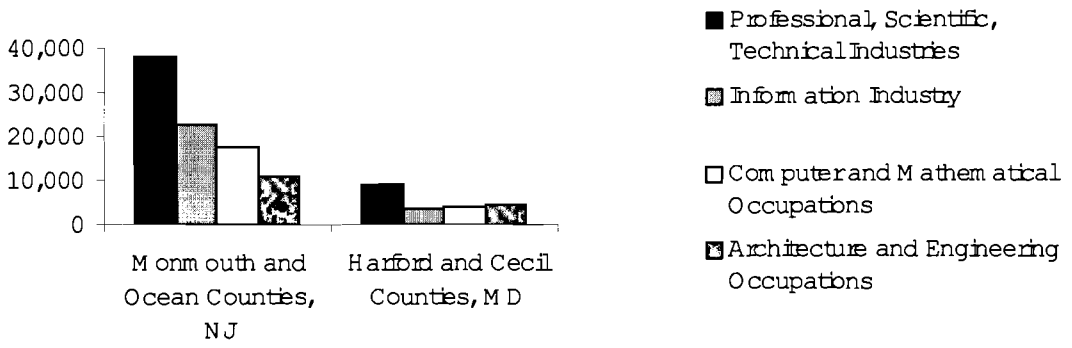


Source: United States Census Bureau, 2002 Economic Census

Figure 25. Employed Civilian Population (16 Years and Over) in Specialized Industries and Occupations in Counties Surrounding Bases

	Monmouth and Ocean Counties, NJ	Harford and Cecil Counties, MD

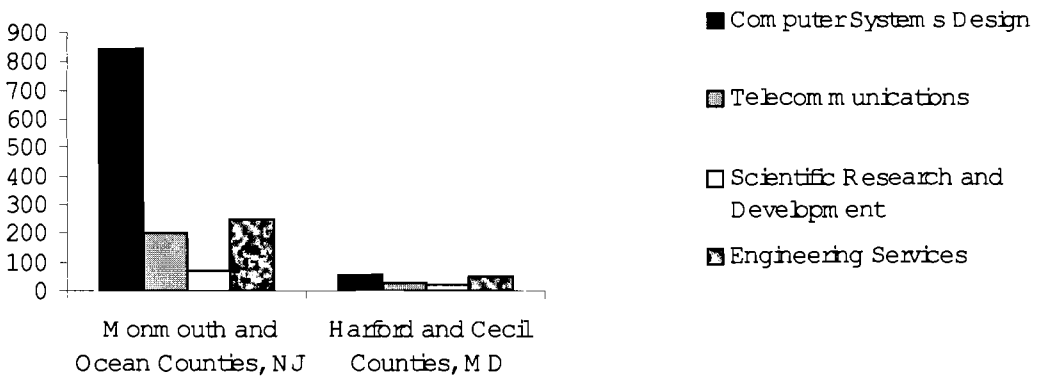
Professional, Scientific, Technical Industries	38,126	9,125
Information Industry	22,524	3,582
Computer and Mathematical Occupations	17,504	3,911
Architecture and Engineering Occupations	10,981	4,472



