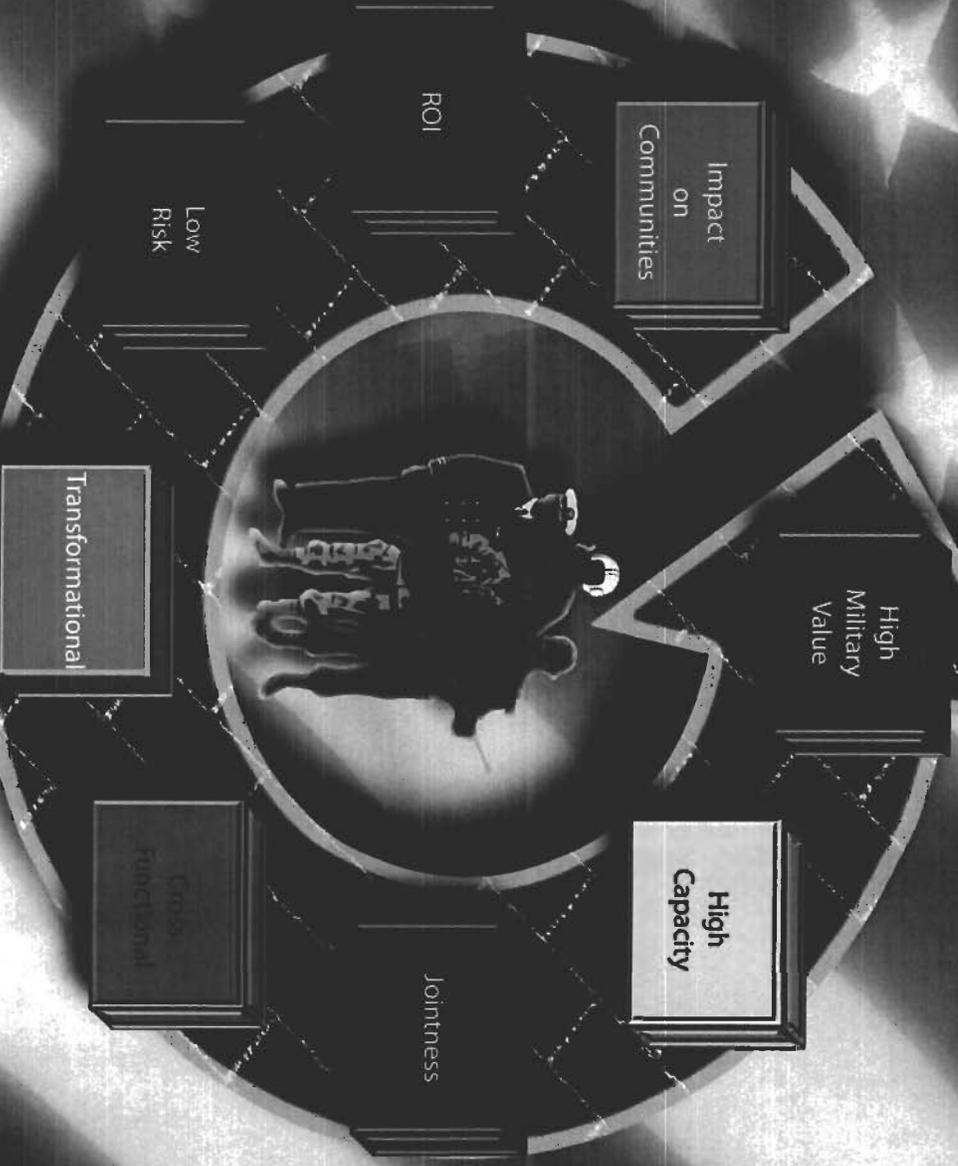


# NSA Crane

## A Model Technical Defense Installation



Matching DoD's BRAC Goals in Electrochemical Energy Storage Systems



## DoD's Primary BRAC Goals\*

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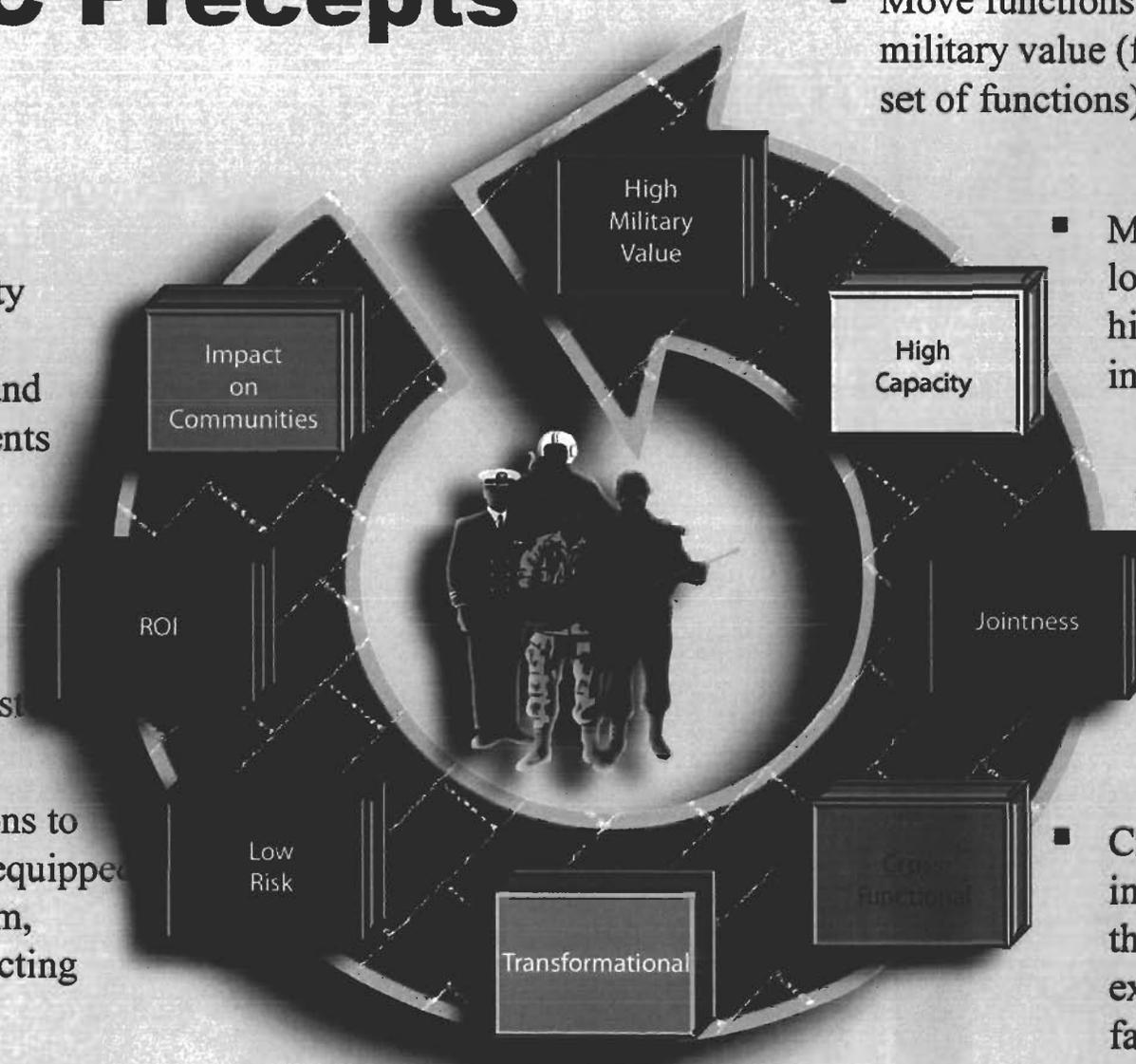
- ➔ Increase military value
- ➔ Reduce excess capacity
- ➔ Reduce costs

- ✓ Joint operations
- ✓ Multi-disciplinary/ multi-functional capabilities
- ✓ Mitigation of encroachment and environmental issues

*\* In consonance with DoD's Transformation Goals*

# BRAC Precepts

- Minimize community impact of closures and realignments
- Maximize ROI and minimize cost
- Move functions to installations equipped to handle them, without impacting Operational Readiness
- Move functions from low to high military value (for the particular set of functions) installations
- Move functions from low to high capacity, high capability installations
- Move functions to increase jointness
- Create synergies by integrating functions that use common expertise and facilities
- Adapt to future requirements in innovative ways



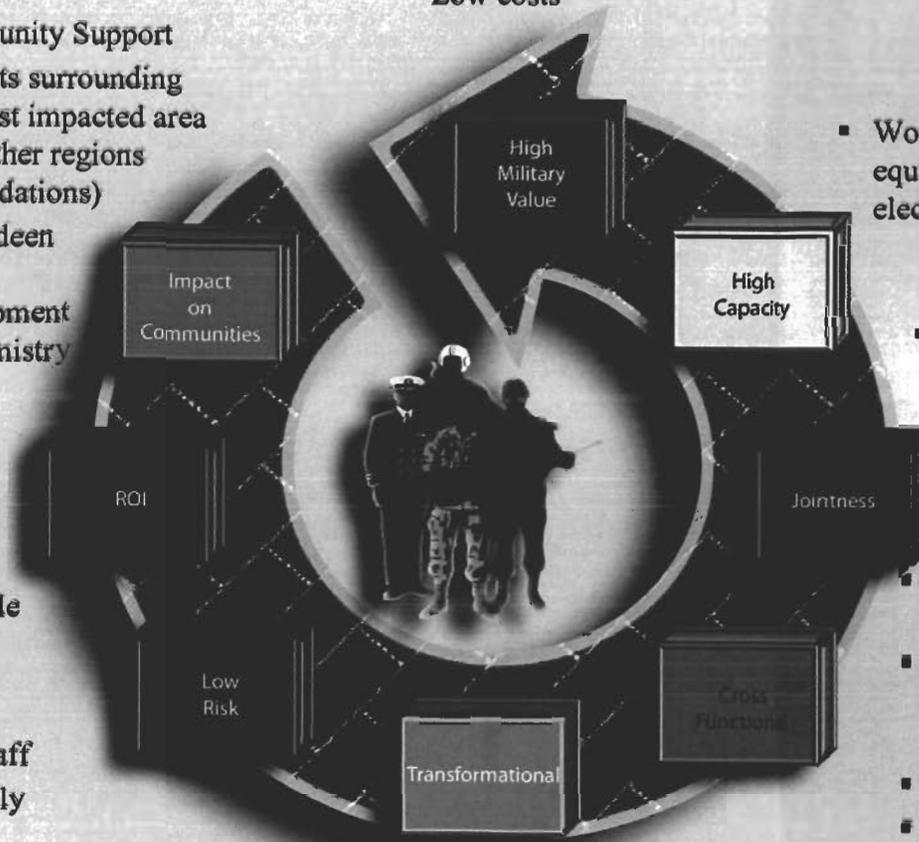
# NSA Crane Model Installation

- Tremendous State and Community Support
- Critical economic impact on its surrounding communities (has second worst impacted area in the US, compared to 241 other regions affected by BRAC recommendations)
- Lower locality pay than Aberdeen
- Expertise, facilities, and equipment to be DoD's Joint Electrochemistry Center of Excellence
- Modern facilities
- Lowest unit costs
- Highest ROI
- Multi-functional synergies
- Leverage assets across multiple services

- <3% turnover rate for engineers and technical staff
- Depth and breadth of highly specialized technical expertise
- Proven record of successfully integrating product engineering with systems engineering

