Community Rebuttal
to the
2005 BRAC Recommendation to:

Close Fort Monmouth and its Fort Belvoir Elements and Re-create a Land C4ISR Center

July 8, 2005

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PREFACE

The concept of integrated C4ISR is difficult to understand especially when considering how military C4ISR systems fit together; how the technology becomes available for systems in development; how the systems are developed and provided to the field and how the systems are sustained in the field. Fort Monmouth's mission covers all of these aspects. The following definitions are provided to aid the reader in better understanding this rebuttal report.

The second part of this preface summarizes the BRAC selection criteria and indicates in "red" those areas where those criteria were violated regarding Fort Monmouth and its subordinate elements at Fort Belvoir.

Fundamental Definitions:

Land In this document the term "Land" relates principally to the U.S. Army (Active, Reserve and National Guard), but it also includes all land warfighters: Marines, Special Operations Forces, Coalition Forces and may include (especially these days) police and emergency units at home and in peacekeeping duties abroad.

C4ISR Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance, technologies, systems, fielded equipment, and sustained equipment.

RDAT&E Research, Development, Acquisition, Test & Evaluation.
In this report and in DOD BRAC deliberations RDAT&E is defined in three parts for analysis sake:

R: basic research; applied research and advanced technology development.

D&A: systems development and demonstration (SDD), systems modification; experimentation and concept demonstration; product and in-service life cycle support and acquisition (the actual procurement and production of systems).

T&E: In DOD Budget jargon and in DOD BRAC deliberations T&E is and was specifically limited to formal Developmental T&E (DT&E) and formal Operational T&E (OT&E). T&E used in DOD BRAC deliberations is that formal scored T&E required before final acquisition decisions are made for major systems. Other more general kinds of testing, not used in DOD BRAC analyses calculations, are: component testing, prototyping, initial

demonstrations and experimentation, and other laboratory and field trials with and without operational forces.

Sustainment and Logistics

This is a collective phrase to describe all the functions, and the dollars associated therewith, necessary to support a C4ISR system once produced. It can mean, for example, field support to the warfighter with technical trouble shooting or upgrades as the threat changes, supporting conversion of Army battalions to a new C4ISR capability before re-deploying, and operating an inventory control point for components logistics, etc.

BRAC Selection Criteria -- The DOD BRAC recommendation deviated from the approved selection criteria throughout DOD deliberations and in the final DOD BRAC recommendation to close Fort Monmouth. The selection criteria are summarized below:

DOD Selection Criteria (red relates to substantial deviation)

Military Value

1. Current and future mission capabilities and impact on operational readiness of the DOD total force, including impact on joint warfighting, training and readiness.
2. Availability and condition of land, facilities and associated airspace (including areas suitable for maneuver by ground, naval and air forces) ...
3. The ability to accommodate contingency, mobilization, surge....
4. The cost of operations and manpower implications.

Other Considerations

5. The extent and timing of potential costs and savings, including the number of years,...
6. Economic impact on communities....
7. The ability of the infrastructure ... to support forces, missions and personnel.
8. The environmental impact....

Summary of Substantial Deviations from BRAC Selection Criteria

The Department of Defense (DOD) substantially deviated from the Base Realignment and Closure (BRAC) selection criteria (see the red highlights in the Selection Criteria section of the Preface) and developed recommendations to close Fort Monmouth, NJ, and re-create a Land C4ISR Center that was based in flawed logic, assumptions and data. Each of these deviations will be discussed further in the Main Report.

- **Criterion 1**: **The Secretary of Defense deviated substantially from BRAC selection criterion 1 by not considering the impact on "current or future mission capabilities" or "operational readiness"** that will be caused by significant C4ISR workforce losses and resultant, unacceptable, Army and Joint C4ISR program disruption.

    - BRAC history relative to relocation of technical civilian workforces, large and small, indicates that very few employees choose to relocate. A June 2005 professional "Harris Poll" survey conducted at Fort Monmouth indicates that only 20% of the employees will choose to move.

    - When one reviews retirement eligibility and considers the expected time to fill several thousand vacant technical positions, one concludes that the Army Land C4ISR workforce will be less than 50% capable of executing its mission during the period 2007-2011. The reduced workforce capability is due to a combination of not being able to fill all the vacant positions during the period and an inability to fully clear, certify and train the employees who have been able to be hired during the period.

    - Unacceptable disruptions to development, acquisition and sustainment of Army and Joint programs will occur over the 2007-2011 period, thereby adversely affecting current and future mission capabilities. From experience in previous BRAC moves, one notes that the best, most senior and most employable people will start to leave Fort Monmouth for other New Jersey opportunities immediately, thereby adversely affecting Fort Monmouth's widely recognized critical support to the Iraqi war – "operational readiness" will be risked as evolving threat response, field technical support and logistics efficiencies are degraded by loses in the workforce.

    - The DOD BRAC T-JCSG determined mission-related Military Values in appropriate technology areas. Fort Monmouth scored the highest, and first in the Army, in its C4ISR mission relevant areas; Aberdeen scored lowest. This data is also presented in the Army BRAC recommendation volume (Volume III, Tab1).

- **Criterion 1: The Secretary of Defense deviated substantially from BRAC selection criterion 1 by neither considering the "impact on Joint warfighting"** nor current access to or the future opportunities for Joint C4ISR program development, demonstrations or experimentation at the nearby Joint Base (Dix, Lakehurst, McGuire – hereinafter referred to as the "DLM Joint Base"), **and by removing existing Joint access by recommending a relocation to a base (Aberdeen) without Joint or C4ISR capability or plans.**

- **Criterion 2: The Secretary of Defense deviated substantially from BRAC selection criterion 2 by not considering current "availability of airspace" over the nearby DLM Joint Base or existing access to "ground, naval and air maneuver space available"** at the Joint Base and in the nearby, offshore, military operating area (designated: W-107). DOD BRAC deliberations include no reference to the DLM airspace or other maneuver space, and DOD BRAC analysts did not visit the existing capability at the DLM Joint Base.

    - Fort Monmouth currently has access to and uses airspace in the DLM Joint Base area and in military operating area W-107. The Fort Monmouth aviation C4ISR research and development program and its employees and aircraft are located at the DLM Joint Base. Fort Monmouth invested in C4ISR instrumentation at the DLM Joint Base ranges for demonstrations and experimentation, and established robust communications among the ranges and between the ranges and Fort Monmouth and then on to the rest of DOD and appropriate industry partners through a Fort Monmouth communications hub. The DLM Joint Base has several runways, other technical test capabilities, access to ground forces continually, and is 45 miles from W-107 where naval operators and supersonic aircraft can easily join in Joint C4ISR experiments

- **Criterion 4: The Secretary of Defense deviated substantially from BRAC selection criterion 4 by not accurately estimating "cost to relocate or the cost of operations" in the DOD BRAC recommendation.**

    - One time costs were significantly understated and recurring savings were significantly overstated. Summary follows; details pertaining to corrected DOD BRAC costs and savings are presented in the Main Report and Cost Annex:
        - DOD BRAC data understated total space needs by over 800,000 sq. ft. at Aberdeen resulting in increased MILCON costs. DOD inputs also improperly characterize that amount of refurbishent, vice new Military Construction; that will increase costs. Total new MILCON costs: $474M.

- DOD BRAC COBRA inputs understate the requirement to install robust intra-base communications linkages for the C4ISR mission.
- DOD BRAC COBRA inputs and BRAC data calls inaccurately describe the magnitude of specialty laboratories/facilities that will need to be reconstructed. Added cost: $151M.
- DOD BRAC COBRA inputs do not address several special facilities that will need to be duplicated (not moved) for a period of time to guarantee continuity of operations. Added costs from $102M to $342M.
- DOD BRAC COBRA inputs considerably underestimate costs to create new hangar space and ramp space for fixed wing, helicopter, lighter than air (aerostat and blimp) aircraft storage, maintenance, mission preparation and staging. Added cost: $60M.
- DOD BRAC COBRA inputs do not include costs for "authorized personnel "over strength positions."
- DOD BRAC COBRA inputs do not include mission support services recurring costs, which reduce annual savings. There were also other Base Operations Support errors that further reduce recurring savings
- Not included in COBRA calculations, but a real cost to the Army and the taxpayer, is the $300M it will cost to reconstitute 3000 jobs lost in DOD recommended move. Contractor moves will also, eventually, affect costs to complete the mission.

- **Criterion 4: The Secretary of Defense deviated substantially from BRAC selection criterion 4 by neither discussing the probable "manpower implications" caused by the loss of thousands of cleared civilian, technical and/or acquisition certified employees who will not move from New Jersey to Maryland** nor including in the DOD recommendation of the costs and risks involved in reconstituting such a workforce.

  - Neither the DOD recommendation, supporting recommendations from Army and T-JCSG deliberations nor background information released by DOD mention the probable loss of 80% of the professional workforce, calculate the "cost to operations" to replace that workforce, calculate the time to reconstitute a cleared and acquisition certified workforce or comment on its impact on current war-related and high priority C4ISR transformation projects in development. "Manpower implications" associated with the loss of intellectual capital are never discussed in the DOD BRAC records or in DOD's recommendation. Historical BRAC data show that technical civilian workforces, large and small, do not relocate (less than 20% on average). A current Harris Poll survey indicates only 20% of Fort Monmouth's employees will move.

  - Reconstitution of any technical workforce in the areas most important to DOD is difficult by DOD's own admission in Congressional testimony, and other

briefings and workshops as late as April 25, 2005, yet DOD never mentions the scientist and engineer supply crisis in its BRAC deliberations.

- **Criterion 5**: **The Secretary of Defense deviated substantially from BRAC selection criterion 5 by inaccurately estimating "costs and annual savings" thereby significantly underestimating the "payback period."** Further, the DOD recommendation did not discuss probable (and historic) lags in filling critical civilian positions or the timely completion of new, highly technical facilities. Fort Monmouth used a COBRA expert consultant to re-run the COBRA model with corrected input data; a summary follows:

    - Corrected COBRA results are:
        - One time costs: $1.5B
        - Recurring savings $74M/year
        - Payback Period 21 years

    - Additional costs:
        - When one considers data from a signed DD form 1391 prepared by West Point-affiliated facilities experts in June 2005 to formally estimate military construction costs for a move of the Military Academy Prep School to West Point from Fort Monmouth, one finds an increase of $202M in costs.
        - When one includes the costs to reconstitute the lost workforce (not a COBRA cost, but a real cost to the Army) one must add a minimum of $300M
        - Relocation and establishment of supporting contractors (personnel costs only) , while not an explicit cost, is a cost that will be imbedded in contractor billing. Add $152M.
        - New one time real costs = $ 1.99B. Payback period = greater than 21 years.

    - Time lag:
        - A civilian professional is not required to declare his/her commitment to re-locate when the final BRAC decision is made; he/she needs only make that decision shortly before the position is actually scheduled to move (likely in the 2007-2008 timeframe). Therefore, initiation of hiring actions for expected vacancies cannot start early. One can safely estimate that by the time a civilian professional decides not to move in the 2007- 2008 timeframe, it will take an average of two years to arrange for a trained and cleared replacement ... it will take even longer to earn required acquisition certifications. A likely "personnel timing lag" affecting thousands of positions was not considered or discussed in released BRAC material.

- Historically, one also finds that similar lags occur due to the time it takes to establish new technical facilities (laboratories, chambers, SCIFs, satellite ground stations, etc.). This occurred in BRAC 1993 when interim sites were set up in Rockville, Maryland and Newark, Delaware because BRAC closures were completed on time, but new facilities at Adelphi and Aberdeen were not ready to accept the full workforce. Duplicate costs for facilities and double relocations of people resulted. Since Aberdeen has admittedly (in conversations with Congressional visitors on July 1, 2005) very limited capability to absorb other than administrative workers in it current WWII-era facilities, considerable new and complicated construction will be required.