Source: United States Census Bureau, 2002 Economic Census

Figure 26. Total Number of Specialized Firms in Counties Surrounding Bases

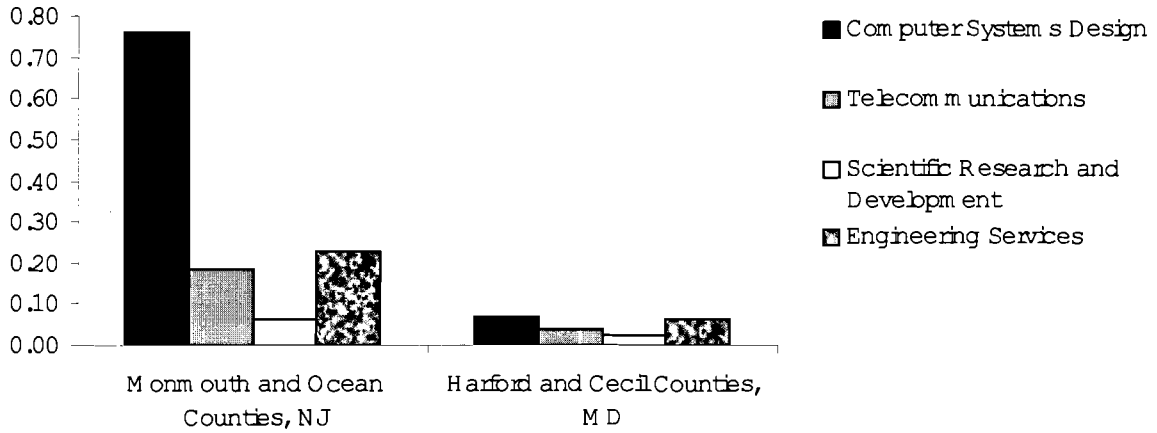
	Monmouth and Ocean Counties, NJ	Harford and Cecil Counties, MD
Computer Systems Design	841	55
Telecommunications	205	31
Scientific Research and Development	68	19
Engineering Services	251	50



Source: United States Census Bureau, 2002 Economic Census

Figure 27. Density of Specialized Firms in Counties Surrounding Bases (per square mile)

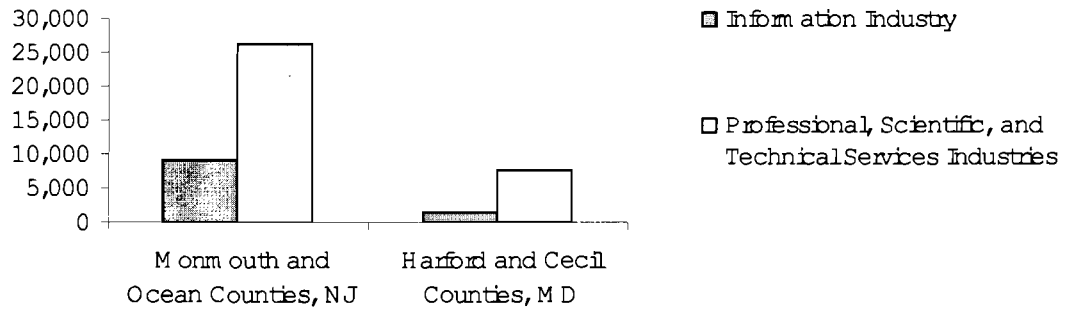
	Monmouth and Ocean Counties, NJ	Harford and Cecil Counties, MD
Computer Systems Design	0.76	0.07
Telecommunications	0.19	0.04
Scientific Research and Development	0.06	0.02
Engineering Services	0.23	0.06



Source: United States Census Bureau, 2002 Economic Census

Figure 28. Number of New Hires in Specialized Industries in the Counties Surrounding Bases, 2003-2004

	Monmouth and Ocean Counties, NJ	Harford and Cecil Counties, MD
Information Industry	9,185	1,330
Professional, Scientific, and Technical Services Industries	26,157	7,735



Source: United States Census Bureau, 2005 Longitudinal Employer-Household Dynamics

8.3 FEDERAL TENANTS NOT CONSIDERED

The cost savings or return on investment from the proposed closure or realignment of military installations shall take into account the effect of the proposed closure or realignment on the costs of any other activity of the Department of Defense or any other Federal agency that may be required to assume responsibility for activities at the military installations. *Non-DOD tenants at Fort Monmouth were not noted in written decisions. Correctly, costs associated with Non-DOD tenants were not included.*

The presence on Fort Monmouth of the Veterans Administration Health Facility, which handles over 10,000 patient visits annually, is not addressed. The report also overlooked the presence of the Department of Homeland Security Continuity of Operations Point, (FEMA Region II and the Northeast Region Corps of Engineers), the FBI's Northeast Regional Data Center. How the increased costs to these agencies caused by the closure of Fort Monmouth were taken into account in accordance with Section 2913 (e) of the BRAC Statute are unclear.