7/29/2005

- Electrochemical power systems military value; exceeds Aberdeen's MV scores for SEEW in R&D, acquisition, T&E
- Data suggests NSA Crane far exceeds other DoD activities in no. of people, equipment value, and facility size.
- Over 100 personnel dedicated to electrochemical power systems
- No encroachment problems or environmental issues
- Low costs



- World-class, modern facilities and equipment that support electrochemical power tasks
- **Electrochemical Power Systems Specialty Site** supporting all Services electrochemical power systems
- Co-located, integrated, full life cycle support
- Multifunctional support, e.g., R&D, engineering, acquisition, logistics, maintenance, and supply
- Integrated industrial and technical
- Co-located, integrated functional capabilities and jointness

- Over \$1B in documented savings in Electrochemical Power Systems alone
- SBIR Lead for MDA power requirements
- Rapid integrated solution deployment
- Industry/academia/government partnerships

- ✓ Fleet Support
- ✓ Acquisition
- ✓ Legacy Systems/Products

**Focus Areas**

*Harnessing the Power of Technology for the Warfighter*

***Ordnance***

- Weapons
- Pyrotechnics
- Munitions

**Special Expertise**

***Electronics***

- Electrochemical Power Systems
- Acoustic Sensors
- Microelectronics
- Computers
- Circuit Boards
- Security

***Electronic Warfare***

- ECM
- Night Vision
- Electro-Optics
- MW Components
- Radar
- Chem-Bio

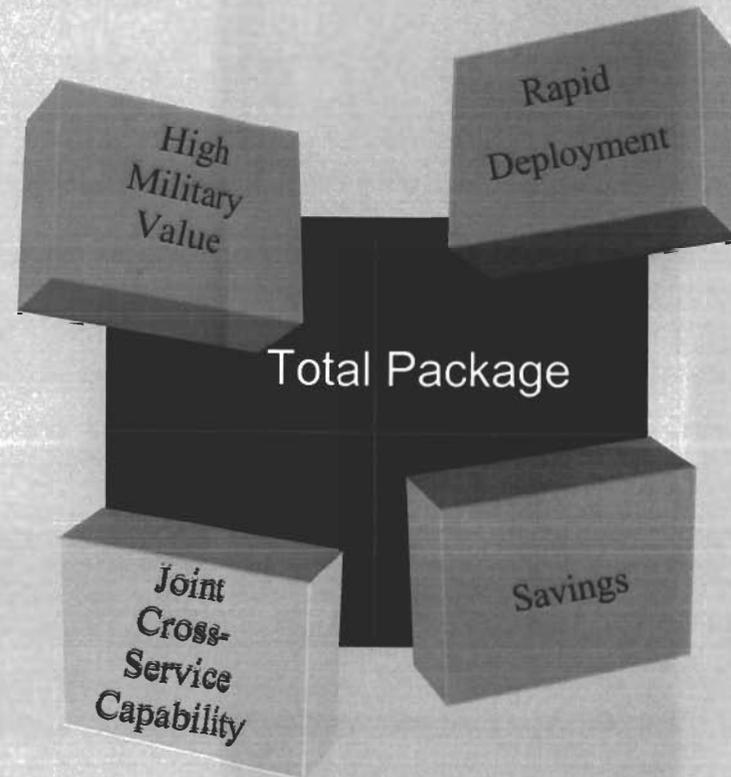
**Core Competencies (Pillars)**

**What Crane Does**

**Design \* Engineering \* Logistics \* Maintenance  
Test and Evaluation \* Acquisition Support \* Supply and Storage \* Program Management**

## NSA Crane Undervalued in DoD Report

- ☒ **Crane's Military Value undervalued**
  - Defense Technical Area Plans (DTAP) levels obscured Crane's functional Military Value
- ☒ **Analyzed by "stove-pipe" teams**
  - Separate analysis by Navy, Army, Industrial Cross-Service, and Technical Cross-Service
  - Integrated industrial and technical capabilities not recognized
  - Joint work/customer base not recognized
- ☒ **No scenarios**
  - Early Navy target for closure, therefore, not looked at as receiving site
  - Evaluating Crane's High Military value
  - Assessing Crane's Model Installation attributes
  - Realigning functions from other sites to Crane



*DoD's ability to influence technology development/produce-ability will be strengthened by capitalizing on existing synergy at NSA Crane.*

## DoD BRAC SEEW Recommendation

- (1) Close Fort Monmouth, NJ. Relocate SEEW\* research, development, and acquisition activities to Aberdeen Proving Grounds, MD and Army Research Laboratory, MD.

Precept	Violation/Disadvantage
High Military Value	Does not take advantage of NSA Crane's high technical military value within DoD for Electrochemical power systems. Violates principle of moving from lower military value to higher military value site.
High Capacity	Moves electrochemical power tasks at Fort Monmouth to more limited electrochemical power capability in Aberdeen. Requires duplication of Crane facilities/equipment at Aberdeen. Increases the footprint. Data suggests NSA Crane far exceeds other DoD activities in number of people, value of equipment and size of facilities.
Jointness	Does not support a truly JOINT Electrochemical Power Specialty Site. Moves one agency's operation (Army) to another single-service operation (Army).
Cross Functional	Stovepipes electrochemical power systems to a single agency (Army) with narrow capability focus (RDA, T&E).
Transformational	Only moves the electrochemical power systems from one location to another. Does not address issue of fragmented power improvement initiatives.
Low Risk	Does not take advantage of a proven record of successfully integrating product engineering with systems engineering (Crane)
ROI	Misses the more cost-effective move to a site that already has expertise, facilities, and equipment, i.e., Crane. Crane's locality pay structure is 10.9%; Aberdeen's is 16.0%, which, under the BRAC recommendation means an automatic increase in labor costs of 5.1%.
Impact on Community	The BRAC impact on Martin County, Indiana, (Crane impact area) is 13.1%.

## Alternate Recommendations and Advantages (Sensors, Electronics and Electronic Warfare)

- (1) Create a DoD Electrochemical Power Specialty Site at NSA Crane.
- (2) Change BRAC recommendation and move electrochemical power functions from Fort Monmouth to Electrochemical Power Specialty Site at NSA Crane.

Precept	Compliance/Advantage
Military Value	Recognizes the integrated capability located in the highest military value activity.
High Capacity	Capitalizes on current capabilities and capacities and negates a MILCON requirement.
Jointness	Capitalizes on existing Joint Service capabilities.
Cross Functional	Capitalizes on extensive existing Joint multi-functional capabilities.
Transformational	Addresses DoD's most significant power systems problem of fragmentation by capitalizing on NSA Crane's synergy.
Low Risk	Innovative processes are already tested with no additional risk.
ROI	Capabilities are moved to a low cost, high military value activity.
Impact on Community	Significantly reduces the cumulative negative impact on Martin County.

## Sensors, Electronics and Electronic Warfare Conclusions

*The recommendation to move the SEEW to Aberdeen Proving Ground violates all Precepts and cannot be justified.*

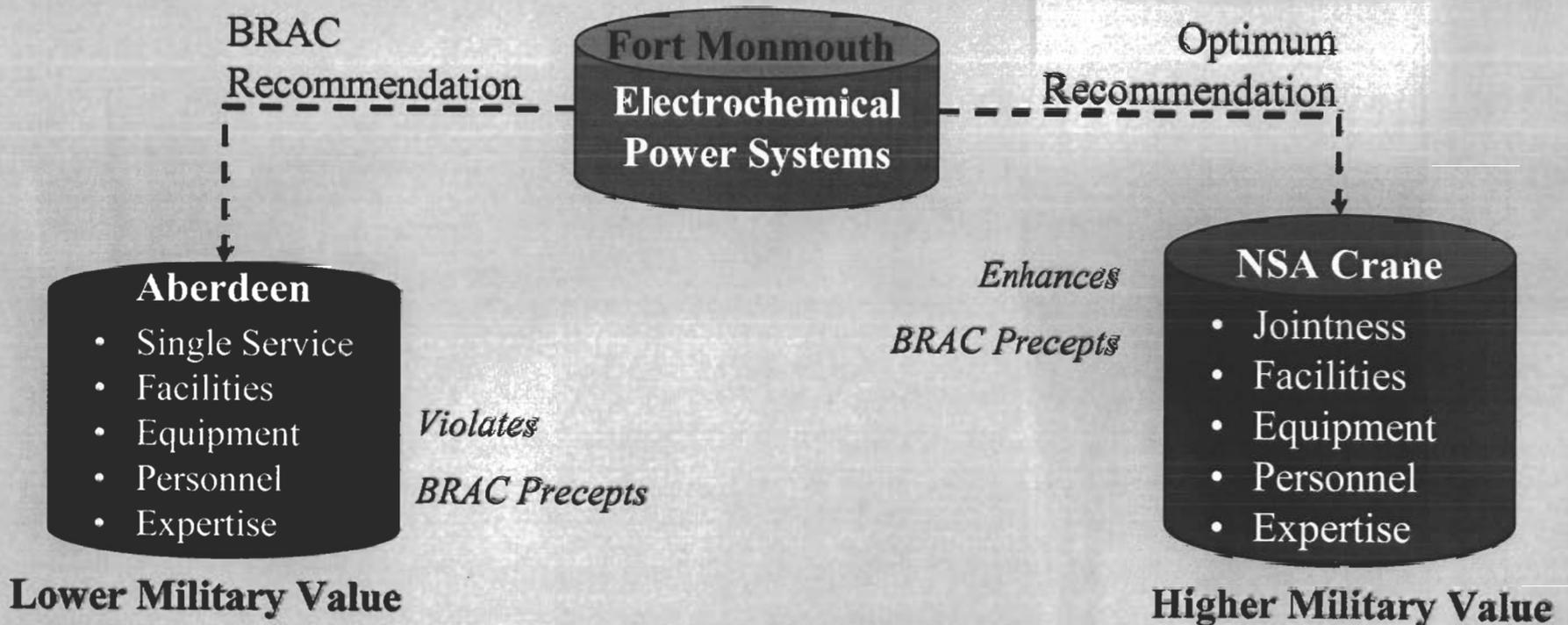
- Instead, validate a Joint Center of Excellence for Electrochemical Power Systems at Crane
  - Promotes jointness
  - Enables technical synergy
  - Exploits existing center-of-mass of scientific, technical, and acquisition engineering expertise
  - Provides a DoD source dedicated to ensuring stewardship and maintenance of industry resources



*Batteries were the only logistics item that had to be briefed to the President during Operation Iraqi Freedom.*