- **Criterion 7: The Secretary of Defense deviated substantially from BRAC selection criterion 7 by not adequately considering the "[in]ability of the receiving base to support mission ... or personnel needs."**

  - No available data released by DOD or information collected on Congressional or other visits to Aberdeen indicate that Aberdeen has the ability or plans to meet Fort Monmouth/Belvoir needs – in fact, one notes that Aberdeen officials stated to Congressional visitors (July 1, 2005) that it was not consulted by the Army about its ability to assume host responsibilities for the land C4ISR mission.

  - The receiving base is not likely to be able to afford or meet the existing standards afforded by Fort Monmouth and its DLM Joint Base partner. In some cases additional funds will be required; in other cases, like ready access to troops in training, ranges and airspace, matching capability cannot be guaranteed even with additional funding. Specific areas of concern follow:

    - new laboratory facilities of adequate capacity/capability,
    - ground satellite control station facilities,
    - C4ISR instrumented ranges,
    - robust intra-facility communications/IT connectivity,
    - C4ISR aircraft housing and ramp space,
    - access to troops for demonstrations and experimentation,
    - ground, air and naval maneuver space for Joint demonstrations and experimentations, or
    - the ability to hire thousands of cleared employees in time to avoid unacceptable C4ISR program disruption.

Discussion and Recommendation

Discussion:

The DOD recommendation does not preserve or enhance military value. It is a serious mistake that will, rather, degrade military value.

The result of the DOD BRAC military value evaluation conducted in the major technical areas and functions relevant to the C4ISR mission are startling in light of the ultimate decision to close the installation. Fort Monmouth was ranked:

- **1st Army Information Systems Technology - Development and Acquisition;**
- **1st Army Information Systems Technology - Research;**
- **1st Army Sensors, Electronics and Electronic Warfare - Development and Acquisition, and**
- **3rd Army Sensors, Electronics and Electronic Warfare - Research.**

In all of these critical functional areas, Fort Monmouth was ranked above (in some cases 300% - 400% above) the proposed site for the organization's re-location (Aberdeen Proving Ground).

If the DoD BRAC recommendation is implemented, the intellectual capital that produces these outstanding ratings will be lost and not recovered for 10 years based on experience with similar moves over the past 25 years. Secretary of the Army Harvey, in testimony before the BRAC Commission on May 19, 2005, cited 26% as the percentage of Fort Monmouth personnel who could be expected to re-locate. That is too optimistic, and surprisingly it is considerably more dismal that the 75% relocation standard used by DOD in COBRA.

Actual experience in re-locating a technical organization from Fort Monmouth to Maryland (and in other moves within Army C4ISR over the last 25 years) indicates that the percentage will be less than 20% and mission failure is a very real prospect. History indicates that the personnel lost will be the most experienced, highly trained personnel in the C4ISR field. Moreover, the employees lost will be the same experienced personnel the organization would have relied upon to train the next generation of C4ISR professionals. It will take many years to re-construct the organization effectively (if it can ever really be re-constructed) during which time there will be catastrophic mission failure across almost all key transformational programs.

The percentage of systems experts and senior leaders re-locating to Aberdeen would most likely be even lower than our 20% estimate, since this group is older and has more years of service than the overall work force. The average age of the organization's systems experts and senior leaders is 48.3; their average years-of-service is 20.5. While experience at Fort Monmouth has been that employees, on average, work until age 61, a BRAC re-location will likely cause a wave of retirements that would otherwise not have occurred.

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The requirement to hire at least 80% of the technical and acquisition work force (approximately 3000 vacancies) will seriously degrade the Army C4ISR program and hurt the soldier for a decade. That estimate is based not only on the amount of time it takes to develop a systems expert (six to nine years for employees hired directly from or shortly after college; four to six years for employees hired in mid-career), but also on the amount of time it will take to hire about 3000 new employees.

DOD is currently struggling to hire qualified engineers and scientists who can obtain a security clearance, both because the talent pool is running dry and because "baby boomers" are expected to continue to retire in record numbers. One cites the *Federal Times*, 7 February 2005, "The Hardest Jobs to Fill," and testimony before the House and Senate by the Director, Defense Research and Engineering (DDR&E) in2004 and briefings by the DDR&E as late as April 25, 2005.

The Army does not have a contingency plan to mitigate the disastrous effect the DOD BRAC recommendation will have on a technical workforce and its current and future Army and Joint C4ISR programs, and most importantly, has not identified any legitimate benefit that would result from the recommendation that might conceivably offset that profoundly negative impact.

In his testimony before the Commission, Secretary Harvey stated that the activities on Fort Monmouth are strictly "R&D" and "Strategic", and that moving them and sustaining a loss of personnel of 74% would not have immediate impact on the warfighter. He is mistaken: new funding increases to support the war, regular travel by Fort Monmouth engineers to the war, and shifting priorities to counter evolving threats like Improvised Explosive Devices (IED) indicate a deep involvement in immediate "tactical" challenges. Further, he failed to take into account the full spectrum of missions from technology generation, to system development, to production and fielding, and to sustainment as more than 50% of the Army's National Stock Number (NSN) items currently in the field are acquired, managed and sustained through Fort Monmouth.

Fort Monmouth is inextricably engaged in supporting the deployed force in Iraq, Afghanistan and around the world. It performs critical functions in equipping divisions and brigades which are "modularizing" and/or are preparing to re-deploy. The impact of what Fort Monmouth does to develop, acquire, field and sustain critically needed C4ISR systems to enhance operational effectiveness and maximize the safety of our Warfighters has immediate, real time consequences while they are in the field.
Fort Monmouth is also integral to transformation to the future force as it provides half of the critical technologies necessary to make the Future Combat Systems (FCS) a reality. It is more than just FCS. Fort Monmouth is substantially involved in every Army program; and the programs support weapons systems that increasingly integrate with each other. These programs are part of the Army's approved roadmaps for transformation and key milestones are already laid out well beyond 2011. While these are "strategic" in that they are not programs being delivered today, they are none-the-less planned, approved and will rely on Fort Monmouth and its intellectual capability to play a critical role.

The Land C4ISR Center exists today at Fort Monmouth, to move it will destroy a workforce and result in unacceptable program disruption.

Credibility is tested.

Secretary Harvey's testimony also stated that Fort Monmouth lacked test ranges suitable for "maneuver", thereby irnplying that Aberdeen would help the situation. Simply he was wrong. Formal C4ISR testing is done at places like the Electronic Proving Ground in Arizona and at large maneuver bases like Fort Irwin. Aberdeen is not now and has never been a C4ISR test site. The nearby DLM Joint Base is perfect for demonstration and experimentation testing because of its ranges, troop availability and airspace. Aberdeen cannot match this capability. The Secretary was incorrect in his understanding of formal or informal C4ISR testing and wrong in implying that C4ISR would improve by moving to Aberdeen to gain T&E efficiencies.
Aberdeen is not a better equipped facility. The highly specialized laboratories and engineering and test facilities needed for the C4ISR mission exist on or near Fort Monmouth, not Aberdeen. Aberdeen's facilities are generally inadequate (Source: 2004 Army Installation Status Report).

It appears that the DOD recommendation to close Fort Monmouth was arrived at before any analysis was conducted. On more than one occasion (e.g. on April 1st and again on April 5th) in T-JCSG minutes, one of the "Close out Checklist" items for the Army representative to the T-JCSG was: "Ensure Tech [Scenario] 35R is knitted with Monmouth closure for real good picture." "Tech 35R" refers to a scenario that would move C4ISR expertise to Aberdeen. The appearance this repeated checklist item creates is that the objective of T-JCSG (at least in April 2005) was less focused on mission effectiveness, and more focused on creating a "real good picture" that would support closing Fort Monmouth. This shows precisely the sort of "preordained" decision that Senators Collins and Lieberman recently directed GAO officials to evaluate. Although it may be merely the result of an extraordinarily poor choice of words, one has yet to find a similar entry related to other closure or realignment recommendations. Additionally, by April 2005, one would have thought that the relevant data supporting the proposed recommendations would have been firmly established, and there would have been no need to create a "real good picture" for closing a major installation and relocating the Army's premier C4ISR organization. The facts should have spoken for themselves.

The Main Report, Section 5, provides corrected costs and savings derived from that DOD data that has been released to date. Costs and savings change very significantly: Costs grow by $700M, savings shrinking by $69M/year and the payback period stretches by a decade. Credibility in the DOD/Army data and calculations has become a real concern.
To punctuate that point:

- The United States Military Academy Preparatory School (MAPS), which is recommended for re-location to West Point recently completed $25M in upgrades to its facilities on Fort Monmouth. The recommended re-location of MAPS and the closure

makes that expenditure wasteful; recent improvements are not referenced in release DOD material.

- West Point recently (June 2005) completed a DD Form 1391 which updates the DOD's BRAC MILCON estimates for the MAPS move; it calculates MILCON costs to be in $227M or an order of magnitude higher than the $22M cited in the DOD BRAC recommendation.

Credibility is also an issue within T-JCSG deliberations. While its goals and philosophies appeared, on review of the released DOD BRAC information, to wander, it consistently "led off" with closing Fort Monmouth.

The T-JCSG was inconsistent in its use of military value calculations. A comprehensive critique of T-JCSG inconsistencies in found in Issue Paper #12-28-04-01.

After months of discussion about the Land C4ISR center, it avoided any detail rationale in its report (BRAC Report Volume 12) or in its briefing to the BRAC Commission staff (BRAC Commission DCN 3031). Further, BRAC Commission DCN3031 recounts a discussion the T-JCSG had with the BRAC Commission on June 1, 2005. While it does not specifically mention Fort Monmouth, it does mention: "because of political reasons, "taken off the table, " "up front decisions " – credibility in the T-JCSG is a concern.

Greybeard Warnings, ignored

The DOD BRAC recommendation to move the existing Land C4ISR capability to Aberdeen is precisely the kind of scenario that General Ronald Fogleman (USAF Ret.) and former 1995 BRAC Commission Chairman Alan Dixon warned against in their 2 May 2005 Defense News editorial entitled "*Measuring BRAC - Weigh High Tech Aptitude Before Shutting Doors.*" They observed that, if the United States is to succeed in the Global War on Terrorism, it must continue to develop a nimbler, smarter, more technologically advanced military infrastructure.

In their view, a key feature of the current BRAC considerations must be to ensure that Secretary of Defense Rumsfeld's goal of reconfiguring the "current infrastructure into one in which operational capacity maximizes both war-fighting capacity and efficiency", is accomplished. To achieve those objectives, this current BRAC round needs to be guided by:

- "Improving 'Jointness' among the Services.
- Risk to mission interruption. At many bases, the process of closing a base is nearly as simple as packing assets and reassigning military personnel. But for technical acquisition facilities, research and development labs and other nontraditional bases, moving the mission is much more complex. These bases have developed deep roots with neighboring universities, research institutions and high tech work forces. In many cases, the experienced engineers and

scientists will not follow the mission to other regions, which may not have the intellectual resources or critical mass of skilled workers to continue the critical research and development work."

Dixon and Fogleman went on to conclude that the Pentagon should look for opportunities to co-locate synergistic military operations from other services, as a means of supporting the needed military transformation. This appears not to have been done in the case of the C4ISR mission being performed at Fort Monmouth.

Homeland Security and Other Federal Agency Tenants

Homeland Security is a critical consideration that was not considered in the DOD BRAC by the recommendation. More specifically a BRAC policy directive (USD(ATL) memo of 10 Dec 2004) included reference to technology sharing as an area to consider during BRAC deliberations.

- The C4ISR activities at Fort Monmouth have played a significant role in Homeland Security, beginning with their immediate support of the efforts in response to the terrorist attack on the World Trade Center on 11 September 2001. Its proximity to New York City has caused the installation to be designated a "Continuity of Operations Point" by FEMA and the Corps of Engineers. Further, primarily through the use of Cooperative Research and Development Agreements, Fort Monmouth is assisting the City of New York, the National Guard Bureau, the Port Authority of New York/New Jersey, Army Corps of Engineers, and the State of New Jersey by bringing intelligence and electronic warfare expertise to bear in meeting homeland security challenges.