8.5 INCONSISTENT PHILOSPHIES BETWEEN RECOMMENDATIONS FOR ARMY C4ISR CENTER AND RECOMMENDATIONS FOR NAVY AND USAF C4ISR CENTERS

The Army seemed worried about the dedicated use of a base for the C4ISR function; Navy and the USAF were not; they retain their dedicated C4ISR-use bases. Both Navy and USAF were more worried about workforce stability, access to high tech partners outside the gate, and avoiding C4ISR program disruption.

Neither the Navy nor USAF considered sending its C4ISR center of mass centers to unrelated centers with no C4ISR capability to satisfy a base operations business theory.

8.6 T-JCSG OMISSION OF DISCUSSION OF LAND C4ISR IN REPORT

Despite months of scenarios, military value/judgment "calculations," briefings and recommendations to higher committees, in the end, the T-JCSG chose not to explain the rationale for re-creating the Land C4ISR center at Aberdeen in the BRAC Volume XII report or in the briefing to the BRAC Commissioners on 1 June 2005. Perhaps it was because it had followed such a serpentine course in its philosophies and scenarios, perhaps because it discovered a 16 year payback period discrepancy with the Army in the month before the final BRAC decision. One can only speculate that such effort goes unexplained in Volume XII is suspicious.

9.0 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

- *The BRAC recommendation substantially deviated from selection criteria and the recommendation to close Fort Monmouth and move its C4ISR efforts along with its subordinate activities at Fort Belvoir to Aberdeen Proving Ground (APG) is flawed. The resultant loss of intellectual capital and disruption to major programs supporting the Warfighter now and in the future is an unacceptable risk to capabilities that are central to the Army and Joint C4ISR.*
- In the BRAC Military Value (MV) analysis, the capabilities described in the report for Fort Monmouth/Belvoir received top scores but were "weighted" as less important and therefore not given adequate emphasis in many BRAC scenarios. MV should be judged, at least equally, on rapidly providing technology and systems to the Warfighter, and on basic and applied research that still requires considerable time to mature. Bottom-line: Fort Monmouth's MV technical score, in its prime mission areas, was unequalled within in the Army.
- The loss of a highly skilled workforce of this quality and quantity has never been experienced in DoD and is unique in BRAC 2005. To displace over 5000 government personnel plus approximately 4000 contractor support personnel to a location without C4ISR foundation and without a C4ISR skilled workforce to absorb some of the losses will mean unacceptable disruption and will take at least a decade to overcome.
- *Considering the magnitude of the programs being executed by Fort Monmouth and its Fort Belvoir components and the absence of any C4ISR capability at Aberdeen, it is inconceivable that the Army did not calculate or mention the tremendous impact a move of this magnitude will have on our current and future C4ISR needs and, hence, our Warfighter capability. This information, inexplicably, did not impact the Military Value and Military Judgment considerations or the cost considerations in the BRAC recommendation.*
- *The type of work done at Fort Monmouth/Belvoir requires years of experience and "greening" of the workforce to understand the needs of the Army and now the Joint Warfighter. It is not just a matter of replacing an engineer with a new hire out of some university. It takes roughly 10-15 years for an engineer/scientist to progress to a mid level manager and 20 years to a senior manager. It is those mid level and senior mangers that will not move and cannot be replaced simply by a new hire. "Greening" a replacement workforce will take over 10 years at least and that's an intangible that hasn't been adequately considered by BRAC process.*
- *The majority of the workforce especially, the most experienced, will not move and if forced to a decision would go to industry or to another more attractive government location. A recent, independent poll of the workforce and real statistics from previous moves indicate less than 20% will move.*

