An Assessment of the Pentagon's Business Case for Realignment of Naval Air Station Brunswick

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Introduction

On May 13, 2005, the Department of Defense transmitted a report of its recommendations for base closures and realignments to Congress and to the 2005 BRAC Commission. Among the actions recommended is the following:

> *"Realign Naval Air Station Brunswick, ME to a Naval Air Facility and relocate its aircraft along with dedicated personnel, equipment and support to Naval Air Station Jacksonville, FL. Consolidate Aviation Intermediate Maintenance with Fleet Readiness Center Southeast Jacksonville, FL."*[1]

According to the report, the realignment is justified because it "will reduce operating costs while single siting the East Coast Maritime Patrol community at Naval Air Station Jacksonville." The recommendation postulates that a one-time investment of $147.6 million will result in annual recurring savings of $34.87 million with an expected 4-year payback and a 20-year net present value savings of $238.77 million.

This study examines the assumptions, data and analytical methods used by the Department of the Navy that led to the above recommendations and demonstrates that errors and omissions were committed in the Navy's analysis. The most significant error was to base the 20-year financial analysis solely on the P-3C aircraft, while ignoring the fact that the Navy plans to begin phasing out the P-3 in FY12, replacing them with a smaller fleet of contractor-maintained P-8 Multi-mission Maritime Aircraft (MMA). [2] The MMA is a key element in the Navy's 20-year Force Structure Plan.[3]

When these flaws are corrected, this analysis demonstrates that the sole justification for this proposed realignment action—to reduce operating costs—is not met.

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[1] DOD Base Closure and Realignment Report to the Commission; Department of the Navy, Analysis and Recommendations (Vol. IV) *Recommendation for Realignment Naval Air Station, Brunswick Maine*, Page C-11

[2] "The present plan is to stand down a P-3 squadron in FY12 for training and transition to the first MMA squadron." *NAS Jacksonville MMA Site Evaluation (Preliminary),* Page 24

[3] Note: Public Law 101-510 requires that the Department of Defense base its BRAC recommendations on its 20-Year Force Structure Plan.

Importance of Costs/Savings as Evaluation Criteria

The Base Closure Act stipulates that base closure/realignment recommendations will be based primarily on four Military Value criteria. One of the four criteria is, "The cost of operations and manpower implications."

In fact, the Navy's entire justification for relocating NAS Brunswick squadrons to NAS Jacksonville is to ***reduce operating costs*** by merging depot and intermediate maintenance activities thus "reducing the number of maintenance levels and streamlining the way maintenance is accomplished with associated significant cost reductions."[4]

There is no claim that the realignment will enhance homeland security, improve readiness or increase mission capability in any way. Therefore, it is of critical importance that the 20-year financial analysis be consistent with the Navy's 20-Year Force Structure Plan.

The COBRA Model

All BRAC recommendations must be supported by cost analysis using an economic analysis program known as Cost of Base Realignment Actions, or COBRA. The current COBRA model, version 6.10, is the latest derivative of a computer program developed by the US Air Force in 1988 and has been adapted for use in each BRAC round since.

One of the criticisms of COBRA is that it is not really a strategic model, yet it is being used to support strategic decisions. There are no provisions in the model for assessing financial risk factors. There is no "best case, worst case" scenario analysis. The model takes six years of data and projects 20 years of results without any consideration of external economic, political, or national security issues.

COBRA was designed as a universal tool for comparing the net costs/savings of various base realignment scenarios. However, like most universal tools, there are shortcomings when it comes to handling non-standard situations. While the model is useful for estimating the costs of relocating/eliminating personnel and equipment—and of building/demolishing facilities—it not capable of dealing with the complexities of Navy operations, mission productivity and evolving mission requirements.

One serious shortcoming is the fact that the COBRA model does not have provisions for entering changes that are planned/expected after year six. "COBRA calculates the costs and savings of realignment actions over a period of 20 years. It models all activities (moves, construction, procurements, sales, closures) as taking place during the first 6 years, and thereafter all costs and savings are treated as steady-state."[5]

Failure to recognize this limitation and deal with it correctly can lead to results that are far off the mark.