Fort Monmouth is home to a Veterans Administration Health Facility that handles in excess of 10,000 patient visits annually. It also houses a FEMA Region II And USACOE Continuity of Operations Points (which have been used several times since establishment). Further, Fort Monmouth is home to the Federal Bureau of Investigation's (FBI's) Northeast Regional Data Processing Center, a secured facility employing 120 personnel. The impact of the recommendation does not appear to have been fully considered during BRAC deliberations.

New Jersey Science and Engineering Workforce

Finally, BRAC criterion 7 tests whether the receiving site is able to meet the mission and support the people being moved. Demographics generally favor New Jersey, especially in the area of intellectual capital of the surrounding area. Data drawn from Federal statistics indicate that area surrounding Fort Monmouth significantly surpasses similar areas surrounding Aberdeen in education, workforce quality and measures of science and technology quantity/quality (Sources: Studies completed by the John J. Heldrich Center for Workforce Development in January, May and June 2005).

Recommendation:

- **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 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.**

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Main Report Synopsis

Introduction.

This report will demonstrate that the DOD BRAC recommendation to close Ft. Monmouth and move its C4ISR efforts, along with its activities at Fort Belvoir, to Aberdeen Proving Ground is flawed. The resultant large loss of intellectual capital and disruption to major programs supporting warfighters now and in the future will negatively impact the C4ISR capability that is central to Army and Joint readiness.

One is concerned that military value scores for technical C4ISR areas were inappropriately considered since the DOD recommendation moves the highest scoring C4ISR functions at Fort Monmouth to the lowest C4ISR scoring base at Aberdeen.

Moving the several billion dollar and highest C4ISR technical military value scoring Fort Monmouth to the less than $10M of C4ISR funding and the lowest C4ISR military value scoring organization in the Army (Aberdeen Proving Ground) is akin to "moving the mountain to Mohammed."

Section 1. Military Value

Technical Military Value was weighted inconsistently in BRAC formulation processes. In the case of Fort Monmouth, High Technical Military Value was moved to a low Technical Military Value base. Military Value for Installations (MVI) used by the Army had only two of 40 contributing attributes that had even slight relevance to C4ISR or to the final BRAC recommendation which purportedly is to improve Land C4ISR RDAT&E. It is noteworthy that high technical military value single purpose Army installations like Picatinny and Detroit were not moved for MVI reasons. Finally, the Army never considered Fort Monmouth's historic ties to Fort Dix, Lakehurst or McGuire AFB in developing the MVI scores. Had it done so Fort Monmouth would have scored among the highest in the Army.

"Current Capacity" was used in the T-JCSG process; yet it was not current (FY01-03 only). "Future Capacity," an important factor for the rapidly changing C4ISR environment, was mentioned, but evidence of its use is missing. One can only suspect that future capacity calculations would show a capacity deficit, thereby negating the need for any C4ISR base closure.

The Army started the BRAC process with an entering argument of excess capacity. In RDT&E, Army showed an approximately 62% excess based on a people/square foot algorithm. Navy using a different algorithm (based on work years) had virtually no

excess. These results are too different. The algorithms are too different. The inconsistency was never questioned.

Section 2. The Loss of Intellectual Capital.

The loss of a highly skilled workforce of this quality and quantity has never been experienced in DoD and certainly not in Industry; it is unique in this BRAC.

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 create unacceptable disruption in important C4ISR programs.

The BRAC analyses use 75% relocation as a standard for calculations — from historical analysis, technical workforces in previous BRACs moved at a rate less than 20%. A June 2005 Harris Poll indicates that only 20% of the Fort Monmouth will move.

The technical workforce supply, upon which the DOD relies, is in crisis by DOD's own admission in Congressional testimony and briefings right up through April 2005. While the loss of thousands of scientists and engineers and certified acquisition officials in this BRAC move will cause unacceptable program disruption, the unlikely ability to reconstitute such a large and talented workforce in a useful timeframe is an equally serious problem.

Costs to reconstitute the lost workforce will be significant (calculated to be $300M).

Section 3. Program Disruption

The BRAC recommendation to close Fort Monmouth and re-create it at Aberdeen risks: (1) serious current program disruption affecting support to an ongoing war and (2) an ability to deliver on priority approved and scheduled Army and Joint C4ISR programs. Particularly at risk are programs with major development, experimentation, test and acquisition milestones in the period 2007 -2011. Several examples are provided in the main report.

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 due to current crisis in the supply of clearable scientists and engineers in America. The Army will experience a major technical "personnel time gap" in the last half of this decade. One can conservatively estimate that the workforce will be less than 50% capable (i.e., a combination of unfilled positions, newly-hired employees not cleared and/or certified, and new employees not be adequately trained).

Likewise, facilities complexity and historical evidence indicates that re-creation of many technical facilities will encounter design, cost, build and outfitting delays thereby preventing timely decommissioning of facilities at Fort Monmouth and 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.

Section 4. Analysis of RDA and T&E Integration

Examination of the BRAC processes in the Army and within the T-JCSG shows that there was a breakdown in philosophy about integration of R with D&A and with T&E. In the end, after many attempts, the final DOD BRAC recommendation did not move R, moved the huge D&A segment to a place with virtually no C4ISR capability, and never consolidated T&E with RDA, even though the DOD and Army incorrectly claimed efficiencies by collocating RDA with T&E at Aberdeen – a base with no C4ISR T&E capability now or planned. In fact, the Army's designated center for C4I T&E is the Electronic Proving Ground at Fort Huachuca, AZ. No multi-functional integration was accomplished. Certainly collocation of RDA with T&E should never have been attempted, but to claim it was achieved is simply wrong.

Section 5. Cost Credibility

Criteria 4 and 5 demand reasonable cost benefit in BRAC recommendations. Assumptions made and data used in the DOD recommendation regarding Fort Monmouth/Belvoir defy credibility: costs are underestimated by $700M, recurring savings overestimated by $69M, bringing the payback period to 21 years.

Military construction and refurbishment estimates for both Fort Monmouth and the Night Vision Lab at Fort Belvoir omitted large areas or did not consider costs to rebuild existing specialized facilities.

Costs for several Fort Monmouth special capabilities slated to be relocated were not properly estimated (e.g., the satellite ground station cluster).

Over the past several years Fort Monmouth has invested in instrumented C4ISR ranges, inter-range high bandwidth connectivity and high bandwidth connectivity from the ranges to Fort Monmouth and then onward to other portals in DOD. These costs were not considered. Nor were costs to connect on-base C4ISR facilities at modern (and existing) standards

Costs were not well estimated in setting up an aviation C4ISR capability at Aberdeen's Phillips Field. Fort Monmouth's flight capability at nearby Lakehurst has significantly more ramp and hangar space than that available at Phillips. One time costs for Aviation related MILCON are underestimated. Recurring-costs (not calculated herein) associated

with conducting R&D flight operations in distant areas void of the FAA Chesapeake Sector's airspace constraints may be significant.

Base operations support (BOS) costs estimated by the DOD for Aberdeen after Fort Monmouth moves are understated in that customer unique mission support services costs, above basic facilities services, were not calculated. There were several other BOS errors, all of which contributed greatly to reducing estimated annual savings.

The Main Report provides calculations based on conservative assumptions and national research on relocating/reconstituting workforces. A conservative estimate is that it costs between 75% and 100% (depending on pay grade, skill level, certification level) of an annual employee's salary to recruit, relocate and clear a replacement employee. One also adds costs in lost time while a new employee is trained to a level of average productivity (three year average). These costs are not included in DOD BRAC deliberations. Costs to the Army and taxpayer will be $300M, if the lost workforce can be re-constituted at all.

There are certain to be program disruptions as already discussed. The disruption costs cannot be quantified by those preparing this report, but one must note that the potential for such disruptions was not part of the record of BRAC discussions released by the DOD. Costs in terms of time or security were also not discussed in DOD BRAC deliberations.

Section 6. Existing and Future Joint Opportunity Lost.

Fort Monmouth is about 23 miles from the Dix/Lakehurst/McGuire (DLM) Joint Base. It uses that base now for Army and Joint demonstrations, experiments, aircraft operations and other RDA tasks. It is in discussions currently to use that Joint Base for more Joint events in the future.

The DOD BRAC recommendation neither mentioned nor considered the current or future opportunity offered by Fort Monmouth's proximity to the DLM Joint Base. BRAC deliberators did not visit the Joint Base. The DOD BRAC recommendation reveals no plan for future Joint C4ISR at Aberdeen. There is no Joint opportunity at Aberdeen in any technical discipline related to C4ISR.

The DOD BRAC recommendation moves Army and Land C4ISR away from Joint opportunities; a substantial deviation from Selection Criterion 1.

Section7. Maneuver Space and Airspace were ignored.

BRAC Criterion 2 directs consideration be given to airspace and maneuver for ground, naval and air forces. Scenarios leading up to the DOD BRAC recommendation and the

DOD 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. They do not consider airspace available over the DLM Joint Base or the nearby air and sea-space in military operating area, W-107. They do not consider the restricted nature of airspace in and around the FAA Chesapeake Sector. They do not consider the restricted sea-space in the northern reaches of Chesapeake Bay.

Scenarios seemed simply to assume that because vehicles and ordnance are tested at Aberdeen, that it would be a better maneuver space than Fort Monmouth's 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 BRAC selection criterion was ignored.

Section 8. Other Concerns with the BRAC Recommendation that Detract from Credibility.

There are a number of issues that challenge the credibility of the BRAC recommendation. They are mentioned below :

8.1. Homeland Defense/Security

DOD policy (USD(ATL) BRAC policy directive of 10 December 2004) directed that effects on homeland defense and support for civil operations be considered in BRAC recommendations, including sharing of technology. DOD 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" Lehman on August 3, 2004, and a August 19, 2004 National Research Council report which cited the Army's C4ISR technology as most relevant to critical homeland security interoperability needs.

8.2. Demographic Inaccuracies.

DOD BRAC demographic analyses miscalculated medical services per patient ratios for the Monmouth/Ocean counties area, when it inaccurately used an 11million population for the Monmouth/Ocean area. Monmouth/Ocean have better health access than the Aberdeen (Harford/Cecil) area.

New Jersey K-12 and higher education metrics are better than Maryland and Ocean/Monmouth counties exceed Harford/Cecil in nearly every metric. One doubts the DOD BRAC estimates that Aberdeen has a teacher student ratio that depicts there being more teachers than students.

Appendices to main report, prepared by the Rutgers University John J. Heldrich Center, based on publicly available national data, present a more comprehensive and accurate picture of comparative demographics.

8.3 Non-DOD Federal Tenants.

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. While costs associated with Non-DOD tenants were not included in COBRA calculations per DOD policy, one cannot deny that there will additional costs to the Federal government (not DOD) by closing a base around a non-DOD tenant. Those costs should somehow be considered.

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 FEMA Region II's Continuity of Operations Point and the Northeast Region Corps of Engineers, Continuity of Operations Point and the FBI 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 is unclear.

8.4. Inconsistencies between the Army C4ISR Center recommendation and those of the Navy and USAF.

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 in BRAC 2005. The T-JCSG scrutinized Service C4ISR centers over many months; they left the Air and Maritime centers alone, but recommended moving the Land C4ISR center to a base without C4ISR capability in order to achieve a (unexplained in released DOD documents) technical synergy. Both Navy and USAF C4ISR centers retain workforce stability, access to high tech partners outside the gate, and avoid 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 base operations business efficiency theories.

8.5. T-JCSG did Not Explain its Recommendations on the Land C4ISR Center.

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. It is missing from the May 13, 2005 DOD BRAC Report (Volume XII) and from the June 1, 2005 briefing by the T-JCSG deputy to the BRAC Commission staff (DCN 3031). One can only speculate why there is virtually no T-JCSG detail on the Land C4ISR center, after so many months of deliberations and intermediate recommendations/approvals, and when one considers that Maritime and Air C4ISR were discussed in detail.

9.0 Conclusions and Recommendation

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.*

- *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 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, without C4ISR capability, for $1.5B in costs. 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 and unacceptable risk to current and future missions.***

- *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.