- *The BRAC recommendation did not co-locate R (Adelphi) with D&A. There is no relevant or sizeable R or D&A at Aberdeen. Moving Fort Monmouth to Aberdeen and Fort Belvoir to Aberdeen does not achieve RDA integration. It simply moves Fort Monmouth/Belvoir RD&A to a new place at nearly a $1B cost. The end result of the BRAC recommendation is to move the bulk of the people doing C4ISR work and currently integrating technology, development, production, fielding, and sustainment to a location which has no C4ISR capability and infrastructure; at* ***Considerable Expense.***
- *The integration of C4ISR RDA with T&E was never considered by the T-JCSG and was added by the Army to make a poor recommendation more palatable. The T-JCSG did consider integration of RDA with T&E but only in the areas of "platforms."*
- *The expected —but unanalyzed in BRAC — losses to the workforce will manifest itself in critical disruptions during the key program years, FY2007-2011. A sample of just four programs conservatively estimates cost implications of well over $1B in those years for those programs alone.*
- Fort Monmouth has conducted significant joint experiments; more are scheduled and can be expanded to provide meaningful opportunities to link Army ground units (current and future) with other Joint activities and headquarters. This is an opportunity that the DOD BRAC process did not examine or mention. The current DOD BRAC recommendation would remove Army C4ISR from this Joint opportunity and move to a locale where no Joint opportunity or future promise exists. BRAC Commissioners should strongly consider this capability to comply with a top BRAC selection criterion.
- *DOD policy directed that effects on homeland defense and support for civil operations be considered in BRAC recommendations, including sharing of technology. BRAC Records that were released do not discuss sharing technology that will support civil operations in the case of Fort Monmouth. This is strange in view of its close proximity to the "911 Commission's" top priority (New York City), Congressional testimony referring to Fort Monmouth by a "911 Commissioner" in 2004, and a 2004 National Research Council report which cited the Army's C4ISR technology as most relevant to critical homeland security interoperability needs.*
- *BRAC Criterion 2 directs consideration be given to airspace and maneuver for ground, naval and air forces. Scenarios leading up to the BRAC recommendation and the BRAC recommendation itself do not consider the ground maneuver space at Fort Dix; better maneuver space than Aberdeen because it is instrumented for C4ISR events. It does not consider airspace available over the DLM Joint Base or the nearby air and sea space in military warning area, W-107. It does not consider the highly restricted nature of airspace in and around Aberdeen. It does not consider the restricted sea space in the northern reaches of Chesapeake Bay.*
- *DOD policy directed that effects on homeland defense and support for civil operations be considered in BRAC recommendations, including sharing of*

technology. BRAC information that was released does not discuss sharing technology that will support civil operations in the case of Fort Monmouth.

RECOMMENDATIONS:

- **Reject the DOD BRAC recommendation to close Fort Monmouth and move it and its Fort Belvoir elements to Aberdeen for substantially deviating from the BRAC selection criteria.**

- **Retain all existing Army C4ISR activities, in place, at Fort Monmouth and Fort Belvoir.**

- **"Realign with enclave" the Fort Monmouth installation and organizationally align it with the DLM Joint Base to enhance Jointness and capitalize on potential overhead efficiencies.**

  - **Assign the Fort Monmouth Garrison to the Joint Base Commander.**

  - **Deliberately, over time, and cooperatively between the Fort Monmouth C4ISR Commander and the Joint Base Commander, take steps to shed excess facilities and property in accordance with mission needs and good business principles.**

- **Recommend that the Secretary of Defense consider establishing a Joint C4ISR headquarters within the DLM Joint Base- Fort Monmouth complex in order to capitalize on extant Joint capabilities and C4ISR technical talents.**

- **Should there be a BRAC Commission desire to relocate any C4ISR organization, that organization(s) should be moved to the center of mass, the Fort Monmouth-DLM Joint Base complex.**

- **Do not move the Military Academy Prep School in view of new "cost to move" data.**