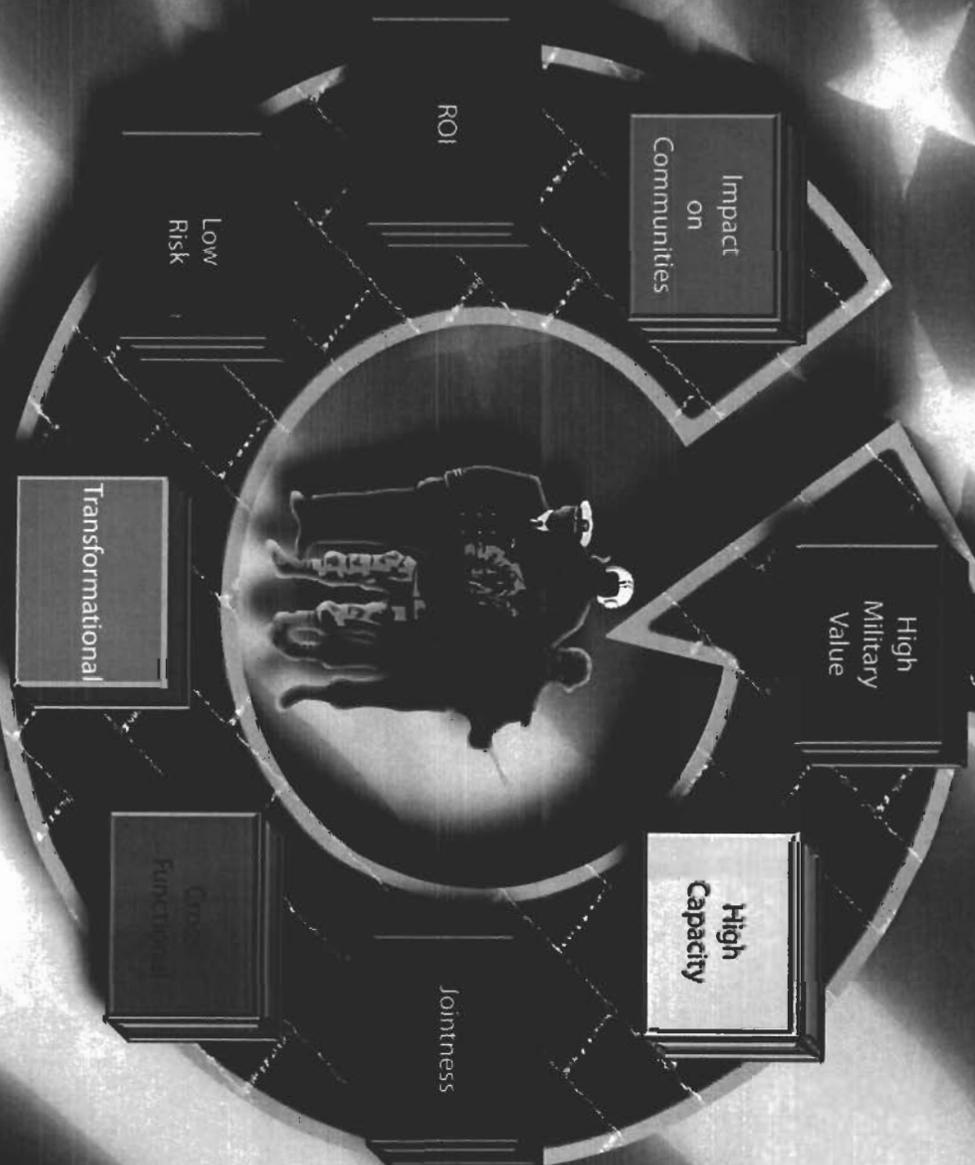
# Optimum BRAC Solutions

- ✓ Validate a DoD **Electrochemical Power Specialty Site** at NSA Crane.
- ✓ Change BRAC recommendation; move electrochemical power functions from Fort Monmouth to Electrochemical Power Specialty Site at NSA Crane.



# NSA Crane

## A Model Technical Defense Installation



Matching DoD's BRAC Goals in Electronic Warfare

missions



## DoD's Primary BRAC Goals\*

- ➔ Increase military value
- ➔ Reduce excess capacity
- ➔ Reduce costs

- ✓ Joint operations
- ✓ Multi-disciplinary/ multi-functional capabilities
- ✓ Mitigation of encroachment and environmental issues

*\* In consonance with DoD's Transformation Goals*

# BRAAC Precepts

- Minimize community impact of closures and realignments

- Maximize ROI and minimize cost

- Move functions to installations equipped to handle them, without impacting Operational Readiness

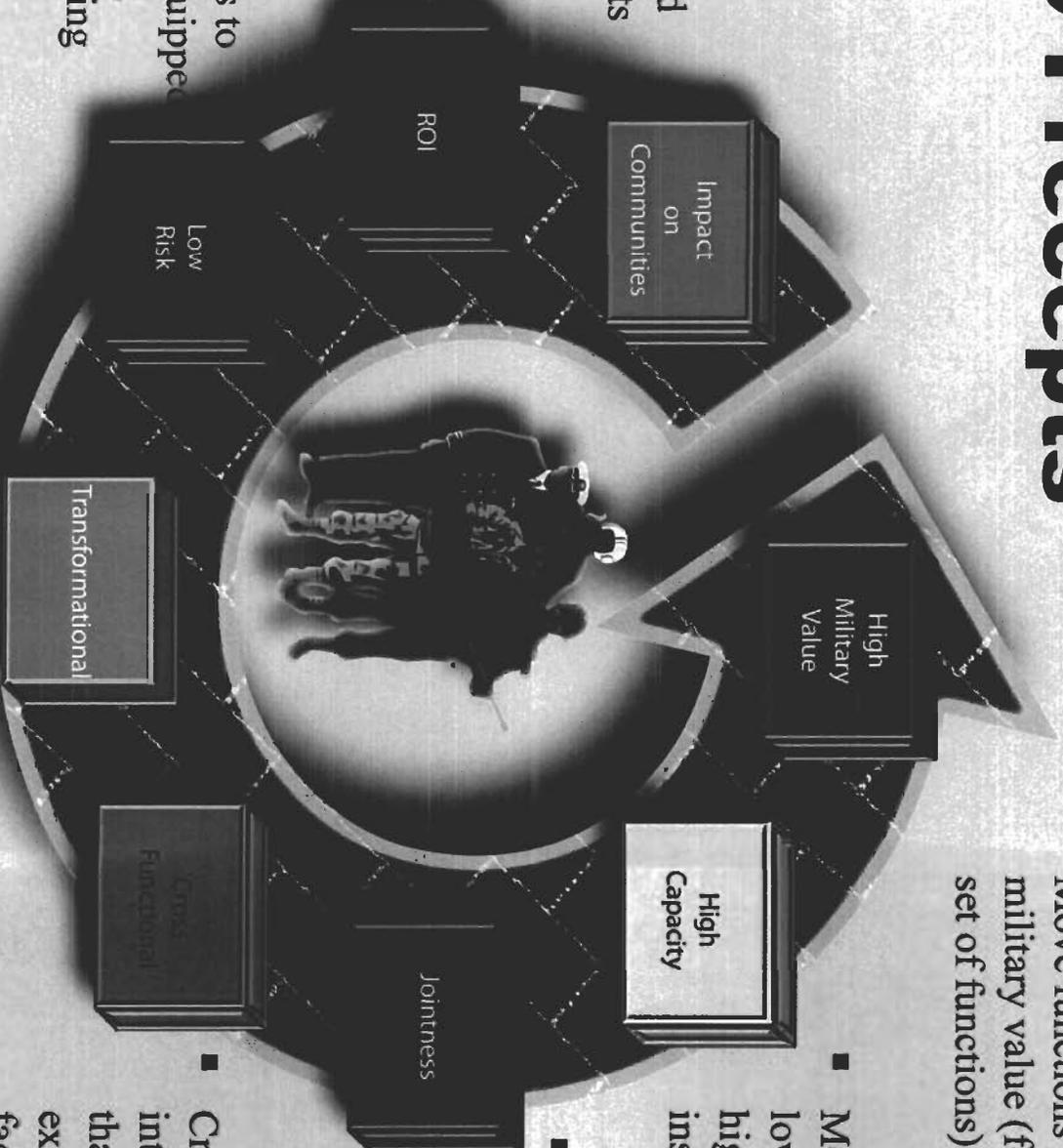
- Move functions from low to high military value (for the particular set of functions) installations

- Move functions from low to high capacity, high capability installations

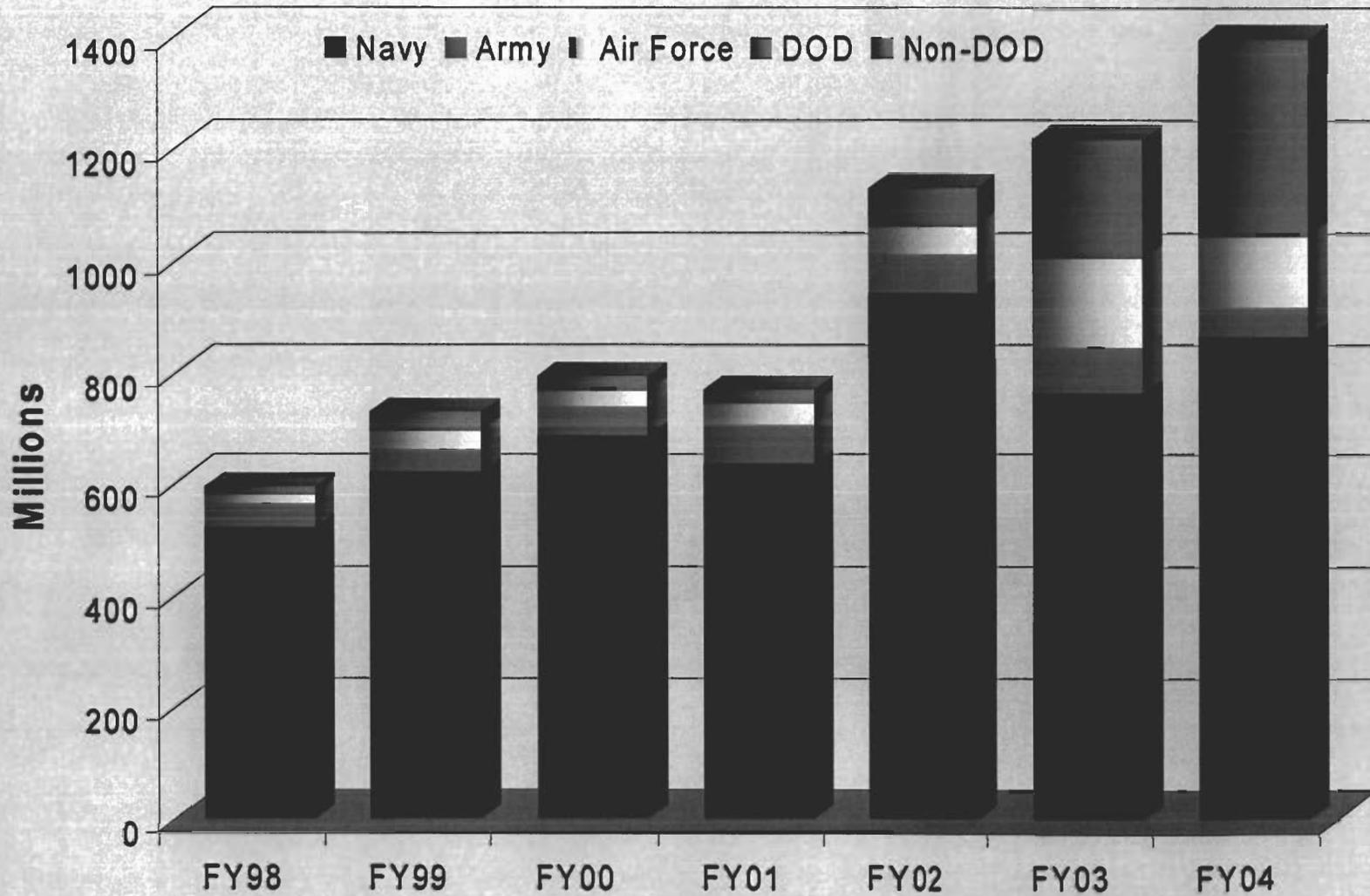
- Move functions to increase jointness

- Create synergies by integrating functions that use common expertise and facilities