Recommendations:

- **Reject the DOD BRAC recommendation 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.**

MAIN REPORT
FORT MONMOUTH

and its
Fort Belvoir
C4ISR Elements

MAIN REPORT TABLE OF CONTENTS

1.0 INTRODUCTION

The report will show that the BRAC recommendation substantially deviated from selection criteria and that 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 will have an unacceptable impact on capabilities that are central to the Army and Joint C4ISR.

For every conflict the United States has been involved in, Fort Monmouth, New Jersey and its subordinate activities at Fort Belvoir have been instrumental in providing the Joint Services critical communications, command and control, intelligence, surveillance, and reconnaissance (C4ISR) equipments and capabilities. *C4ISR is most complex for the Army and is the "glue" that integrates our Joint Forces on today's modern battlefield.*

The Army has many pieces, at many echelons, moving at different speeds and some of those pieces are in hot combat with C4ISR equipment hosted on a variety of combat platforms. More importantly, though, is that all C4ISR, while important and complex for each Service, must eventually connect to the land forces — the term "land forces" here principally means the U.S. Army, but also includes Marines, Special Operations Forces, and Coalition Forces and police units.

It is critical to inter-connect land forces who are fighting in close/direct quarters with the enemy, who are taking ground, who are occupying land, who are in dangerous urban peacekeeping/peacemaking roles and who are often carrying out those roles with coalition military, paramilitary and/or civil organizations. Connecting to land forces is *THE "end game" in C4ISR.* In everything but strategic deterrence, it is supporting land forces who win by defeating the enemy and controlling their territory that is the toughest issue for our military to face.

Equipping and sustaining our forces is the mission currently performed at Fort Monmouth and one in which they excelled, most recently in providing rapid responses to critical field requirements for both Iraq and Afghanistan.

The relevance of Fort Monmouth is evident from the breadth and depth of their critical C4ISR mission to day-to-day operations, and the number of dollars being invested in Fort Monmouth managed and/or executed programs. One notes that funds (Army mission funds and funds from others for C4ISR work) have grown to well over $5B annually – larger than any other Army C4ISR entity by more than an order of magnitude. Further, the responsiveness of Fort Monmouth in rapidly providing critical capabilities to our Joint Deployed Forces distinguishes it from other DOD organizations and demonstrates the criticality of these contributions in enabling the Warfighter during war and stabilization operations.

The Fort Monmouth elements have many significant contributions to: Iraq and Afghanistan field requirements especially in responding to the continually evolving threat; expediting delivery of capability to units rotating to Iraq/Afghanistan; and expediting the incorporation of new capabilities into modular units being formed as part

of Transformation. The significance of these products are amplified, not just because of their capability, but also because Fort Monmouth's staff and their support contractors typically do the training support and remain with the products until they are fully integrated within the gaining units and throughout their life cycle.

Fort Monmouth's products and services range from the battlespace through strategic to sustaining base and cover: strategic and tactical communications to enable Joint interactions; battle command capabilities to enable decisive actions; combat identification to reduce fratricide; multi spectral sensors that allow our forces to know/see the enemy; intelligence systems that can "listen" to enemy communications; mine detection capabilities that can find anti- personnel and anti-tank mines; jammers against improvised explosive devices (a threat that continually changes); and artillery/mortar locating systems to bring counter fire to enemy weapons. *All were responses to Coalition requirements; all were provided rapidly; all were deployed with support staff; all were highly effective; all have application to Army and Joint Transformation; all show the professionalism and competence of Fort Monmouth's C4ISR staff in supporting the Joint Warfighter and all are being supported in the field today.*

In BRAC's Military Value (MV) analysis, the capabilities described above received top scores but were "weighted" as less important and therefore not given adequate emphasis in many BRAC scenarios. In fact, there is evidence in BRAC records that the weightings were adjusted in favor of basic research capabilities thereby awarding some organizations with higher scores. 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, were unequalled within in the Army.

One of the most significant capabilities at Fort Monmouth is a community of technologists, systems developers, and system deployers/sustainers working to ensure that fielded products are responsive to the Army and Joint requirements and can be upgraded with the latest technology (keeps the systems mission capable during the life cycle) to meet the evolving threat. That community includes thousands of government employees, and a nearly equal number of local highly skilled partners in high technology firms. It is a proper and continually changing mix between Government "smart buyers" and those in the marketplace who are leveraging commercial information technology advances that allows for rapid response and best access to technology.

In many cases the Research, Development, and Engineering personnel transition from technology development to system development, work in direct support of a PEO/PM, or ensure short term programs are focused on PEO/PM needs. In addition these

military oriented C4ISR experts adapt commercial products for military use thereby shortening the lead-time to get products in the field.

The Army's Life Cycle Commodity Command concept (Figure 1) recognizes the value of better linkages among the various product development phases and across product-lines. This is especially true for C4ISR systems because the challenge is to ensure that C4ISR equipments are interrelated and interoperable.

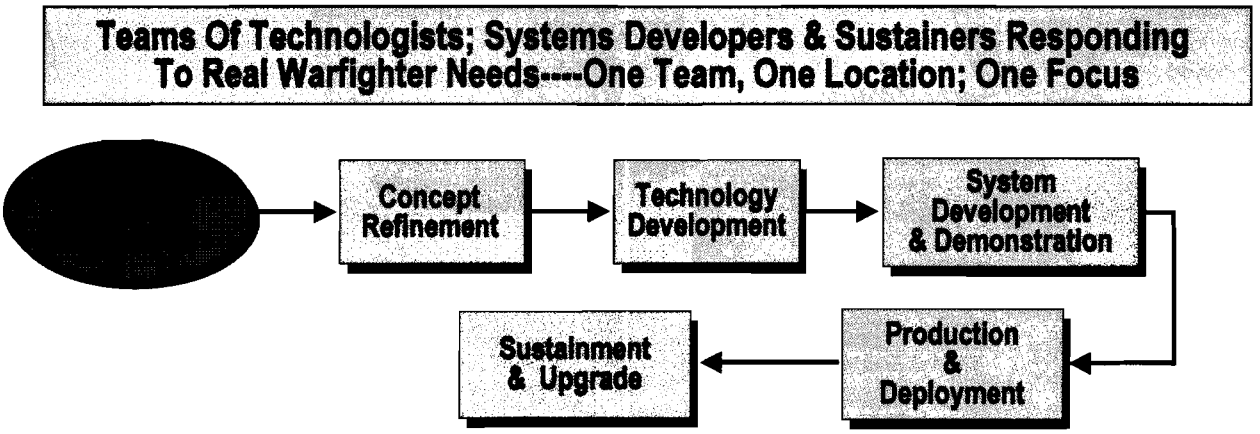

Figure 1: Integration of Technology and Systems

Many Fort Monmouth engineers have considerable experience and years of training across the product domains and are in an excellent position to understand how best to integrate capabilities. Fort Monmouth has fielded a large number of C4ISR products over the last ten years, but more importantly it has kept those products current with technology capability upgrades, software upgrades for new evolving threats, and modernization through spares — all fielded in the shortest time possible. This is made possible by the team focus across the development life cycle where technologists find solutions to upgrade existing products or develop backward compatible capabilities and where there collocated partners in the acquisition community accept these technological improvements and integrate them into system development programs.

Fort Monmouth with a substantial applied research (6.2) and advanced technology development (6.3) program is the "bridge" to bring maturing technology out of labs and universities into multi-billion dollar applied development and production efforts with which it is collocated so that land C4ISR needs can be met in a timely manner.

The linkage between applied research and advanced technology development programs to systems development, production and sustainment efforts is not adequately recognized in the "military judgments" that overrode raw military value technology scores.

The following sections of this report will deal with:

FORT MONMOUTH

- Military Value and how that criteria was applied to Fort Monmouth across the Military Value Installation and Military Value Technical areas.
- Inadequate attention to the loss of intellectual capital and the resultant impact that has on current and future land and Joint C4ISR capability. Assuming an artificially high number of people will move to Aberdeen has cost, time and capability/national security impacts that will be described in detail. Less than 20% of the technical and acquisition certified workforce will move and the impact of "rebuilding" a workforce where most need clearances, acquisition certifications and C4ISR experience, is and will create an unacceptable risk that will take a decade or more to correct — it will have long term implications to our C4ISR capability and to the Warfighter.
- Claimed linkage of C4ISR RDA and T&E at Aberdeen is not created with the BRAC recommendation. Aberdeen has a very limited C4ISR capability, and no C4ISR test capability. It is recognized that Aberdeen has no C4ISR T&E capability (T-JCSG defined T&E as formal Developmental and Operational Testing only) and that Army C4ISR formal test ground is at Fort Huachuca. It was not recognized that Joint C4ISR experimentation at the Joint Base of Fort Dix, McGuire AFB, and Navy Lakehurst offers more existing and future opportunity to conduct Joint demonstrations and experiments than any scenario considered. Fort Monmouth's investment in and proximity to the DLM Joint Base for field Army and Joint demonstrations and experimentation was not addressed.
- No attention was given to the disruption of programs within the BRAC window nor were program delays, increased costs, and impact on the Warfighter discussed. We will examine several programs of record being executed in the BRAC window and discuss the implications of losing critical workforce within this time period.
- Cost issues that include missed cost estimates for: facilities; cost to move and reinstall sophisticated equipment; cost of aviation requirements for R&D evaluation; and recruitment and training of a new workforce. Cost estimation errors will add significant funding requirements for the move and will lengthen unacceptably the pay back period.
- Selection criteria put a high premium on maneuver space: ground, air and naval. The maneuver space, especially its Joint opportunity in the central NJ area was not adequately considered. Of specific concern, because it was not addressed, is current, close proximity access to airspace for C4ISR flight missions, instrumented land C4ISR ranges; access to space for C4ISR demonstrations and nearby offshore dedicated (W-107) sea space and supersonic airspace
- Absence of any Joint recommendations in the BRAC report and the opportunity to significantly increase Joint Experimentation at the Fort Dix; Lakehurst Naval Air Engineering Center and McGuire AFB Joint Base (DLM Joint Base). We will show a significant number of Joint experiments already accomplished and the potential to utilize this DLM Joint Base as a conduit for extended experimentation.

In consideration of the importance of Fort Monmouth/Belvoir C4ISR mission to the Transformational concept of Network Centric Warfare, we must keep in mind the Pentagon's Office of Force Transformation definition of Network Centric Warfare (NCW):

"NCW represents a powerful set of warfighter concepts and associated military capabilities that allow warfighters to take full advantage of all available information and bring all available assets to bear in a rapid and flexible manner. The tenets of NCW are:

- *A robustly networked force improves information sharing.*
- *Information sharing enhances the quality of information and shared situational awareness.*
- *Shared situational awareness enables collaboration and self-synchronization and enables sustainability and speed of command.*
- *These, in turn, dramatically increase mission effectiveness."*

This quote is consistent with the life cycle mission of Fort Monmouth and its Fort Belvoir elements, has been proven in capabilities provided to the Warfighter, and is an integral part of their current/future programs.

2.0 MILITARY VALUE: Deviation from the #1 Criteria

The first four BRAC selection criteria focus on military value. In the BRAC deliberative process, DOD attempted to quantify military value. Each DOD BRAC entity chose a different method. The Army developed a military value for an installation; optimizing the running of a base. The T-JCSG took a higher road and focused on technical mission. The results of each are reviewed in this section, since they present differing views of the "value" of a capability.

The T-JCSG briefed the BRAC Commission on June 1, 2005 and stated that it used "intellectual capital center of mass" as critical to DoD technology needs, as one of its criteria—we will show Fort Monmouth/Belvoir is the center of mass and that the T-JCSG did not follow its philosophy.

We will further show that DOD should consider the capabilities of the highest ranked C4ISR organization (Fort Monmouth) and the Joint Base of Fort Dix, Lakehurst Naval Air Engineering Station, and McGuire AFB. This combination meets all of the MV Installation Criteria and creates an opportunity to implement true Joint Experimentation that answers the original and main requirement for BRAC.

Military Value of the Technical Mission (T-JCSG model).