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[4] DOD Base Closure and Realignment Report to the Commission; Department of the Navy, Analysis and Recommendations (Vol. IV) *Recommendation for Realignment Naval Air Station, Brunswick Maine*, Page C-11

[5] *COBRA Users Manual,* Page 4

DOD Data Releases

The initial round of data released by the Pentagon on May 23 included a 35-page printout generated by the COBRA model—a report of the NAS Brunswick realignment scenario. (See Attachment 1). The following table is from page one of the COBRA Summary Report for the proposed NAS Brunswick Realignment Scenario DON-0138B:

Starting Year:	2006
Final Year:	2011
Payback Year:	2015 (4 Years)
NPV in 2025 ($K):	-238,771
1-Time Cost ($K):	147,156

Net Costs in 2005 Constant Dollars ($K)

	2006	2007	2008	2009	2010	2011	Total	Beyond
MilCon	3,154	0	45,016	45,459	19,015	0	112,645	0
Person	-120	-647	-1,202	-2,589	-5,263	-21,889	-31,709	-38,711
Overhd	3,987	2,975	2,877	3,304	3,310	2,382	18,834	1,321
Moving	0	0	300	2,189	2,310	1,655	6,454	0
Missio	0	0	0	0	0	0	0	0
Other	0	0	125	1,037	2,110	3,118	6,390	2,518
TOTAL	7,022	2,327	47,116	49,401	21,482	-14,734	112,615	-34,872

	2006	2007	2008	2009	2010	2011	Total
POSITIONS ELIMINATED							
Off	2	2	0	1	1	32	38
Enl	0	6	3	7	20	272	308
Civ	0	0	0	5	15	37	57
TOT	2	8	3	13	36	341	403
POSITIONS REALIGNED							
Off	0	0	0	107	134	36	277
Enl	0	0	0	705	686	303	1,694
Stu	0	0	0	0	0	0	0
Civ	0	0	0	0	0	4	4
TOT	0	0	0	812	820	343	1,975

Additional data releases included the COBRA Users Manual, the Algorithm Manual and other supporting documents. Then, on June 8 DOD released additional data in the form of dozens of Redacted Scenario Data Calls. These data calls provided most of the information required to understand the proposed scenarios. The recommended NAS Brunswick Realignment is scenario number DON-0138B and is defined by six Scenario Data Call files.[6]

[6] Six scenario data files are: COMFLTFORCOM_NORFOLK_VA.pdf, COMPATRECONWING_FIVE_BRUNSWICK_ME.pdf , NAS_BRUNSWICK_ME.pdf, NAS_JACKSONVILLE_FL.pdf,, NAVAIRES_BRUNSWICK_ME.pdf, and NAVRESCEN_BANGOR_ME.pdf

Deconstructing the Navy's Cost Analysis

In deconstructing the COBRA scenario report and data calls, our analysts identified errors that raise serious concerns about the validity of the DOD case for realigning NAS Brunswick. The errors were primarily due to the following factors:

- **Basing the cost analysis solely on the P-3** without accounting for planned reduction in support requirements due to the MMA program. It is clear from their own documentation that Navy analysts were aware of the MMA's reduced support requirements. They refer to, "...the smaller operational "footprint" of the Multi-mission Maritime Aircraft (MMA) as compared to the P-3." Yet, their cost analysis is based entirely on the high manpower requirements of the P-3.
- **Failure to account for aircraft operating costs** such as the costs of relocating squadron aircraft to NAS Jacksonville and the additional mission costs of flying up to 1100 miles (each way) farther to reach operating areas, multi-national exercises and standard deployment sites.
- **Unrealistic assumptions concerning the timing of Military Construction** at NAS Jacksonville and ability to accommodate Brunswick squadrons according to the proposed schedule.

Six remarkable errors are discussed in the following paragraphs, along with an analysis of the financial impact of each error and the recommended corrective actions:

1) **Overstated Personnel Savings.** The Navy's entire business case for single-siting east coast P-3s rests on the theoretical elimination of 403 Personnel beginning in 2011 and continuing through the "beyond" years 2012-2025 (refer to table on page 5). Yet, many of the positions identified for elimination are already slated for elimination as the P-3 fleet progressively stands down beginning in FY12. Even if the proposed ambitious relocation schedule were met, it would be improper to credit the BRAC realignment with eliminating these positions for 15 years.

   Analysis

   The replacement P-8 will be contractor-maintained by Boeing under a Contractor Logistics Support (CLS) program. A large part of the justification for replacing the P-3 with the P-8 was the savings that would result from the elimination of AIMD and other military maintenance positions.

   The CPRW-5 Scenario Data Call[7] and the NAS Brunswick Data Calls[8] provide a breakdown of positions proposed for elimination. The following is a list of eliminated positions that have been improperly credited to BRAC realignment.