- Adapt to future requirements in innovative ways



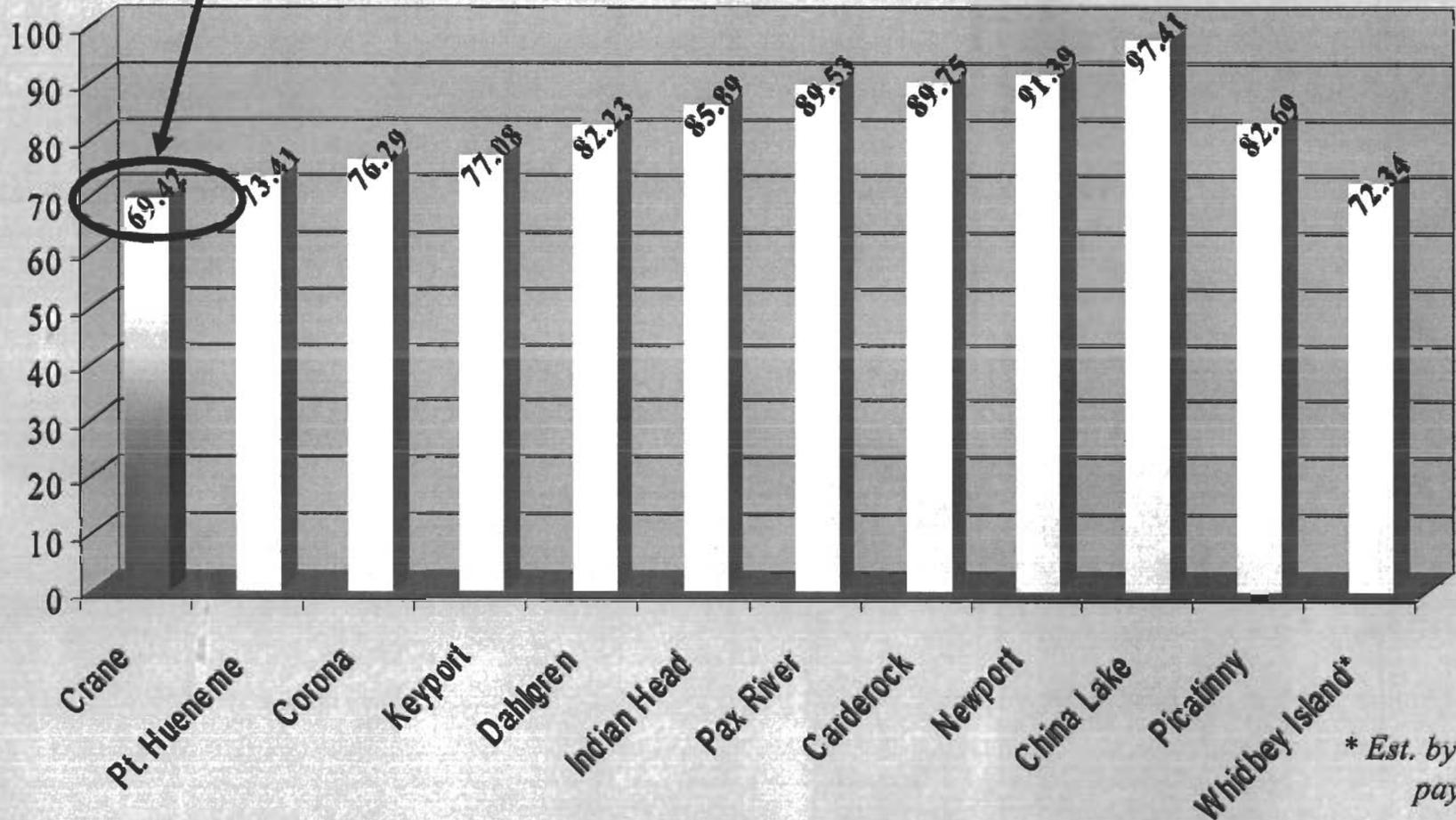
## NSWC Crane Model Installation High Military Value, Joint Workload, Low Cost



Net receipts have increased 67% since 9/11. DoD increase reflects Special Missions ~20-fold increase.

**Lowest manhour costs**

# FY05 Manhour Costs



\* Est. by Loc pay diff

- Installation of the Year Award for its “Business and process re-engineering” program
- Value Engineering Award for its lean manufacturing program

# NSA Crane

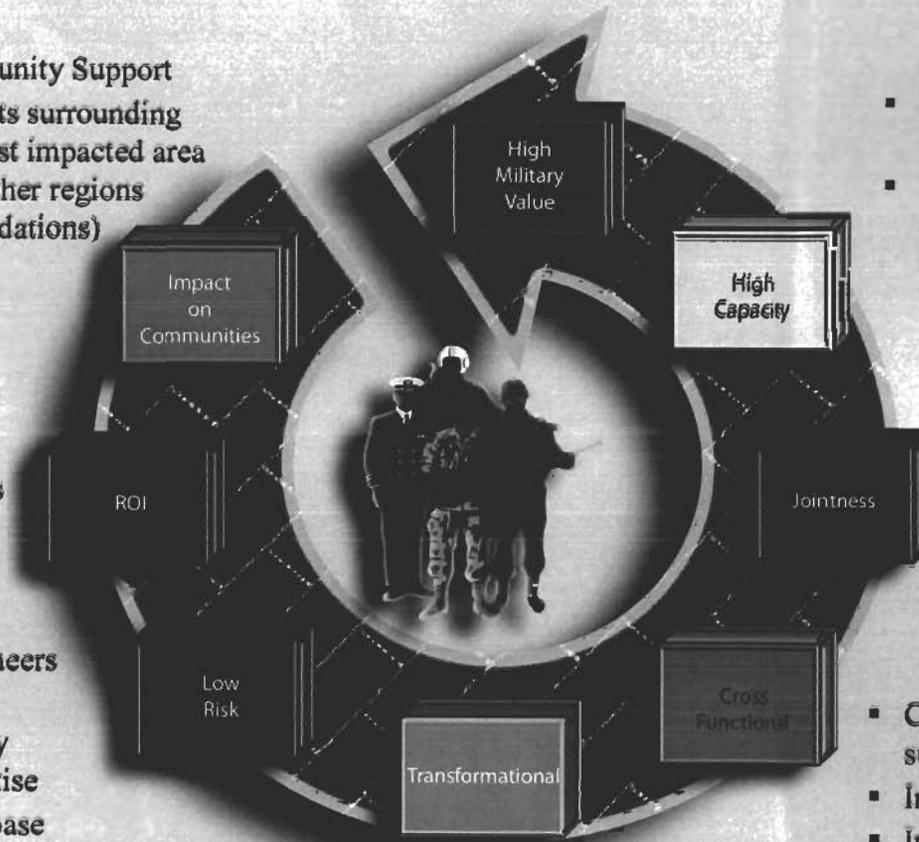
## Model Installation

- Highest EW and Special Missions military value
- Relevant to Warfighter's needs
  - Funding increased by 67% since 9/11
- No encroachment problems or environmental issues
- Low costs

- Tremendous State and Community Support
- Critical economic impact on its surrounding communities (has second worst impacted area in the US, compared to 241 other regions affected by BRAC recommendations)

- Modern facilities
- Lowest unit costs
- Highest ROI
- Multi-functional synergies
- Leverage assets across multiple services

- <3% turnover rate for engineers and technical staff
- Depth and breadth of highly specialized technical expertise
- Large technical recruiting base
- Rural, isolated location



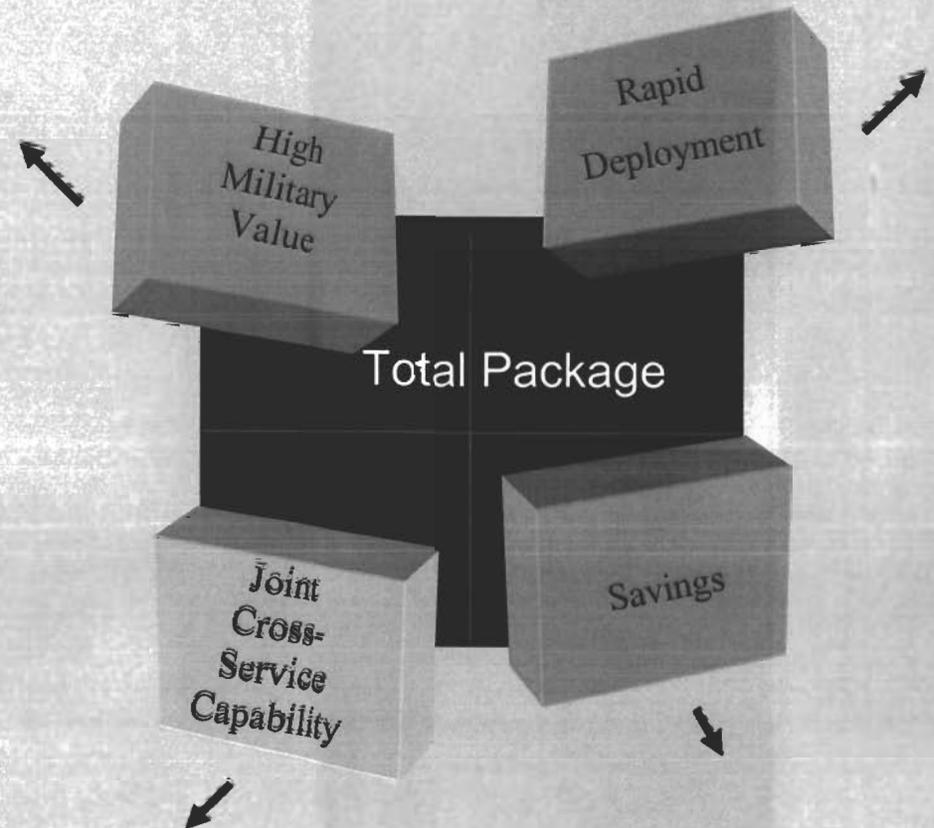
- World-class, modern EW and Joint Special Missions facilities
- Extended Special Missions facilities at Lake Glendora, Camp Atterbury and Muscatatuck Urban Training Facility
- Co-located Navy/Army commands
- Multi-functional, multi-disciplinary tasking across ordnance, electronics, and EW products and systems
- Multi-service support solutions

- Co-located, integrated, full life cycle support
- Integrated ordnance and electronics
- Integrated industrial and technical

- Business Process Reengineering Leader
  - \$29.3M savings from 2000-2003
- "Virtual" Warfighter support
- Rapid integrated solution deployment
  - \$200M, 2001-2003 Rapid Response Solutions
- Industry/academia/government partnerships

## NSA Crane Undervalued in DoD Report

- ☒ **Crane's Military Value undervalued**
  - Defense Technical Area Plans (DTAP) levels obscured Crane's functional Military Value (Special Missions/EW)
  - Classified products and services
- ☒ **Analyzed by "stove-pipe" teams**
  - Separate analysis by Navy, Army, Industrial Cross-Service, and Technical Cross-Service
  - Integrated industrial and technical capabilities not recognized
  - Joint work/customer base and Army/Navy co-location not recognized
- ☒ **No scenarios**
  - Early Navy target for closure, therefore, not looked at as receiving site
  - Evaluating Crane's High Military value
  - Assessing Crane's Model Installation attributes
  - Realigning functions from other sites to Crane
- ☒ **Limited Special Operations input**



*NSA Crane joint capabilities will be fragmented and the existing synergy will be negatively impacted.*

## DoD BRAC Electronic Warfare Recommendation

- (1) Realign NSA Crane, IN, by relocating the Depot maintenance workload and capacity for ALQ-99 EW to Fleet Readiness Center Northwest, Naval Air Station Whidbey Island, WA.