The T-JCSG organized its scoring by the research (R) category and development and acquisition (D&A) category. Within those functional areas were two technical areas appropriate to C4ISR: "information systems" and "sensors." Scores were derived by the T-JCSG using this taxonomy and later displayed by the Army in its final BRAC recommendation. Figure 2 below shows this tabulation:

Info Sys Technology - D&A

Location	Military Value Score	Ranking
CECOM San Diego	0.2933	2(t)
Ft. Lewis	0.2933	2(t)
Redstone	0.2330	4
Ft. Belvoir	0.2268	5

Info Sys Technology - Research

Location	Military Value Score	Ranking
Aberdeen	0.2864	2
Adelphi	0.2563	3
Walter Reed	0.1527	4
Ft. Belvoir	0.0744	5

Sensors, Electronics & EW- D&A

Location	Military Value Score	Ranking
Redstone	0.3402	2
Ft. Belvoir	0.2524	3
Aberdeen	0.2250	4
Warner Robins	0.2247	5

Sensors, Electronics & EW- Research

Location	Military Value Score	Ranking
Adelphi	0.5018	1
Ft. Belvoir	0.3972	2
Redstone	0.2378	4
Aberdeen	0.1748	5

From 09-May-05 DoD Recommendation Supporting Information, Ft. Monmouth

Figure 2: T-JCSG Military Value Scores

Figure 2 clearly shows that in R+D&A, in the C4ISR mission area, Fort Monmouth is the preeminent Army facility.

One also notes from the table that Aberdeen received some interesting scores. For example, in the area of information systems research, ARL Aberdeen scored higher than the designated and parent ARL center for C4ISR research in Adelphi. When one examines the very small number of people at ARL Aberdeen involved in C4ISR (approximately 30) and very small average annual size of its C4ISR programs (<$8M) one concludes that the score is misleading and that potentially someone could incorrectly conclude that other assets at Aberdeen are involved in C4ISR programs, which is not correct.

When one considers skill to accomplish the mission, Fort Monmouth is clearly tops in C4ISR R+D&A.

Early T-JCSG deliberations intended to send Fort Monmouth to Adelphi and Belvoir and later to Aberdeen, despite Fort Monmouth's higher military value scores. While the scores were clear, the application of those quantitative indicators was initially quite inconsistent. In the end, the T-JCSG abandoned its notion of letting research drive the future C4ISR Land warfare organization. It went along with moving the top military value scores (Monmouth and Belvoir) to the lowest score (Aberdeen) and left its original candidate receiving site (Adelphi) alone.

Military Value for Installation Management (the Army model).

Army BRAC deliberations relied on a model that summed up data call inputs in 40 different areas called "attributes." The attributes have little to do with a R&D mission or a R&D Installation and less to do with C4ISR. The attributes try to encircle those factors that make bases run well in support of typical Army training and operational missions.

• TRAINING • Direct Fire • MOUT • Heavy Maneuver • Indirect Fire • Airspace • General Instruction • Applied Instruction • Air Quality • Noise Contours • Soil Resiliency • POWER PROJECT • Mobs. History • Force Deploy • Materiel Deploy • Operations • Accessibility • Connectivity	• LOGISTICS • RDTE Mission Diverse • Test Ranges • Munitions • Workload • Maintenance • Supply Storage • Ammo Storage • WELL BEING • Crime Index • Medical Availability • Housing • In State Tuition • Employment	• COST EFFICIENT • Workforce Avail. • Area Cost • Joint Facilities • C2 TGT, Facilities • Inst. Unit Cost • FUTURE OPTIONS • Buildable Acres • Brigade Capacity • Environment • Urban Sprawl • Infra. Proximity • Water

Figure 3: Military Value—Installation

In a nutshell, one does not score well in areas in which one does not work; one does score well in areas in which one does work — an unfortunate consequence if one's mission is Land and Joint C4ISR. Figure 3 presents the attributes; only two have a slight relevance to a R&D or C4ISR mission, but Fort Monmouth scored quite high (top 12%) in the Army in the cost efficiency category.

Based on other BRAC recommendations and inspection of Aberdeen today, one can quickly ascertain that Aberdeen has room for additional missions and needs tenants to help pay for overhead. The MVI technique drives the Army (or vice versa) towards the solution to put many functions on fewer big bases. In this case, the mission (the C4ISR mission) will be put at great risk for a yet-to-be substantiated business theory.

It is noteworthy to mention that neither the Air C4ISR center nor the Maritime C4ISR center deliberators (in their respective Services and in the T-JCSG) seemed worried about optimizing base business functions. They chose to optimize around mission accomplishment and leverage the excellent workforce surrounding their single mission bases in California, New York and Massachusetts.

Military Judgment.

Military judgment overrode quantitative military value several times during the DOD BRAC deliberative period. For example, early-on in the T-JCSG scenario development phase, military judgment was used to override technical military value

scores; in the Land C4ISR instance, much smaller research programs were given greater emphasis than much bigger and higher scoring D&A programs. Just the opposite occurred when the Air C4ISR center was being debated.

Such unexplained inconsistencies are a concern. Equally concerning is: who might be the "military judges" who made these weighting decisions? In the C4ISR area, little evidence exists that senior, C4ISR-experienced military personnel were involved.

Will the real Military Value please stand up?

The DOD BRAC recommendation would move a multi-billion dollar, 5000+ person, highest mission military value C4ISR capability to an installation with insignificant C4ISR program levels and employee numbers—and with the lowest mission military value scores—in order to satisfy a military value scheme that aims to save the business base of a large installation with new found vacancies. This move, for a cost of more than $1B, results in the loss thousands of technical employees and the insertion of unacceptable risk into Army and Joint C4ISR programs. Which military value is more important—mission value or garrison operations value?—and for what cost/risk?

An Opportunity for True Jointness.

DOD has the opportunity to create a robust Joint Concept by linking the highest ranked C4ISR RDA organization, with the strong military value for installations that Fort Dix received (23rd) with excellent scores in all 40 attributes (Annex 1., Capability Analysis; DA BRAC 2005—Analysis and Recommendations). By adding the capabilities of the Air force and Navy to those Fort Dix Army installation criteria/attributes and coupling with the ranking of Fort Monmouth's installation cost and C4ISR rankings, DOD has the opportunity to create a true Joint capability that is technically proficient and operationally efficient as a path to the future Joint Warfighter. Figure 4 shows how a linked Dix, Lakehurst, McGuire Monmouth Base would fair using the Army installation attributes. All blue is a strong score.

• TRAINING • Direct Fire • MOUT • Heavy Maneuver • Indirect Fire • Airspace • General Instruction • Applied Instruction • Air Quality • Noise Contours • Soil Resiliency • POWER PROJECT • Mobe. History • Force Deploy • Material Deploy • Operations • Accessibility • Connectivity	• LOGISTICS • RDTE Mission Diverse • Test Ranges • Munitions • Workload • Maintenance • Supply Storage • Ammo Storage • WELL BEING • Crime Index • Medical Availability • Housing • In State Tuition • Employment	• COST EFFICIENT • Workforce Avail. • Area Cost • Joint Facilities • C2 TGT, Facilities • Inst. Unit Cost • FUTURE OPTIONS • Buildable Acres • Brigade Capacity • Environment • Urban Sprawl • Infra. Proximity • Water

Figure 4: Military Value of Joint Organization

3.0 THE LOSS OF INTELLECTUAL CAPITAL: Deviation from Criteria 1, 4, 7

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 a 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.

A large percentage of the workforce will not move:

- BRAC report uses 75% relocation as a standard for calculations – history over all BRAC periods show that *technical workforces moved at a rate less than 20%.*
- Fort Monmouth/Belvoir C4ISR personnel are a highly skilled and an "in-demand" workforce that has many options for outside employment. *Statistics for recent hiring in New Jersey punctuate this point. New Jersey currently has America's lowest unemployment rate and technology job opportunity growth is expected to continue.*
- Data on technology workforce moves from past BRAC decisions do not support the large percentage used as the BRAC calculation standard. *Estimates are that well less than 20% will go.*
- Recruitment, time delays in training the workforce and high cost of trying to obtain the right people are understated or not considered. *Our estimates are that it may take as much as 100% (average) of salary to obtain new people when all factors are considered.*
- There is an excessive time to get clearances and majority of the new workforce must be cleared at the Secret level to function. *Clearances cannot start until the employee is hired and are averaging above 18 months for TS/SCI clearances and up to 12 months for secret clearances. This is all lost and unproductive time.*
- Establishing the credentials for the Acquisition Certified Work Force takes time to meet experience thresholds and continuing educational requirements.

C4ISR is a dynamic and challenging multi billion dollar business for Fort Monmouth and its elements at Fort Belvoir. The lynchpin for this successful business is the dedication and competence of the personnel and the system engineering expertise that integrates its multiple products. Personnel in C4ISR constitute "critical infrastructure" just like a three mile long pier is considered "critical infrastructure" for seagoing ammunition loading. Fort Monmouth's active R&D activities include: rapid adaptation of commercial products; the largest Army Small Business Innovative Research program; a large number of Cooperative Research and Development Agreements with Industry; dynamic interaction with Industry Independent Research and Development programs; networked laboratories; and field experimentation to better evaluate emerging technology in a real environment. *The annual funding for the R&D activities is $876 Million on average.*

FORT MONMOUTH

Fort Monmouth has the largest number of U.S. Army acquisition programs (98) being managed by C4ISR experts with a portfolio of $12 Billion (Source: Fort Monmouth reports and briefings). These programs cover: post, camp, and station infrastructure; strategic reach-back communications; sustaining base communications; tactical C2 systems; Intelligence systems; Electronic Warfare systems; and Radar and Sensor Systems for the Army, Joint, Coalition and Intelligence communities. *The leadership & contributions of these acquisition experts are providing needed capabilities for our current force & the foundation for the future force.*

Fort Monmouth provides the sustainment of all C4ISR systems in the field and accounts for approximately half the Army inventory of National Stock Numbered items. It has Logistics Representatives in the field with the users; fields and trains new equipment (610 fieldings); and are leading the revolution in military logistics. Fort Monmouth is executing the Logistics Modernization program and is the systems integrator to link wholesale and retail sales into a single commercial based system. *This new system is "live" at Fort Monmouth and will soon begin migration to the other Army Commands.*

Fort Monmouth is also the center for C4ISR Software Management and provides for maintenance and software upgrades to deployed systems. Its software engineers are "forward deployed" to provide real time upgrade support to the using units. These experts currently support over 200 systems with 190 Million Lines of Code.

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, and it clearly violates the DOD BRAC criteria.

A Look at the Characteristics of the Multi-Functional C4ISR Workforce at Fort Monmouth and its Fort Belvoir Components:

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 managers 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 the BRAC process. In addition, there is a considerable salary differential between government mid/senior managers and industry

and we do not anticipate any significant number of "experienced" industry personnel taking government jobs due to significant pay differences.

Figure 5 below shows the statistics of the personnel implementing Research (Applied Research and Advanced Technology Development) and also providing Department of the Army matrix engineering support for the various PEO/PMs. The workforce is highly technical averaging 18 years experience with 67% Engineers; 12% Scientists; and 3% Business. 82% have Degrees with 39% Masters or higher. Many S&Es have crossed the technical disciplines shown in the figure increasing their value to the organization. Because of the co-location of Research (R) with Development and Acquisition (D&A), many people have worked in both the certified acquisition world and the R&D world. It is not unusual to find individuals that have worked Intelligence, Command and Control, and Communications in both program management and technology development positions. This level of across-the-board capability cannot be easily recruited; it must evolve as part of a career path.