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[7] *CPRW-5 Scenario Data Call DON-0138B, pages 4-5*

[8] *NAS Brunswick Data Calls DON-0138, pages 7-9, and DON-0138B, pages 4-6*

Aircraft Maintenance/Supply Positions Eliminated

	Officers	Enlisted	Civilian	TOTAL	Reference
AIMD	8	91	-	99	DON-138B CPRW-5 Data Call
ASD	1	19	2	22	DON-138B CPRW-5 Data Call
Aviation Supply Support	-	11	25	36	DON-138 NASB Data Call
TOTAL	9	121	27	157	

It is wrong to credit BRAC with eliminating maintenance/support positions that are programmed for elimination under the MMA program. ***This error alone results in an understatement of Personnel Costs by $13.8 million annually.***

(Note: Even the additional 250+ Aviation Intermediate Maintenance and Aviation Supply (AIMD/ASD) positions slated to relocate to Jacksonville in FY09-FY11 will be phased-out starting in FY12 when the first P-3 squadron stands down.)

Recommended Corrective Action.

This COBRA scenario should be run again after reducing the proposed 403 eliminations by the above 157 positions. This can be accomplished on *Input Screen Six (Brunswick)* by correcting the user entries under *Scenario Changes by Year (+ Additions/-Eliminations).*

2) **Overstated Facilities Shutdown.** Scenario DON-0138B (Input Screen Five) assumes that 874,000 sq ft of facility space would be closed due to the realignment.

Analysis

According to the relevant data call file, 126,000 sq ft is attributable to AIMD shutdown.[9] This should not be recognized as a BRAC benefit because AIMD is already slated to be shutdown due to the MMA CLS program. Only the remaining 748,000 sq ft of facilities shutdown should be counted as BRAC savings. ***This error results in an understatement of overhead costs by $415,000 annually.***

Note: A footnote for *Input Screen Five* states, "Brunswick has included costs that appear to be for a closure and not for a realignment."

Recommended Corrective Action

Correcting for this error is accomplished on *Input Screen Five (Brunswick)* by changing the number of *Facilities Shutdown (KSF)* to 748,000 sq ft.

3) **Ignored Mission Costs:** There are no Mission costs shown in the scenario summary, even though NAS Jacksonville is much farther than Brunswick from North Atlantic operating areas, multi-national exercises and most deployment sites. The COBRA Users Manual states:

[9] *NAS Brunswick Scenario Data Call DON-0138B, DoD54330, page 16*

"... the analyst/user should primarily consider whether the costs/savings are mission or support related. The most important thing is to capture all known costs/savings incurred with the realignment action."[10]

Analysis

An analysis of P-3 deployment sites, operational areas and exercise areas shows that Jacksonville is 800 to 1100 miles farther from most of these locations than is NAS Brunswick. This increases flying time by 4 to 7 hours per round trip, at a cost of $7,876 per P-3 flight hour.[11] For example, a single round trip to Sigonella or the Mid East will cost an additional $55,000 in the P-3 (estimate 1/3 less for the P-8.) As shown in the accompanying analysis, [12] this error results in an ***understatement of recurring Mission Costs by $2.5 million annually.***

Recommended Corrective Action.

This COBRA scenario should be run again after entering the appropriate value on *Input Screen Five (Brunswick)* under *Activity Mission Costs ($K)* year 2011. According to our analysis, a value of $2.5 Million is justified.

4) **Understated Moving Costs.** The COBRA analysis is very detailed in calculating the costs of moving people, vehicles, household goods, etc. to Florida. However, it makes no allowance for the cost of relocating the aircraft. Nor, does it make any allowance for the numerous liaison flights that will take place between Brunswick and Jacksonville before, during and after the move. These are all one-time moving costs.

Analysis

It costs over $27,500 to fly each P-3 the 1100+ miles from Brunswick to Jacksonville. Even if the squadrons move during deployment, they will have to fly an additional 2.5-3.5 hours to reach NAS Jacksonville. This error results in an ***understatement of Moving Costs by $2.6 million.*** (See the analysis in attachment 2)

Recommended Corrective Action

It is recommended that the COBRA scenario be run again after allowing for the cost of flying squadron aircraft between Brunswick and Jacksonville. Correcting for this error can be accomplished on *Input Screen Five (Brunswick)* by increasing the values for *One-Time Moving Costs ($K).* Our analysis indicates that corrective values should be 1,285 ($K) in year 2010 and by 1,285 ($K) in year 2011.

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[10] *COBRA Users Manual, page 30*

[11] From *FY 2004 Navy VAMOSC Data* (available on-line to registered users.)