Precept	Violation/Disadvantage
High Military Value	Moves EW work from the highest EW military value activity, NSA Crane, to much lower EW military value activities. Depot operations will lose connectivity to highly specialized EW resources. (.6220→ .0.0)
High Capacity	Moves the ALQ-99 Depot from a high EW capacity to a low EW capacity activity. Relocating the ALQ-99 Depot requires Military Construction at receiving site, thereby increasing the footprint.
Jointness	Fractures a joint EW Specialty Site that supports all services. It moves one system's Depot operation to a single Service, in fact, a single platform, within one Service. ALQ-99 Depot operations will lose connectivity to EW technical expertise and resources.
Cross Functional	Moves the ALQ-99 Depot from a multi-functional, including engineering, acquisition, logistics, maintenance, and supply support, EW activity. This separates the maintenance from the highly skilled EW personnel and resources.
Transformational	Discards new and transformational virtual maintenance processes in deference to doing the same old maintenance processes at a new location.
Low Risk	Moving highly complex EW systems requiring millions of dollars of test equipment and losing available EW expertise is a high risk effort with a high probability of reduction in readiness. Developing microwave intellectual capital requires 3-5 years, resulting in a gap of support.
ROI	Moving the ALQ-99 Depot will cost \$195M with no positive ROI. This represents 95% of the investment dollars required for FRC Whidbey and over 50% of the entire FRC recommendation. The GAO has also questioned the magnitude of DoD's projected savings from the FRC concept in its BRAC analysis.
Impact on Community	The ALQ-99 BRAC impact on Martin County, Indiana, is 2.6% of the total 13.8%. Crane personnel also cannot afford to move to Whidbey Island because of a significant increase in cost of living.

# Electronic Warfare Analysis based on BRAC Precepts

	Military Value <sup>1</sup>	Capacity <sup>2</sup>	Jointness <sup>3</sup>	Cross Functional <sup>4</sup>	Risk <sup>5</sup>	Community Impact <sup>6</sup>	Overall Ranking <sup>7</sup>
NSWC Crane	High	High	High	High	High	High	18
Wright Patterson AFB	High	High	Medium	Medium	High	Low	14
NAS China Lake	High	High	Low	High	High	Low	14
Aberdeen Proving Ground	Medium	High	Low	High	Medium	Medium	13
NSWC Dahlgren	Medium	Medium	Low	High	Low	High	12
NAS Pax River	High	High	Low	Medium	Medium	Low	12
Edwards AFB	Medium	High	Medium	Medium	Medium	Low	12
Fort Monmouth	Medium	Medium	Low	High	High	Low	12
Eglin AFB	Low	High	Medium	Low	Low	High	11
NUWC Newport	High	Low	Low	High	Medium	Low	11
SSC San Diego	Medium	High	Low	High	Low	Low	11
SSC Charleston	Medium	Medium	Low	High	Low	Medium	11
NAS Point Mugu	Medium	Low	Low	High	Medium	Low	10
Fort Belvoir	Medium	Medium	Low	Medium	Medium	Low	10
Lackland AFB	Medium	Low	High	Low	Low	Low	9
Tobyhanna Army Depot	Low	High	Low	Low	Medium	Low	9
NAS Whidbey Island	Low	Low	Low	Low	Low	High	8
Hanscom AFB	Low	High	Low	Low	Low	Low	8
NUWC Keyport	Low	Medium	Low	Low	Medium	Low	8
NSWC Corona	Low	Low	Low	Low	Low	Low	6
	<sup>1</sup> Data from DOD Military Value Reports	<sup>2</sup> Data from DOD Capacity Analysis Report	<sup>3</sup> Data from various public sources	<sup>4</sup> Data from DOD Military Value Reports	<sup>5</sup> Data from DOD Analysis Reports and Public Sources	<sup>6</sup> Population Data from DOD JPAT Community Infrastructure Reports	<sup>7</sup> Sum of all Scores
	High: Total Military Value score > 1.0 in JCSG measured EW functional areas	High: > 500K sq-ft excess	High: Current EW Support for 3 or more services	High: Military Value in 3 or 4 JCSG measured EW functional areas	High: > 500 personnel in EW functions that would require movement or replacement	High: < 200K in either Metropolitan Statistical Area (MSA) or Military Housing Area (MHA)	High=3
	Medium: Total Military Value score > 0.5 and < 1.0 in JCSG measured EW functional areas	Medium: > 0 and < 500K sq-ft excess	Medium: Current EW Support for 2 services	Medium: Military Value in 2 of 4 JCSG measured EW functional areas	Medium: > 150 and < 500 personnel in EW functions that would require movement or replacement	Medium: > 200K and < 600K in either MSA or MHA	Medium=2
	Low: Total Military Value score < 0.5 in JCSG measured EW functional areas	Low: < 0 sq-ft excess	Low: Current EW Support for only 1 or no service	Low: Military Value in 0 or 1 of 4 JCSG measured EW functional areas	Low: < 150 personnel in EW functions that would require movement or replacement	Low: > 600K in either MSA or MHA	Low=1

## **Alternate Recommendations and Advantages (Electronic Warfare)**

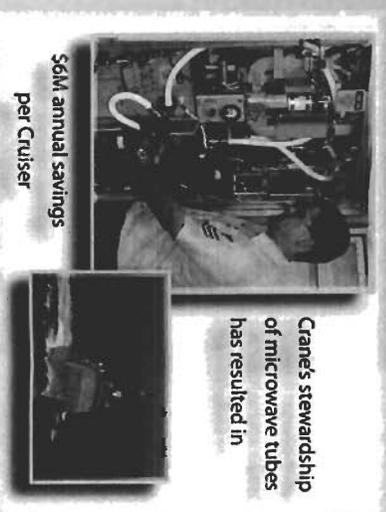
- (1) Create a DoD EW Specialty Site at NSA Crane
- (2) Delete the BRAC recommendation for relocating the ALQ-99 Depot workload and capacity from NSA Crane, IN, to FRC Northwest Whidbey Island, WA
- (3) Change BRAC recommendations and move EW functions from Fort Monmouth, Fort Belvoir, NWS Charleston, Naval Submarine Base Point Loma, and NAWC Division Point Mugu to NSA Crane

<b>Precept</b>	<b>Compliance/Advantage</b>
Military Value	Recognizes the integrated capability located in the highest military value activity.
High Capacity	Capitalizes on current capabilities and capacities and negates a MILCON requirement.
Jointness	Capitalizes on existing Joint Service capabilities.
Cross Functional	Capitalizes on extensive existing Joint multi-functional capabilities.
Transformational	Institutes transformational virtual maintenance processes.
Low Risk	Innovative processes are already tested with no additional risk. No emission encroachment (guaranteed by State law).
ROI	Capabilities are retained at a low cost, high military activity and \$195M in relocation costs are negated. Leverage multi-service assets and intellectual capital.
Impact on Community	Eliminates the specific impact on the local Community, and significantly reducing the cumulative negative impact on Martin County.

# Electronic Warfare Conclusions

*The recommendation to move the ALQ-99 to Whidbey Island violates all Precepts and cannot be justified.*

- Capitalize on Crane's critical mass of Joint EW Specialty Site with over 1,000 EW employees
- Validate a DoD joint EW Specialty Site at Crane
  - Best value in all major BRAC precepts
  - Unlimited space for growth
  - No encroachment that would curtail high power microwave emissions
- Retain the ALQ-99 Depot at Crane
  - Increases return-on-investment
  - Reduces significant cost and risk
  - Reduces economic impact on community
- Evaluate opportunities to enhance jointness by realigning additional EW support to NSA Crane from closing or other EW realignment



## DoD BRAC Weapons & Armaments Recommendations

- (1) Create a Naval Integrated Weapons & Armaments Research, Development & Acquisition, Test & Evaluation Center. Relocate all Weapons and Armaments Research, Development & Acquisition, and Test & Evaluation, except gun/ammo, combat system security, energetic materials, to Naval Weapons Station China Lake, CA.
- (2) Create an Integrated Weapons & Armaments Specialty Site for Guns and Ammunition. Relocate gun and ammunition Research and Development & Acquisition to Picatinny Arsenal, NJ.

Precept	Violation/Disadvantage
High Military Value	The assigned separate Military Value scores did not reflect the aggregate Military Value required by Joint Special Missions
High Capacity	Doesn't recognize the integrated Joint Service capacity associated with Crane in support of Special Missions
Jointness	Fragments existing Joint Service capabilities
Cross Functional	Fragments existing Joint multi-functional capabilities
Transformational	Dismantles the transformational style of adapting COTS/NDI products into tailored acquisition approval processes to achieve quick response solutions required to counter asymmetric threats
Low Risk	Fractures the existing integrated capability and capacity, requiring the use of several specialty sites to obtain the same capability which negatively impacts response time and, subsequently, Operational Readiness
ROI	Creates return on investment for these recommendations of 7 and 13 years respectively, which is out of synch with the 4-year objective
Impact on Community	The BRAC impact on Martin County, Indiana, is 11.1% of the total 13.8%. Second worst of the impacted 241 communities nationwide

# Integrated Military Value for Special Missions

Military Value Category	Joint Base Crane, IN	China Lake, CA	Picatinny, NJ
TJCSG Weapons Technology D&A	0.2292	0.4982	0.5251
TJCSG Weapons Technology Research	0.1754	0.5062	0.5272
TJCSG Weapons Technology T&E	0.0930	0.6391	0.0564
IJCSG Maintenance - Small Arms/Personal Weapons*	0.5203	0	0
IJCSG Maintenance - Conventional Weapons*	0.3220	0	0
IJCSG Munitions - Production	0.4836	0	0
IJCSG Maintenance - Electro-Optics/Night Vision/FLIR*	0.5645	0	0
IJCSG Munitions - Munitions Maintenance*	0.1951	0	0
IJCSG Maintenance - Electronic Comps. (non-airborne)*	0.4314	0	0
IJCSG Maintenance - IMA Ordnance/Weapons/Missiles*	0.1706	0.0592	0.0512
<b>Total Integrated Military Value for Special Missions</b>	<b>3.1851</b>	<b>1.7027</b>	<b>1.1599</b>

\* Maintenance capability includes maintenance, prototyping, and limited production.

## Alternate Recommendation and Advantages (Joint Special Missions)

(1) Create a DoD Integrated Weapons & Armaments Specialty Site for Joint Special Missions at NSA Crane, IN.