Technical Discipline	# People	Degrees BA/BA, M, PhD	Clearances Conf.—TS/SCI
Command & Control	355	289 (81%)	340 (96%)
Intelligence & Info Warfare	372	311 (84%)	372 (100%)
Software	244	243 (100%)	230 (94%)
Communication	461	394 (84%)	400 (87%)
Night Vision & Sensors	517	378 (73%)	500 (96%)
Headquarters	106	73 (69%)	100 (94%)
Totals	2055	1688 (82%)	1942 (95%)

Figure 5: R&D Workforce Statistics

Over the next five years, 1336 of the skilled R&D personnel are eligible for retirement or optional retirement (65% of the workforce) under the old Civil Service Retirement System. With an average age of 48, most would normally remain until age 61 (a real statistical average) but BRAC would force them to make an early decision to leave with the majority of the senior personnel leaving early because of their market value. It is relatively easy to recover a 2%/year pension loss once employed at a higher salary in industry. The majority of this workforce has high security clearances with many at the SCI level. Those hired in the past approximately 25 years are under the Federal Employee Retirement System, which is a portable system, akin to a 401K plan. These employees are not "handcuffed to 35 years of service and 50 years of age. They can choose to carry their pension contributions with them to a Federal or non-Federal employer in the prospering New Jersey technical employment environment.

Figure 6 shows the Development and Acquisition (D&A) personnel statistics which include the Post Deployment Software support and the Logistics functions. While the number of degrees is lower than those found in Fort Monmouth/Belvoir's R&D components, the average years of experience is the same 18 years. This workforce is also highly

Area	# People	Degrees BA/BA, M, PhD	Clearances Conf.—TS/SCI
Cmd. Control, Communication	275	176 (64%)	275 (100%)
Intell. EW & Sensors	106	67 (63%)	106 (100%)
Software Engineering	156	101 (65%)	156 (100%)
Logistics & Headquarters	1943	1071 (55%)	1943 (100%)
Totals	2480	1415 (57%)	2480 (100%)

Figure 6: Development & Acquisition Personnel Includes Software & Logistics Support Plus Command Hqs.

educated with a high percentage of Masters Degrees, and is holding many of the Acquisition Certified positions. Over 80% of the positions are Acquisition Certified, including those in the RDEC. At Fort Monmouth/Belvoir there are 3,846 Acquisition Certified positions. The Logistics staff is highly specialized and experts in supporting the complex C4ISR systems. They manage over 57,000 materials/items, half the total items managed by the Army and includes over 6,000 end items. In the last year (2004) alone they have performed over 800 fieldings of C4ISR equipment and over 450 so far this year. The logistics staff participated in 400 deployment events with over 200 logistics assistance representatives with Army units in OIF/OEF. They have also "reset" 180 battalions with over 75 different C4ISR systems.

TRAINING----is a continual process at Fort Monmouth and is a combination of Army, DOD, and centrally-funded/unique technical and leadership classes. For the Career Program 11 (Comptroller) up to 25 courses are required for new hires; for Career Program 14 (Contracting and Acquisition) up to 10 courses are required for new hires; for Career Program 16 (E&S) up to 8 courses are required for new hires with an advanced degree highly encouraged; and for Career Programs 13 & 17 (Materiel Maintenance and Supply Management) up to 17 courses are required for new hires.

Fort Monmouth is the host site for the Defense Acquisition University (DAU), Northeast Regional with approximately 1,500 participants in FY 04. It is also a Distance Learning Location for the Naval Post Graduate School with 15 participants in FY 05.

It will be extremely difficult to find the critical GS-13 and above employees who must meet the acquisition certification criteria. Certainly a Land C4ISR center at Aberdeen will be able to hire entry level technical employees, but they will take years to get enough experience and certification to be effective mid-level managers. In the meantime there will be an unacceptable gap in leadership and a probable inability to carry out even fundamental acquisition functions for a program that in development and production exceeds $5B.

Because Industry is a large part of our direct support workforce, the industry statistics must be considered in any loss of intellectual capital analysis. Figure 7 shows a sampling of the Fort Monmouth/Belvoir contractor base, estimated at 4000 people.

We surveyed 7 contractors totaling 1221 people and found a very highly skilled workforce (72% With Degrees) and mostly all cleared (93%) many at the SCI level. These industry personnel are largely collocated with government personnel and

Company	# People Direct Support	Degrees BA/BA, M, PhD	Clearances Conf.—TS/SCI
A	304	204 (67%)	303 (100%)
B	149	132 (89%)	122 (82%)
C	171	103 (60%)	146 (85%)
D	116	70 (60%)	89 (77%)
E	182	135 (76%)	152 (84%)
F	119	60 (50%)	100 (84%)
G	180	180 (100%)	180 (100%)
Totals	1221	804 (72%)	1139 (93%)

Figure 7: Support Contractor Statistics

facilities and operate as an extension of the government. Industry labs are utilized in direct support of and critical to the Fort Monmouth mission. We also found that 15-18% of this workforce is retired military or government yielding a very large number of years of practical and program management experience. Our recent survey indicates that 80% of this workforce would not move; 100% of those company's employees who are retired military or government personnel would not move.

A loss of the direct support industry base (only 20% moving) will exacerbate the loss of government personnel. In addition, Industry offering higher salaries would probably hire people "away" from their customer—the government. If we need to hire a contractor cleared workforce on the order of 3200 people (80% of the estimated 4000 contractors) along with the government workforce estimated 4500 (80% of 5000) as well, it will create huge holes in C4ISR capability. The clearance delays alone, which can only begin once an individual is hired, will bring operations to a halt.

SECURITY CLEARANCE ISSUE:

The large number of security cleared personnel required to execute the C4ISR mission will present an insurmountable task to recruit, hire and train personnel with adequate clearances who also have the requisite expertise to implement the Fort Monmouth C4ISR mission. Delays in obtaining clearances can and probably will exceed 18 months for TS/SCI and up to 12 months for secret— the clearance process can only begin once the individual is hired. This will result in unacceptable delays in hiring what is essentially a new workforce at Aberdeen.

Dr. Sega, the Director of Defense Research & Engineering, in his testimony before the Subcommittee on Emerging Threats and Capabilities of the Senate Armed Services Committee, on 9 March 2005 indicated the following:

- There is an increasing and growing concern about the availability of cleared S&Es for the DOD workforce.
- 60% of federal employees are over 45 years old and will be retirement eligible shortly under both the CSRS and FERS.
- A significant number of the workforce with valuable skills will be eligible for retirement and in fact, under FERS, most employees would consider their retirement contributions as portable.
- There is a declining supply of U.S Citizens awarded degrees in defense related S&E fields.
- DOD will face increased competition with domestic and global commercial interests for top notch cleared people.

Dr. Sega said: "The department is struggling to recruit enough engineers".

The Federal Times in a 7 February 2005 article stated: "that the Defense Department needs to hire 14,000 S&E personnel next year. The pool of candidates is shrinking with > 50% of graduates being foreign nationals. The pipeline of available talent is running dry."

The Honorable Claude M. Bolton, Jr. Assistant Secretary of the Army (Acquisition, Logistics and Technology) before the Air Land Subcommittee on the Senate Armed Forces Committee, March 11 2004 also recognized this problem. "With over a decade of downsizing activities and the anticipated retirements of 25% eligible to retire (based on 55 years of age and 30 years of service) or more of Army acquisition workforce personnel in the next five to 10 years, Human Capital Strategic Planning for the Army Acquisition, Logistics and Technology Workforce is critical in order to proactively plan for the future acquisition workforce. Loss or diminishment of the highly skilled acquisition workforce will seriously impact warfighting capability and readiness unless dramatic steps are taken."

Dr. Sega chaired the T-JCSG panel and it is surprising that the T-JCSG didn't mention, calculate or otherwise recognize the magnitude of the problem created by moving so many skilled positions that require clearances from Fort Monmouth/Belvoir to Aberdeen. Senior leaders recognize the magnitude of this problem, but it was not factored in the BRAC process. When one reviews the dozens of scenarios considered over many months by the Army and the T-JCSG, not one mentions the potential significant loss in workforce, the challenge in rehiring to fill thousands of technical position all at once or its resultant disruption to the Army.

"IF THE BRAC RECOMMENDATION IS UPHELD WILL THE TALENTED WORKFORCE MOVE?"

Answer: No. 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 by Harris Interactive and attached as an Annex indicates that less than 20% will move. This is consistent with historical data from previous BRAC moves of technical workforces.

The rationale for most of the people not moving (Figure 8) is that they had a two-income family; had children in school and were not willing to disrupt their lives; had marketable skills that were found attractive in industry; or were going to take an early retirement.

As the Figure 8 shows, only 13% of the ARL workforce moved from Fort Monmouth to Adelphi as a result of the 1993 BRAC decision. Taking into account the lead time necessary to grant a patent and the two or three years it took to fully implement BRAC

	Activity	From	To	Total	# Moved (%)
BRAC 95	Signals Warfare	Vint Hill, VA	Ft Monmouth, NJ	180	29 (16%)
BRAC 93	Phy. Sciences Dir.	Ft Monmouth, NJ	Adelphi, VA	300	40 (13%)
1990	TMDE	Ft Monmouth, NJ	Huntsville, AL	40	1 (2%)
1980	Laser Tech Div	Ft Monmouth, NJ	Ft Belvoir, VA	50	5 (10%)

Figure 8: Workforce Move Statistics

93, the bulk of the 360 scientists and engineers (S&E) that did not move as a result of BRAC 93 found other employment. In the 1995-1997 timeframe, a measure of productivity of a basic research laboratory such as ARL was the number of patents awarded. Figure 9's chart shows a catastrophic decline in the number of patents awarded; a decline that has yet to be corrected.

While publishing and producing patents are standard measures of performance for the basic and applied research workforce, the measures for the systems technologists are counted in terms of system delivery. The result when the systems technologists' performance falls is the Warfighter does not receive equipment or support.

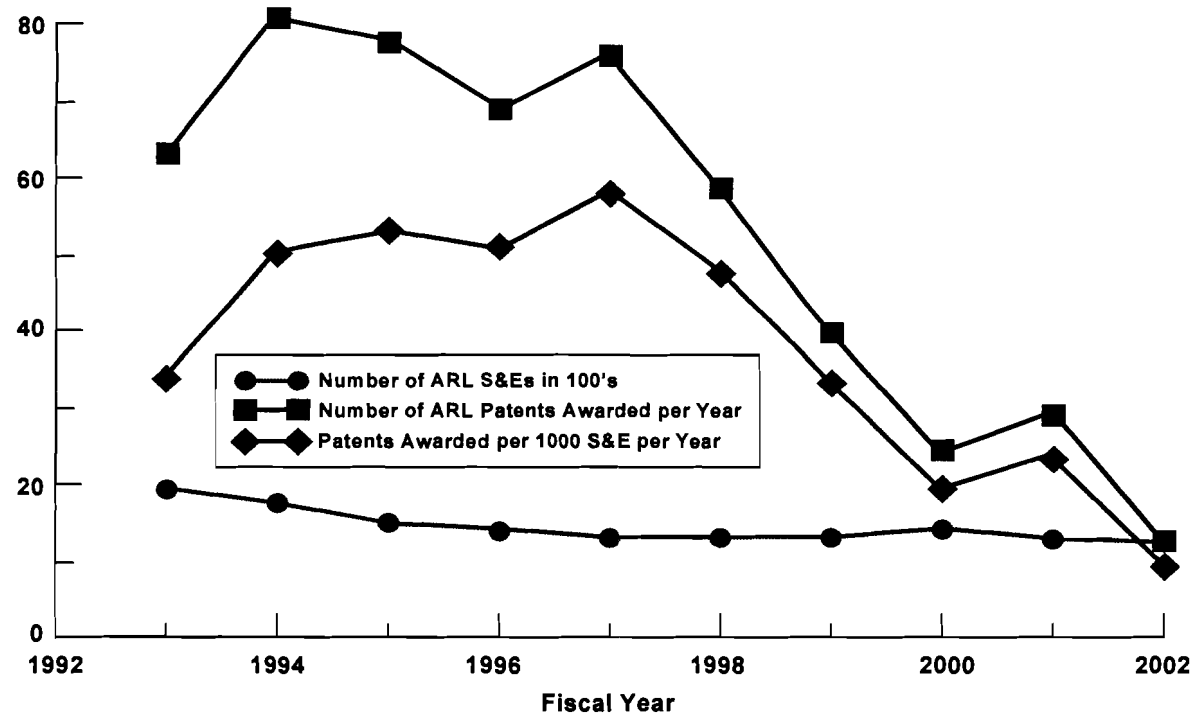

Figure 9: Productivity Declines As A Result of BRAC 93
Note: The Peaks in 1994—1996 Result from Patents Submitted Prior To BRAC 93

NEW JERSEY SCIENCE & ENGINEERING HIRES IN 2004: To reinforce the opportunities available in New Jersey, we surveyed recent S&E hires in 2004:

- 23,742 new hires for S&E related occupations per quarter.
- New hires for S&E accounted for 5% of total state new hires (464,548).
- 11,545 S&E degrees conferred in FY 2004.
- S&E Degrees accounted for 18.8% of total State Degrees in FY 2004.
- Computer Systems Design and Related Services ranked 1st in terms of new hires.
- Telecommunications industry ranked 3rd in terms of new hires.

CAN THE TECHNICAL SKILLS AT ABERDEEN FILL THE GAP?

Answer: No. Aberdeen employs a number of S&Es in chemical and biological warfare defense and in the Army Research Laboratory's materials sciences and super-computer programs. These disciplines are not compatible with the C4ISR development and acquisition (D&A) functions being recommended for relocation to Aberdeen. The very limited number of C4ISR personnel and their very minor programs (<$4M/year) cannot serve as a base upon which relocating employees or new hires can "fall in" on nor can that very, very small Aberdeen cadre of C4ISR employees make an easy transition to developing and fielding C4ISR systems.

We also examined the capability of the workforce at Adelphi and find C4ISR personnel conducting basic research and exploratory development, which transitions to Fort Monmouth and Fort Belvoir for productization. The skill set at Adelphi is not compatible with the advanced technology development; systems development and demonstration, production, logistics, and sustainment mission for Fort Monmouth/Belvoir. They have neither the technical orientation nor the acquisition experience to fill personnel gaps.

CONCLUSIONS FOR LOSS OF INTELLECTUAL CAPITAL

- BRAC analysis has not given sufficient weight to C4ISR Intellectual Capital. *The process is flawed because the cost model uses 75% as a standard for relocation calculations, but the reality of a 20% move is never factored into the Military Value or Military Judgment analyses and therefore DOD has violated their criteria.*
- The combined workforce of 5000 government personnel and 4000 industry personnel in direct support will result in a significant loss of capability. *The absence of cleared people with C4ISR experience will seriously impact Army and Joint missions. Even assuming a higher percentage will move, the problem still remains, especially if only the younger, less experienced people move.*
- Excessive delays in obtaining high level (TS/SCI) security clearances (18 months average) and secret level (up to 12 months) will create a critical personnel vacuum, with hired people being unable to work efficiently because of the absence of a clearance. For the many programs requiring an SCI clearance, the loss of productivity is extreme. *Clearances are a major problem since a condition of employment in most areas of C4ISR is having a Secret Clearance.*

- The existing skills at Aberdeen and Adelphi do not match the needed C4ISR skills and those personnel cannot fill the jobs required. *A valuable C4ISR individual is one that has many years experience in the area with cross training across the C4ISR domains. Research personnel are normally focused in a single research area and have no understanding of the systems implications of developing C4ISR systems.*
- The length of time to recruit, hire, and train this NEW workforce has not been considered and the impact on the Warfighter never considered. *We have indicated the training and experience thresholds required for mid to high level personnel mandated by the acquisition corps—it will take considerable time to enable a new workforce to be productive and "learn" how to bring programs and capabilities to the field.*
- Finally, one must consider a frightening scenario: some will move – 20% or so – but they are likely to be the least qualified and least confident in their abilities to get rehired in New Jersey. Certainly there will be a few very strong performers, but too many will be from the "B-Team." The B-Team will be faced with: program disruption, relocation logistics, and hiring several thousand technical people. What quality will the B-Team hire? Are they likely to hire the A-Team or the C-Team? The prospects for Land C4ISR for the next decade are ominous.

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 is an unacceptable risk. 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 those mid level and senior mangers that will not move and cannot be replaced simply by a new hire. The loss of thousands, mostly all at once, was not considered. The enormous cost to reconstitute the workforce was not calculated. The unavailable supply of clearable technical personnel was not considered. The competition for the best people to work with support contractors instead of with the government was not considered. That the less qualified person will likely relocate and be given responsibility for dealing with relocation logistics, program disruption and hiring thousands of replacement employees was not considered.

WHY FORT MONMOUTH IN NEW JERSEY?

Fort Monmouth's location in New Jersey is of great benefit to the Army and the Warfighter because it can leverage and support the: "Information Technology" corridor that exists with both Industry and Academia; cooperative research agreements with DoD and Commercial Industry leading contractors; and New Jersey and New York in their Homeland Security objectives.

New Jersey is home to many high technology information industry and academic institutions, all leading in and specializing in the underpinnings of C4ISR. Fort Monmouth's proximity to these entities facilitates the collaboration necessary to develop, field and sustain today's, and tomorrow's, superior C4ISR capabilities. This geographical advantage also enables Fort Monmouth to cultivate and harvest the very best candidates to continually refresh the technical workforce. Figure 10 shows some of the local relationships Fort Monmouth has with academia and industry and a brief summary of each follows.

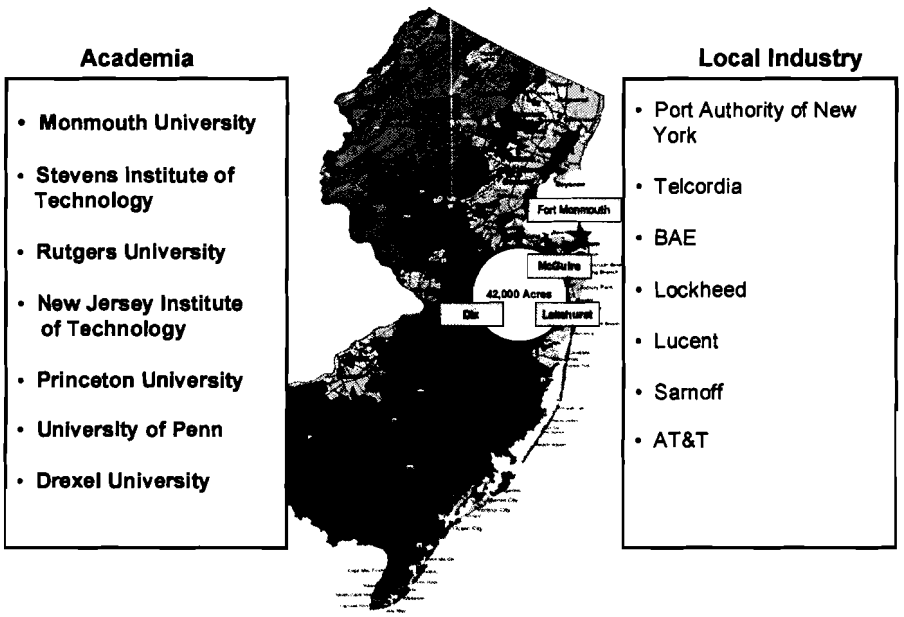

Figure 10: Fort Monmouth Relationships

ACADEMIA (only a brief summary of the work is presented)

- **Monmouth University**—19 year relationship with Monmouth University allows Fort engineers to obtain Masters of Science Degree in Software Engineering, with curriculum established to meet changing software

engineering and Army software development needs. Over 220 graduates to date from this program, of which over 70% have been retained at Fort Monmouth. Fort Monmouth also partners with Monmouth University in the establishment of the Center for Rapid Response Database system that enables rapid response to bioterrorism incidents.

- **Stevens Institute of Technology**—conducting joint R&D in the areas of optoelectronics and photonics for application to wide-band communications. Also working in their WinSec Laboratory evaluating networks for homeland security and an urban network of 50 sensors around Hoboken to determine sensor requirements and networking for warning. In addition, a focused set of courses for C4ISR has been constructed that yield a MS in Computer Science (Cyber Security Concentration; MS in degrees in Computer Engineering, Electrical Engineering, and Systems Engineering for Fort Monmouth NJ.)
- **Rutgers University**—full sponsor of the Wireless Information Laboratory working with senior university researchers in emerging wireless systems, such as, 4G; ad-hoc mesh networks; cognitive radio systems; and sensor networks for pervasive applications. This relationship also leads to access to research sponsored by the leading Telecommunications developers who are part of this team.
- **NJ Institute of Technology**—collaboration on communications projects and sensor-based security systems for infrastructure defense, command, control and first responder support. Objectives are to strengthen communications flow throughout security and rescue communities.
- **Princeton University**—Active collaborative partner in the Princeton Institute for the Science and Technology of Materials (PRISM) with focus on materials science through photonics.
- **University of Pennsylvania**—focused Masters of Science in Technology Management with courses held on Fridays and weekends to accommodate the Fort Monmouth workforce schedules.
- **Drexel University**—collaborative program with Drexel, Sarnoff Corporation and Camden NJ. The top-level goal is to capitalize on wireless technology emerging from the commercial, communications and networking industries. In addition, a Center of Entrepreneurship, located in Camden NJ, has been formed to assist small emerging technology companies grow and to broker partnerships with major DOD industry.

INDUSTRY

- **Port Authority of New York**—Fort Monmouth and its Fort Belvoir elements are providing System Engineering Support for the development and implementation of operational solutions to safeguard the PANYNJ infrastructure and its patrons. Facilities, personnel, equipment and laboratories that cannot be replicated anywhere else are resulting in a tremendous cost saving to all participants.

- **Lucent Technologies**—Cooperative research in the wireless communications, Information Assurance/Security and MEMs Nanotechnologies focus on how these technologies can be applied to the Army Tactical mobile wireless environment. This effort will use Lucent facilities and Fort Monmouth testbed at Fort Dix.
- **Telcordia**—Collaborative research in proactive, dynamic link selection in a mobile tiered network, ad hoc networking and Quality of Service for military and commercial dynamic networks is being performed.
- **BAE**—Collaborative effort for antenna modeling and simulation, testing and validation of network architecture and demonstration, system integration and prototyping of antenna solutions is being performed. The focus is on wideband antennas for use with software defined radios.
- **Lockheed**—Established a cooperative development antenna modeling library for analysis of ad hoc mobile wireless networks for use in the future force.
- **Sarnoff**—Establish a collaborative partnership to capitalize on wireless technology emerging from commercial and consumer communications. A series of joint projects has been initiated for technologies that have application to both the commercial and DOD sector and consist of: high power wide band amplifiers; communications for urban environments; and air-ground unmanned vehicle collaboration.
- **AT&T**—Intent is to leverage AT&T investment in network operations and adaptation of their commercial network management tools for Army mobile wireless environments.

To reinforce the above discussion, we also note that the engineering and scientists professional population in the Fort Monmouth area is very large which gives an excellent source of technical talent for both hiring into Fort Monmouth or for collaborating on important C4ISR programs. This is shown in Figure 11. The Fort Monmouth area has approximately 3 times as many technical professions in its area compared to Aberdeen. Source: Department of Labor Statistics of Engineering and Math/Science Professionals within 60 miles of Fort Monmouth or Aberdeen (May 2004).