Precept	Compliance/Advantage
High Military Value	Recognizes the integrated capability that would be assigned the highest Joint Special Missions Military Value nationally
High Capacity	Capitalizes on recently constructed, unencumbered facilities that are equipped with modern technology, and environmentally permitted, in support of Special Missions
Jointness	Capitalizes on existing Joint Service capabilities
Cross Functional	Capitalizes on existing Joint multi-functional capabilities
Transformational	Capitalizes on a unique, world-class solution to DoD Joint Special Missions RD&A, T&E, and Training requirements
Low Risk	Provides a low risk option through competition of ideas, geographic separation, and sustainment of existing human capital
ROI	Provides a reduced implementation cost by maintaining capability at a low cost, high quality facility. Leverage multi-functional synergy and Joint Service assets
Impact on Community	Eliminates the specific impact on the local community, significantly reducing the cumulative negative impact on Martin County

## Special Missions Conclusions

- **Validate DoD Joint Special Missions Specialty Site at NSA Crane**
- Capitalize on Crane's critical mass of Joint Special Missions
- Retain a multi-functional, multi-disciplinary, transformational capability
- Capitalize on synergy of existing critical mass of Ordnance and Electronics Engineering
  - NSWC weapons/energetic materials expertise
  - NSWC electro-optics/electronics expertise
  - CAAA ordnance depot/industrial capability
  - Unique training/testing capability
    - Lake Glendora test facility
    - Indiana National Guard's Camp Atterbury and Muscatatuck Urban Training Center
- **Delete relocation of Weapons & Armaments and Guns & Ammunition from NSA Crane to China Lake and Picatinny**
  - Enhance military value of DoD Centers of Excellence concept
  - Reduce one-time implementation costs
  - Reduce economic impact on community
  - Recognize existing joint Service capability and capacity that meets BRAC goals and objectives
  - Maintain lowest cost over entire life cycle
  - Support geographic separation and continuity of operations



## Optimum BRAC Solutions

### ✓ **Validate a DoD Electronic Warfare Specialty Site at NSA Crane.**

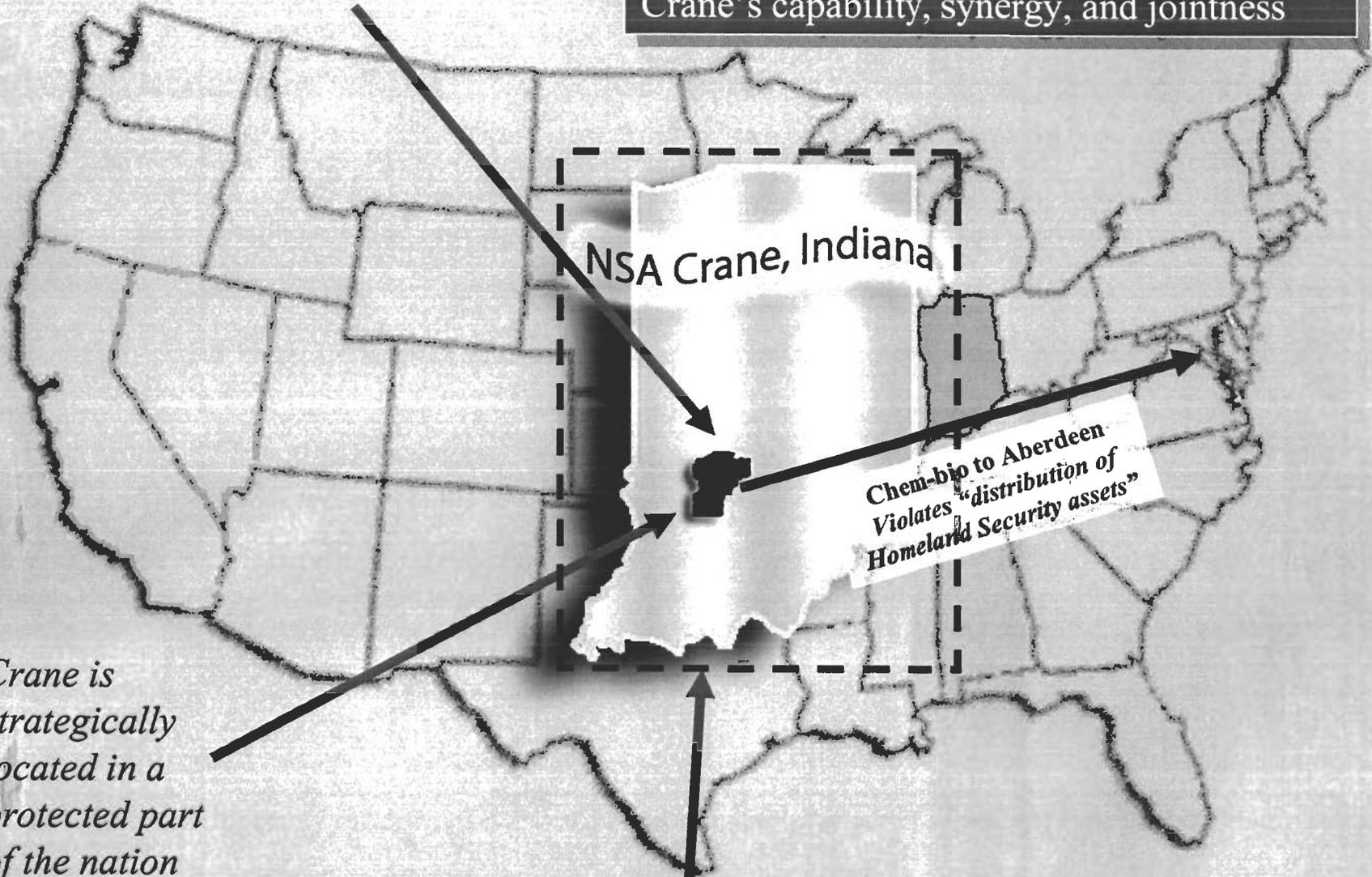
- ☒ Delete the BRAC recommendation that relocates the ALQ-99 Depot workload and capacity from NSA Crane, IN to FRC Northwest, NAS Whidbey Island, WA. (*BRAC Report, Vol. 1, Part 2 of 2, Section 6, page 22*)
- ☒ Change BRAC recommendations and move EW functions from Fort Monmouth, Fort Belvoir, Naval Weapons Station Charleston, Naval Submarine Base Point Loma, and Naval Air Warfare Center Weapons Division Point Mugu to the EW Specialty Site Crane, which has a higher military value. (*BRAC Report, Vol. 1, Part 2 of 2, Department of Army Section, pages 11-12; and Section 10, pages 9 and 28*)

### ✓ **Validate a DoD Integrated Weapons & Armaments Specialty Site for Joint Special Missions at NSA Crane.**

- ☒ Delete the BRAC recommendation that realigns Crane by relocating all weapons and armaments research, development & acquisition, and test & evaluation, except gun/ammo, combat security, and energetic materials to NAWS China Lake, CA. (*BRAC Report Vol. 1, Part 2 of 2, Section 10, page 15*)
- ☒ Delete the BRAC recommendation that realigns Crane by relocating gun and ammunition Research and Development & Acquisition to Picatinny Arsenal, NJ. (*BRAC Report Vol. 1, Part 2 of 2, Section 10, page 20*)

*Crane should be recognized as DoD critical product Center of Excellence (Specialty Site) in several areas*

*BRAC should enhance, rather than fragment, Crane's capability, synergy, and jointness*



*Chem-bio to Aberdeen  
Violates "distribution of  
Homeland Security assets"*

*Crane is strategically located in a protected part of the nation*

*Crane and Indiana can be a supplier of industrial-based support*

**DoD**

**SOCOM**

**BASE REALIGNMENT AND CLOSURE 2005**

**INDUSTRIAL CROSS-SERVICES GROUP  
NAVAL SUPPORT ACTIVITY CRANE, INDIANA**

**ELECTRONIC WARFARE RECOMMENDATION**

**ANALYSIS OF AND ALTERNATIVE RECOMMENDATIONS TO DOD  
BRAC RECOMEMENDATION**

**"Realign Naval Support Activity Crane, IN, By Relocating The Depot Maintenance  
Workload And Capacity For ALQ-99 Electronic Warfare To Fleet Readiness Center  
Northwest, Naval Air Station Whidbey Island, WA."**

**SIBA, Inc.**

*Southern Indiana Business Alliance*

**30 June 2005**

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**BRAC 2005**  
**INDUSTRIAL CROSS-SERVICES GROUP**  
**NAVAL SUPPORT ACTIVITY CRANE, IN**  
**ELECTRONIC WARFARE RECOMMENDATION**

## **1.0 INTRODUCTION**

The Department of Defense had the primary goals in the 2005 BRAC round of increasing military value and reducing excess capacity in consonance with the Department's Transformation Goals. Guidelines included emphasis on joint operations, multi-disciplinary capability, and mitigation of encroachment and environmental issues.

The Naval Support Activity (NSA) Crane hosts the Naval Surface Warfare Center (NSWC) Division Crane and the Crane Army Ammunition Activity (CAAA); co-located mission commands that perform multi-functional and multi-disciplinary tasking across ordnance, electronics and electronic warfare (EW) products and systems. These two commands have jointly built a cross service capability leveraging shared world-class facilities and a human intellectual capital that focuses on development, acquisition, sustainment, maintenance and distribution. In-depth integrated technical and industrial capabilities provide extremely agile, responsive, and complete support to Warfighters of all services.

NSA Crane, located in under-populated Southern Indiana has 63,000 acres, completely encroachment free; with no environmental issues; remote from potential terrorist threat; in close proximity to excellent roads, rail, and air transportation; with abundant power and water utilities; with extraordinary facilities; academic and industry partnerships; and, an almost unlimited technical workforce recruitment ability. NSA Crane gets very high marks when compared to DOD 2005 BRAC goals.

This discussion covers the Industrial Joint Cross-Service Group portion of BRAC 2005 recommendation to realign ALQ-99 EW Depot from NSA Crane to Fleet Readiness Center (FRC) Northwest. It is obvious from this analysis that the BRAC process did not take advantage of Crane's high military value and model installation attributes. There were no scenarios to investigate re-locating anything to Crane. In fact, if the BRAC EW recommendations remain, EW capabilities will be fragmented across the country and will negatively impact the existing synergy in the joint and transformational EW Specialty Site at Crane.

We are offering an alternative recommendation to establish an EW Specialty Site at NSA Crane. This recommendation greatly strengthens Military value and provides a much higher ROI when compared to the BRAC recommendation.

## **2.0 BRAC RECOMMENDATION**

"Realign NSA Crane, IN by relocating the Depot maintenance workload and capacity for ALQ-99 EW to Fleet Readiness Center Northwest, Naval Air Station Whidbey Island, WA."

## **3.0 BRAC RECOMMENDATION ANALYSIS**

The BRAC recommendation was analyzed by utilizing the Department of Defense primary goals of reducing excess capacity and increasing military value in consonance with the Departments' Transformational Goals. Guidelines include emphasis on joint operations, multi-disciplinary capability, and mitigation of encroachment and environmental issues. The analysis will show the BRAC recommendation to be in violation of the BRAC precepts.

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### **3.1 BRAC Precept – High Military Value**

It is impossible to tell from the BRAC data the overall technical and industrial EW military value as the data was not collected in this format. However, Crane's EW military value is the highest for Electronic Warfare as reported under the Industrial Joint Cross-Services Group Summary Military Value Report for maintenance and 2<sup>nd</sup> under the Technical Joint Cross-Services Group Analysis and Recommendations for Sensors, Electronics, and EW D&A. From past experience, we believe Crane is number *ONE* in DoD technical EW military value, as well as industrial.

Crane is the leading hi-tech facility in the whole of Southern Indiana, employing in excess of 1,500 Engineers, Scientists, and Technicians. These personnel support multiple products from power systems to EW, with approximately 700 personnel supporting functions in the EW Specialty Site. The recommendation to move the ALQ-99 Depot from a very high EW military value activity (Crane), to a very low EW military value activity (Whidbey) is in violation of the importance BRAC placed on military value.

### **3.2 BRAC Precept – High Capacity**

The BRAC criteria included movements from low to high capacity. It was also a goal to reduce the overall DoD footprint. The BRAC recommendation moves the ALQ-99 Depot from a high EW capacity activity to a low EW capacity activity. It also requires the military construction of additional capacity at NAS Whidbey Island. This is being done while Crane has over 700 personnel and world-class facilities and equipment in support of joint service EW systems. In addition to the costly MILCON at Whidbey Island, the issue of outdoor microwave radiation requirements for testing of microwave antennas and Radomes must also be addressed. The approval and establishment of microwave radiation testing capability required for the AN/ALQ-99 at Crane is very expensive and time consuming. The ALQ-99 movement requires extensive equipment and facility buildup at Whidbey that duplicates those at Crane. The military construction at Whidbey Island increases EW excess capability and is a violation of the BRAC capacity precept...

### **3.3 BRAC Precept – Jointness**

Crane is an EW Specialty Site supporting *Joint Services EW and Microwave Systems* for the Navy, Air Force, Marine Corps, Army, Coast Guard, and multiple countries. Services, platforms, and systems supported include:

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#### Navy

- (Airborne) • EA-6B (AN/ALQ-99, USQ-113, ALQ-218 V1)
- (Airborne) • F/A-18 C/D & E/F (ALQ-162, ALQ-165 ASPJ & ALQ-214 IDECM RFCM)
- (Airborne) • EA-18G (ALQ-218 V2, Communications Countermeasures system)
- (Airborne) • Next Generation Jammer
- (Airborne) • Low Drag RAM Air Turbine
- (Airborne) • E2-C (Advanced Hawkeye)
- (Airborne) • P3 Special Mission Avionics / EP-3 Aries
- (Airborne) • Multiple Aircraft (IR Countermeasures/Expendables)
- (Surface) • SLQ-32, SLQ-49, WLR-1, SQQ-82, Mk 245, NULKA, IR/Chaff Decoys
- (Sub-Surface) • BLQ-10, SSS-1, MOIS, CCS

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#### Air Force

- B-52 Stand-Off Jammer
- Advanced Material Decoy

	<ul style="list-style-type: none"> <li>• B-1 (Off-board countermeasures (Chaff, IR, and Microwave Deception)</li> <li>• Multiple Aircraft (ALQ-131, ALQ-135, ALQ-152, ALQ-155, ALQ-161, ALQ-184)</li> </ul>
Army	<ul style="list-style-type: none"> <li>• Wolfpack (Expendable, autonomous, ground-based monitor/jammer)</li> <li>• Demilitaration technologies for ordnance based EW (Flares, Chaff, etc.)</li> </ul>
Marine Corps	<ul style="list-style-type: none"> <li>• JSF (Electronic Attack Studies)</li> <li>• EA-6B (AN/ALQ-99, USQ-113, ALQ-218 V1)</li> </ul>
Coast Guard	<ul style="list-style-type: none"> <li>• WLR-1</li> </ul>
NATO	<ul style="list-style-type: none"> <li>• Threat seeker trials (IR measurements of foreign assets)</li> </ul>
SOCOM	<ul style="list-style-type: none"> <li>• Fleet Testing (IRCM)</li> </ul>
US/Australia/Canada	<ul style="list-style-type: none"> <li>• NULKA</li> </ul>

The BRAC recommendation fractures a truly *Joint EW Specialty Site* that supports all services. It moves one system's Depot operation to a single service, in fact a single platform (EA-6B aircraft) within a single service. This violates the BRAC jointness precept. It also violates the Office of Secretary of Defense (OSD) guidelines of capability basing (EW) vice threat basing.

### 3.4 BRAC Precept – Cross-Functional

Crane provides support across the life cycle for a large number of EW systems. The support is multi-functional, including engineering, acquisition, logistics, maintenance, and supply support. There are several other functional areas at Crane that support the EW Specialty Site including microwave tubes, power systems, interconnect devices, physical repair, failure analysis, antenna testing range, anechoic chambers, solid-state devices, corrosion control, wind tunnel, composite repair, and commercial off-the-shelf (COTS) technology.

The Crane EW Specialty Site is successful because the support functions of Research, Development and Acquisition, Test and Evaluation, and maintenance required are co-located and fully integrated. It is a *joint EW capability* with the resources to provide rapid response as needed by the Warfighter. The Site supports multiple EW systems across all Services. This supports the BRAC Cross-Functional precept. However, the BRAC recommendation minimally satisfies the Cross-Functional precept by consolidating the AN/ALQ-99 Depot to one of the numerous I level EA-6B sites. This stovepipes the maintenance process to a single service, single platform activity.

Crane was analyzed in the BRAC process by several "stove-piped" teams: Navy, Army, Industrial Cross-Service, and Technical Cross-Service. This tended to fragment its evaluation and not recognize its cross-functional integrated military value. The EW capability was evaluated by the Industrial and Technical Cross-Services teams separately. Yet, its value to the Warfighter lies in the integration of the industrial and technical capabilities.

### 3.5 BRAC Precept – Transformational

A major factor in establishing the Depot for ALQ-99, and numerous other EW and microwave systems and components at Crane was Crane's innovative approach to maintenance and extensive expertise and capability in microwave technology. Crane is a recognized leading activity in developing new and transformational maintenance processes in support of the Warfighter.

The BRAC recommendation only moves the ALQ-99 Depot from one location to another. No transformational changes in the maintenance process are involved. Approximately 60% of the ALQ-99 Depot workload originates from non-Whidbey sites. The BRAC action only combines the Depot with the

I level at Whidbey. Multiple other O and I level maintenance sites still exist and they will lose connection to the extensive EW Depot capabilities provide by Crane.

Crane, prior to BRAC, had already initiated virtual presence at all O and I level maintenance sites. When fully implemented, this will merge O, I and D level maintenance. Only the extremely difficult to repair assets will be moved back to the Depot for repair. This is done through using state of the art technology, making engineering and high-level technician expertise virtually available to the sailors in real time. Crane is the leading activity that can provide this state-of-the-art transformational support because of their EW and related technologies expertise. Through this technology, the EW technical data and expertise will be available to ALL ALQ-99 operating sites aboard ships, or land based at NAS Whidbey, MCAS Cherry Point, MCAS Iwakuni Japan, Reserve Units at NAF Washington DC, or the USAF Sembach, Germany Van Complex. With this approach, problems are resolved at the operating site, thereby minimizing the need to physically ship assets back to the Depot and minimizing the repair parts inventory.

The Crane approach is much more transformational and of higher military value than the BRAC proposal for several reasons.

- First, it enhances the readiness of the deployed Warfighter by quickly resolving the problem at the site and making that asset ready for issue.
- Secondly, it virtually connects the maintainer to Crane's vast EW capability allowing them to make changes in the EW system to meet new and evolving threats.
- It keeps the ALQ-99 maintenance integrated with the technical expertise and the cross-functional industrial and technical EW Specialty Site at Crane.

This alternative approach was validated by a Business Case Analysis (BCA) dated 22 November 2004. This analysis showed a ROI of 117.4% beginning on Fiscal Year 2007 to 950% for Fiscal Year 2010. This concept is currently being implemented. Some examples of its success include:

- NSA Crane installed a video learning capability at Whidbey to facilitate interaction between depot and I-level workers. Very early into the installation, Crane was able to view a transmitter chassis that was diagnosed as cracked and slated for depot level repair. Through video analysis, Crane EW engineers and technicians determined the crack to be superficial and the transmitter was returned Ready For Issue, negating the requirement to send it to the depot.
- NSA Crane provided materials and set-up for establishing new high-band radome maintenance at Whidbey Island. This virtual maintenance approach provides training and continuous interactive support, greatly reducing the total cost of ownership.

### **3.6 BRAC Precept – Low Risk**

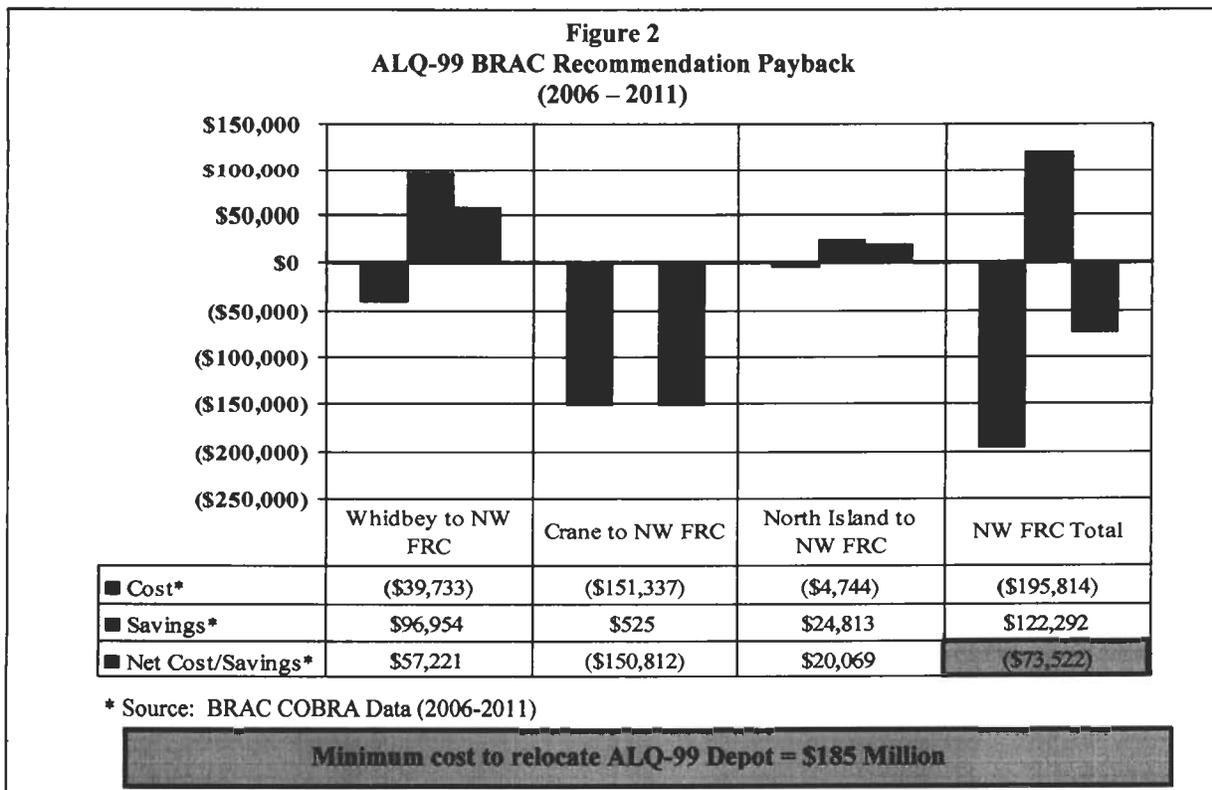
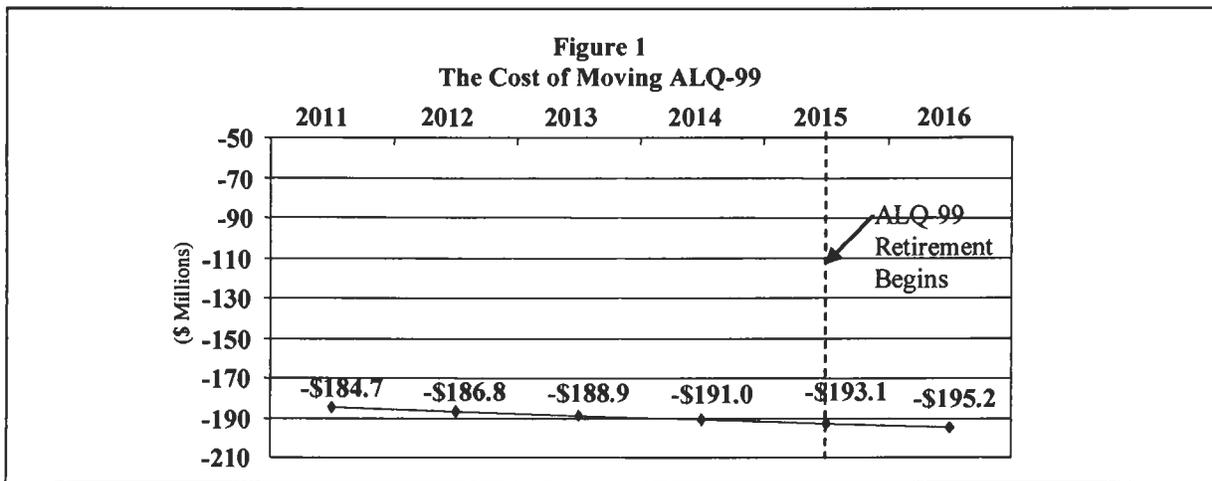
EW systems are technologically challenging. EW systems are extremely complex, with high technology, multiple sub-systems and components! EW is an enduring capability that requires utilization of emerging technologies. Microwave (MW) technology is the heart of EW systems and is a core capability at Crane. Examples of EW and associated technologies include: Radio Frequency (RF) Amplifiers, RF Antenna/Arrays, RF Receivers; RF Exciters, High Voltage Power Supplies, RF/Microwave Components; A/D & D/A Converters; Digital Beam Forming, Ram Air Turbine Generators, Composite Structures & Radomes, and of course, test, maintenance and operational software. *Support of such systems cannot be moved indiscriminately and still maintain long-term Fleet readiness.*