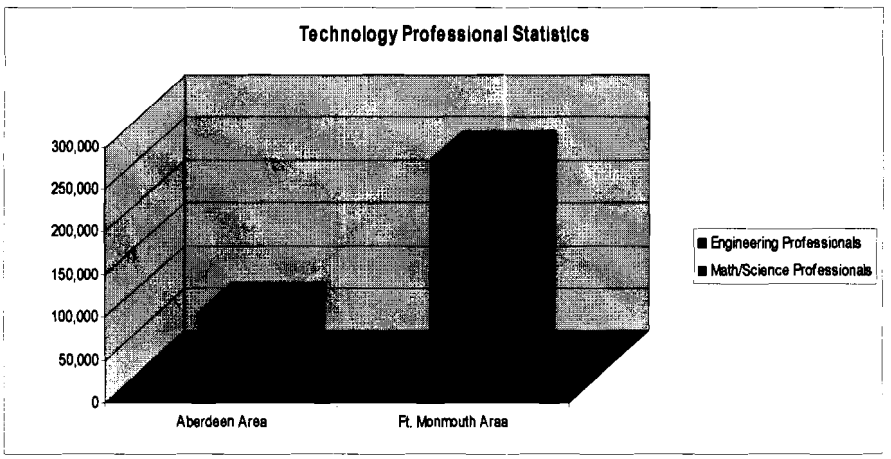

Figure 11: Professional Statistics

WHY NEW JERSEY CONCLUSIONS

- *Talent Pool unequalled anywhere in the world. Skilled IT, telecommunications, and sensor professionals within close proximity.*
- *Talent Replenishment with the capability and capacity to provide the next generation workforce supported by the surrounding education and research infrastructure.*
- *Academia/Industry/ Fort Monmouth linkage that allows for fruitful exchanges between the DOD, Universities, Commercial Industry and DOD Industry—allows Fort Monmouth to adapt technology rapidly.*
- *Proximity to New York with the ability to address challenges of HLS/HLD with dual-use C4ISR technology and to work directly with "First Responders" that have been "battle" hardened.*
- *Joint Base of Fort Dix, Lakehurst and McGuire that permits unique opportunities for experimentation linked to National Guard and Reserve training.*

3.0 PROGRAM DISRUPTION CAUSED BY BRAC RELOCATION: Criteria 1 & 5.

Fort Monmouth and its Belvoir elements are decisively engaged in upgrading the Army's modular brigades and incrementally building the future force through integration of emerging programs. Disrupting these programs during their critical phases (FY 2007-2011) will have a significant disruptive impact on current force and future force capabilities.

PREDICTED LOSS OF PEOPLE:

Within technical organizations, losing a large percentage of the staff is unacceptable in cost and time. There is typically a subset of key people who understand the total architecture of the C4ISR products and the details of why it is being built and how the components fit together. Without this in-depth understanding, it is often difficult to determine integration problems and to successfully perceive the next step—the next evolution of a particular product.

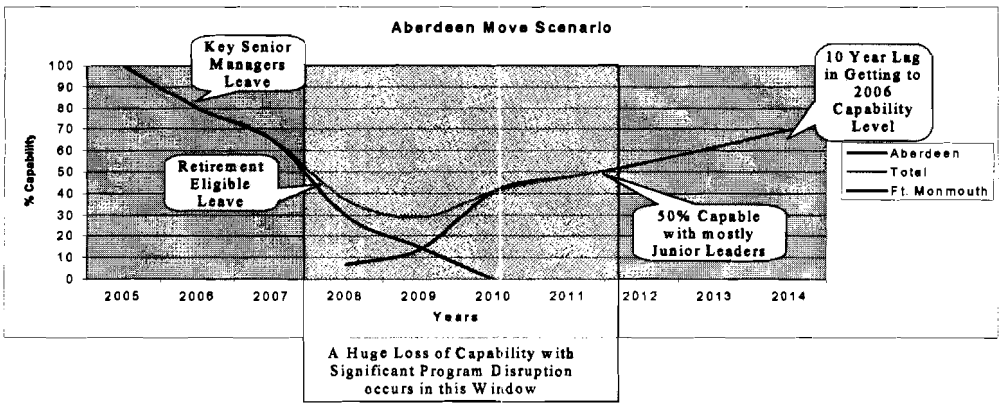

Figure 12: Disruption Based On Loss Of People

Architectural versus purely technical understanding of a product takes many years to develop. Hence, the architects (experienced system engineers) tend also to be the most senior members of the engineering staff. These System Engineers typically provide the mentoring to the newer staff. Losing the architects of a system is equivalent to a ship captain losing his navigation chart. *It is much more difficult to steer the ship without the ability to navigate. Moves of technical organizations are at a very high risk of losing their architects and hence the ability to evolve their products.* Figure 12 shows the loss of intellectual capital with more rapid loss of the more senior personnel on the front end of the BRAC window.

As mentioned previously in this report, a loss of 80% of the people is anticipated. This is backed by previous statistics of BRAC or other moves as well as an independent survey recently completed. Many senior personnel will become eligible for retirement within the BRAC window and the more junior people (hired since 1987) are not handcuffed to a retirement system. We expect many of the key senior managers would leave early (most are highly marketable and will quickly find alternative jobs). We estimate this initial loss at 20% followed by the retirement eligible personnel (which will add an additional 30%) for a total loss of 50%. This loss will then be followed by the younger staff making a final decision at the last possible minute, which we predict will be a final 30% of the original workforce—(loss of 80%). Most of this latter element of the workforce will have just completed a Masters Degree program, paid for by the government, and the higher quality personnel will have visibility within DoD Industry.

Because of the limited availability of S&E in Northeast Maryland and the predicted difficulty in hiring a technical workforce at Aberdeen with the right experience level, with the right clearances, and with the right acquisition certifications, a lag of at least two years will occur, during a significant period, in getting this initial workforce hired. *The result will be a very junior workforce with limited experience in C4ISR, with program disruption pressures, who will be coping with the logistics of a move and the inability to rapidly hire the right people for the right job, while trying to execute a $5B program.*

IMPLICATIONS FOR CURRENT AND FUTURE PROGRAMS: The Army is heavily engaged in creating modular brigades which are more responsive and enable Joint and Expeditionary capabilities. The modular brigade schedule is shown below in Figure 13.

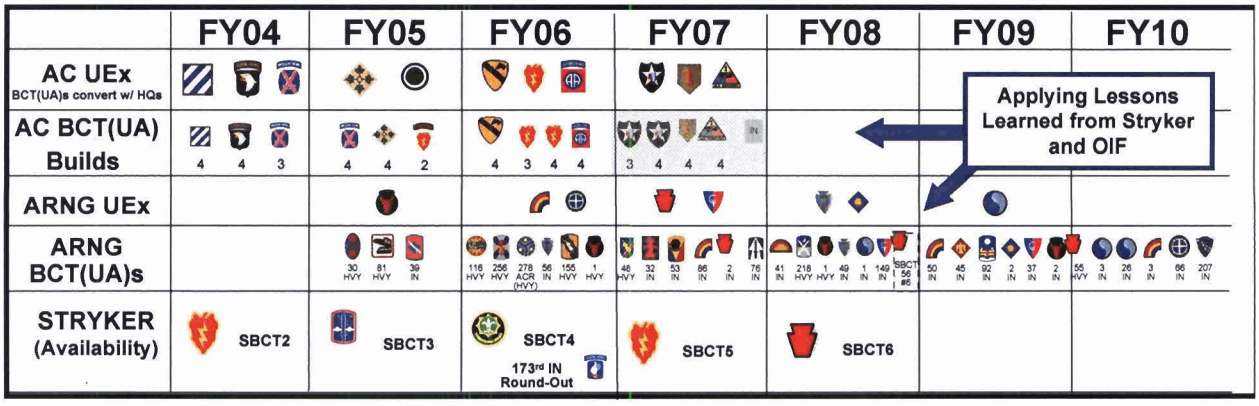

Figure 13: Campaign Plan for Modular Units

This will provide self-contained units that can fight in a non-linear, non-contiguous battle space. These modular units will have significantly increased current C4ISR equipment that will enhance their fighting capability, improve their deployability, and enable connectivity to Joint Headquarters. In addition, as newer C4ISR equipments are ready for fielding, they will be added to the mix of upgrades for the modular units. Improvements in Networked Battle Command enabling systems will provide enhanced situation and terrain awareness and allow the exchange of mission critical information.

The increased communications capability will consist of greater density of radios and satellite connectivity at lower echelons to extend the communications footprint. The ISR improvements will consist of UAVs with sophisticated sensors, increased target acquisition, multi sensors integrated to obtain improved classification and identification of enemy actions and the ability to fuse and integrate organic and external information.

Fort Monmouth has been instrumental in providing many C4ISR systems to these Modular units and providing training and sustainment support as these units deploy. As shown in Figure 13, this will be a continual process during the BRAC window with evolutionary upgrades in addition to the initial fielding.

The Army is Transforming. Fort Monmouth is now and needs to remain integral to that Transformation process. As Transformation progresses over the next decade, the Army will need support and upgrade of legacy systems while the newer systems are evolving to replace them. Both old and new must live together in a dynamic environment, be seamlessly connected, and complement each other. From Operation Iraqi Freedom, we recognize the problems associated with having some units with and others without critical equipment. The Army's modularity concepts and rapid fielding of "good enough" capability across the Force have made Fort Monmouth's C4ISR products even more essential—*more C4ISR products are being fielded at lower echelons to make our Unit of Action elements self contained and more responsive.* Figure 14 shows some of the "newer" C4ISR products that will dramatically improve the "network-centric" capability of our Forces. Fort Monmouth C4ISR technical and acquisition staff: originated the concepts; defined the technical requirements;

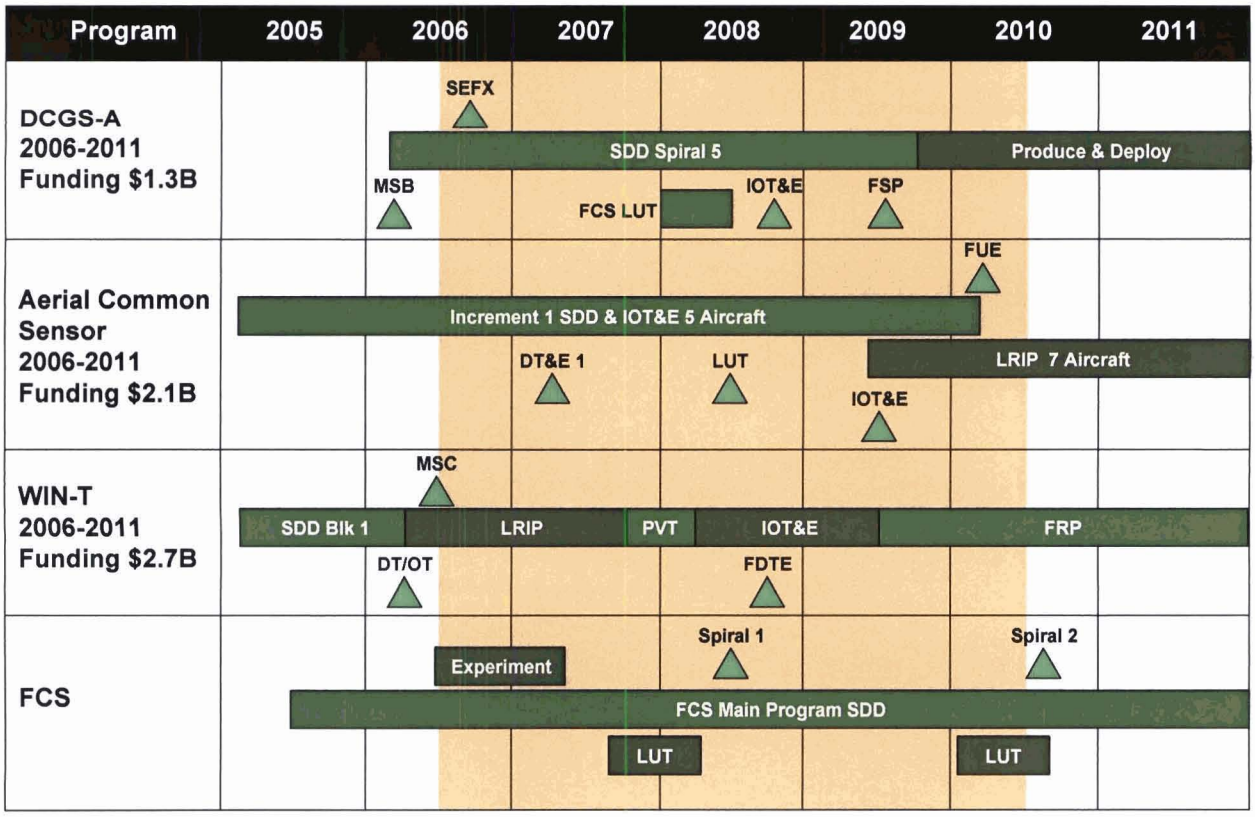

Figure 14: BRAC Impact on Major Programs