EW Engineers and Technicians are not recent graduates, as schools teach very few EW concepts. EW Engineers and Technicians are grown over long time periods and once lost are difficult to replace.

The ALQ-99 movement requires extensive equipment and facility buildup at Whidbey that duplicates those at Crane. The EA-6B ALQ-99 system is a “sunset” system with retirement plans in 2014/2015. With the expected relocation of only 5% of the maintenance expertise from Crane to Whidbey Island, it is very doubtful the expertise can be developed at Whidbey prior to the retirement of the ALQ-99. It appears the complexity of EW systems and the EW capabilities resident at Crane have not been analyzed by DoD and Navy decision makers. The ALQ-99 movement is high cost and high risk.

### 3.7 BRAC Precept – Return on Investment (ROI)

The cost of establishing the ALQ-99 Depot at NAS Whidbey is approximately \$195M (See Figure 1) through 2016 based on BRAC scenario data. The ALQ-99 cost represents approximately 95% of the total cost for establishment of the entire Northwest FRC. Analysis of the data shows **no positive ROI for movement of the ALQ-99 Depot**, thereby violating the BRAC ROI precept. Excessive costs



are being incurred on an aging system going into retirement. Figure 2 depicts the BRAC Northwest FRC cost and savings.

After analysis of the BRAC data, it appears the projected cost savings are invalid. The one-time and recurring savings on page 5/12 of the COBRA Realignment Detail report raised some serious questions about the claimed savings.<sup>1</sup> These savings are explained within notes on page 8 of the COBRA data. The majority of the one-time savings are:

- A projected cost savings for spare parts is supporting Operational Forces. These spare part assets are available as needed to maintain readiness. Reducing numbers of assets in allowance or moving assets around does not constitute a real DoD savings. It simply locates the assets and their worth somewhere else.

The majority of the recurring savings is included under:

- A cost savings for Depot maintenance. These funds are expended whenever an asset is not capable of repair at O or I level and is returned to D level for repair. There are three possible ways that these savings can be generated. One is less failures, which is highly unlikely on an aging aircraft and system. Secondly, the I level capability to repair could dramatically improve, but this is not likely without any innovative changes in the maintenance process. Thirdly, if the movement of assets from I level to D level is not recognized or documented it would not eliminate the cost to repair. It would just move the cost to another account. This process would also drive the Navy Supply System to recalculate the new price of the effected asset upward to make up the difference. It appears these BRAC documented cost savings are questionable.

### **3.8 BRAC Precept – Impact On Existing Communities**

Movement of the ALQ-99 comes with a very high price tag and questionable payback. According to the BRAC data, Martin County (Crane impact area) has the 2<sup>nd</sup> largest economic impact of any economic area (13.1% total for proposed BRAC realignments) in the BRAC study. This is catastrophic to an area that is already economically depressed.

Crane, Indiana has a much lower cost of living than Oak Harbor, Washington (NAS Whidbey Island) as indicated by the OSD BRAC database. This is indicative in the locality pay structure with Crane being 10.9% and Whidbey at 15.1%. This causes an automatic increase in labor costs of 4.2%. This will also have a significant impact on personnel moving a long distance across country. The median housing in Crane is \$98,773 and Whidbey \$223,100. This will not be affordable for most technicians.

## **4.0 CONCLUSIONS**

EW is a critical product area for our transforming military dealing with today's asymmetrical threats. The EW technology has commonality across all Services and platforms. Crane has the critical mass of a joint EW Specialty Site. It has the ability to grow with unlimited space and no encroachment that would curtail high power microwave emissions. Realignment of additional EW support to NSA Crane from closing or other EW realignment should be considered.

Detailed analysis comparing maintaining the ALQ-99 Depot at Crane vice moving to Whidbey is in favor of maintaining the Depot at Crane. Crane is the best value in all of the major BRAC precepts including; military value, capacity, jointness, cross-functional, transformational, risk, ROI and impact on existing communities. The BRAC recommendation of moving the Depot to Whidbey violates all of the BRAC precepts and cannot be justified.

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## 5.0 RECOMMENDATIONS

The analysis and conclusions warrant three recommendations that will increase military value and give a higher ROI:

1. Create a DoD EW Specialty Site at NSA Crane.
2. Delete the BRAC recommendation for relocating the ALQ-99 Depot workload and capacity from NSA Crane, IN to FRC Northwest, NAS Whidbey Island, WA.<sup>2</sup>
3. Change BRAC recommendations to move EW support functions from Fort Monmouth<sup>3</sup>, Fort Belvoir<sup>4</sup>, Naval Weapons Station Charleston<sup>5</sup>, Naval Submarine Base Point Loma<sup>5</sup>, and Naval Air Warfare Center Weapons Division Point Mugu<sup>6</sup>, which have **lower military value** to the **EW Specialty Site Crane with higher military value**. (See Attachment A)

<sup>1</sup> (COBRA v6.10) page 5/12: Department – Industrial; Scenario File – z:/Cobra/Maintenance/Working Cobra Submissions/MX 1.4P/IND0104 MX 1.4P 04272005.CBR;

<sup>2</sup> DoD Base Closure and Realignment Report, Volume 1, Part 2 of 2: Detailed Requirements, Section 6 Industrial Joint Cross-Service Group, Page 22.

<sup>3</sup> DoD Base Closure and Realignment Report, Volume 1, Part 2 of 2: Detailed Requirements, Department of Army Section, Page 11.

<sup>4</sup> DoD Base Closure and Realignment Report, Volume 1, Part 2 of 2: Detailed Requirements, Department of Army Section, Page 12.

<sup>5</sup> Technical Joint Cross-Service Group, Section 10, Page 9.

<sup>6</sup> Technical Joint Cross-Service Group, Section 10, Page 28.

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**Attachment A**

**Sensors & Electronic Warfare Consolidation  
at  
Naval Support Activity Crane**

**Specialty Site Capabilities & Capacities:** As indicated by industrial and technical military value scores and capacity information, Naval Support Activity (NSA) Crane possesses extensive capabilities to support multi-platform, multi-Service Sensors & Electronic Warfare (S&EW) systems. NSA Crane presently provides a full spectrum of Research, Develop & Acquisition, Test & Evaluation and Maintenance/Repair services and products for numerous Radio Frequency (RF) / Microwave based systems. This support covers land-based, surface/sub-surface and airborne S&EW systems, including Electronic Attack (EA), Electronic Protection (EP), EW Support (ES), Intelligence, Surveillance & Reconnaissance (ISR) and Radar systems. EW systems supported (ALQ-99 and SLQ-32) are extremely complex systems, comprised of multiple “black boxes” of widely varying RF, digital and analog technologies integrated together and controlled by operational software. NSA Crane capabilities outside of direct S&EW Divisions also bring a synergy for “one-stop shop” capability. These include capabilities for failure analysis, environmental testing, COTS/Diminishing Manufacturing Sources, printed circuit board/cables, and micro-miniature repair.

Fort Monmouth/Fort Belvoir – The Sensor and Electronic Warfare (S&EW) systems supported at these sites, such as MLQ-40 Prophet, Shortstop/Warlock, PRD-13, TPQ-36/37/47 and others are well within the capabilities and capacities of NSA Crane. Developmental efforts for new systems, such as Tactical SIGINT Payload, Aerial Common Sensor and block upgrade efforts to Prophet, are well within NSA capabilities and share process and technology similarities to on-going workload. Sustaining engineering and industrial efforts for Army S&EW systems are also well within the capabilities of NSA Crane. Opportunities for maximizing development of common technologies and sustaining support processes will be realized, reducing redundant efforts and individual Service costs and manpower requirements. NSA Crane also provides services and products related to logistics support (test equipment, publications, training, spares provisioning, asset management, etc). NSA Crane provides worldwide rapid reaction and sustained field support, providing technical support and repair for both operational systems and supporting test, evaluation and repair equipment.

NAWCWPNS Point Mugu – If relocated, NSA Crane, as an EW Specialty Site, provides a higher military value location than NSA China Lake. The EA-6B Weapons Systems Support Lab (WSSL) and Electronic Combat Systems Evaluation Lab (ECSEL) are specialty labs dedicated to support of EW systems performance analysis and operational software development and sustainment. NSA Crane currently has the capability and capacity for Software Support Activity (SSA) functions and currently executes SSA workload for the SLQ-32 shipboard EW system. NSA Crane’s EA-6B weapons system hardware engineering and maintenance capabilities, combined with our SLQ-32 SSA capabilities, make for an ideal location for the EA-6B WSSL and ECSEL labs and associated workload.

In the cases of relocating S&EW workload, as delineated above, the Specialty Site at NSA Crane offers the greatest potential for minimizing relocation costs and maximizing the long-term benefits and transformation sought through the BRAC process. NSA Crane possesses comprehensive, state-of-the-art facilities and equipments that provide a dual-use capability for both technical and industrial support of S&EW systems. Our workforce of engineers, technicians, logisticians, and acquisition professionals are skilled and experienced in all aspects of development, fielding and sustainment of highly complex, multi-platform weapons systems and their associated logistics support systems. NSA Crane is the major support site for all DoD S&EW systems.

All of these systems are similar technologies to those supported in the EW Specialty Site at NSA Crane. Movement of these systems to NSA Crane would be more cost effective than the splintered movement in the BRAC scenarios. It would also re-locate EW systems to the activity with the highest EW military value and achieve BRAC goals.

# CRANE NWS

Electronic warfare

move Electronic warfare from  
MANMOUTH TO CRANE vice  
Aberdeen

They go to Albany - seems  
A FY.

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Electro Chemical power -  
Batteries & Fuel Cells.

no movement out of  
CRANE

MANMOUTH does  
BATTERY R&D?