[12] See Attachment 2

5) **Overstated MILCON Cost Avoidance.** Under the original base closure scenario, Navy analysts claimed $6.7 in MILCON Cost Avoidance due to:

- Cancellation of the demolition of Hangar 1. "Hangar 1 is scheduled to be demolished in FY2006 as part of P-121."
- Cancellation of P-175, Weapons Magazine Replacement. "This project is currently under design and could be cancelled as a result of this scenario with the listed cost avoidance."[13]

Analysis

These credits, while correct for a base closure, were incorrectly carried forward to scenario DON-0138B. If NAS Brunswick were converted to an active Naval Air Facility, it would still be necessary to demolish Hangar 1 (it is literally falling apart) and it would still be necessary to complete the Weapons Magazine Replacement in order to support future detachments of operational aircraft. This error results in an ***understatement of Military Construction Costs by $6.7 million***.

Recommended Corrective Action

Correcting for this error is accomplished on *Input Screen Five (Brunswick)* by deleting the 6,700 *Mission Milcon Avoidance ($K)* under year 2006.

6) **Unrealistic MILCON Time-Phasing**. According to a note in the CPRW-5 Scenario Data Call DON-0138B, the first Brunswick Squadron "relocates in FY09 upon completion of hangar MILCON."[14]

Analysis

Scenario DON-138B shows Military Construction beginning in 2008. Yet the space where hangars and ramps will be built will not be available until 2009 or later because active S-3 squadrons currently occupy them. [15]

The relocation schedule used in this realignment scenario is unrealistic. In running the COBRA model, the analyst used default settings for MILCON time-phasing. This means that each year's MILCON is proportional to the following year's personnel transfer; so, nearly half of the construction would occur in 2008. Most of the rest would occur in 2009.

The scenario also wrongly indicates that NAS Jacksonville would be able to accommodate 50% of Brunswick's squadrons when MILCON is half complete. It doesn't work that way. You can't put aircraft, or people, into a half-finished hangar. No squadron relocation could take place until all MILCON is complete.

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[13] *NAS Brunswick Scenario Data Call DON-0138B, DoD54329, pages 15-16*

[14] *CPRW-5 Scenario Data Call DON-0138B, reference DoD54310, page 6*

[15] *NAS Jacksonville Scenario Data Call DON-0138B, reference DoD54333, page 7*

The argument that the schedule is unrealistic is supported by language in NAS Jacksonville's Data Call DON-0138B[16] as follows:

> "NAS Jacksonville has no available hangar space suitable to house the types of aircraft that are relocating. Per latest NAVFAC planning criteria, each relocating squadron is entitled to one Type II hangar module. Quantity is based on a total of five modules."
>
> "NAS Jacksonville currently has an existing deficit of aircraft parking apron. Based on the type and quantity of aircraft proposed for relocation, and based on current NAVFAC planning criteria, a total of 197,085 SY of new parking apron and taxiway is required. However, there is insufficient area available to construct this amount of new parking apron. In order to provide the required amount of apron space, it will be necessary to demolish existing hangars 113, 114, 115, and 116."
>
> "The S-3 squadrons are being decommissioned over the next five years, thus freeing up these hangars for demolition. Due to the size of the hangars, they are not suitable to accommodate any of the squadrons and aircraft proposed for relocation."
>
> "Due to the age and potential historical nature of these hangars, Level II historical documentation will be required."
>
> "Child Street, a major traffic artery on NAS Jacksonville, must be relocated. Unless Child Street is relocated, there is insufficient area available to construct the required hangar and parking apron."

Therefore, it is extremely unlikely that the proposed new hangars will be ready to occupy before FY11. Thus, the entire realignment action would be pushed back several years into the timeframe when P-3 squadrons are transitioning to the new P-8 MMA.

It is impractical to estimate the value of this cost error without running an entirely different scenario based on new (corrected) scenario data calls.

Recommended Corrective Action.

Given the above facts, DON should explain how it proposes to relocate Brunswick squadrons to Jacksonville according to the proposed schedule, given the requirement to:

1) Wait for S-3 squadrons to be decommissioned over the next five years
2) Re-route Child Street, a major traffic artery
3) Demolish four historic hangars
4) Build five new Type II hangar modules with adequate parking apron on the site of the old hangars

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[16] *NAS Jacksonville Scenario Data Call DON-0138B, reference DoD54333, pages 4-11*

Otherwise, scenario DON-0138B should be replaced with one based on a realistic schedule for MILCON at NAS Jacksonville.

Correcting Flaws in the DON-0138B Scenario Analysis

We used the COBRA model to measure the cost impact of the above listed errors and to test corrective actions. We first ran the model based on the original DON-0138B inputs in order to validate the accuracy and consistency of our data. This run successfully produced the same results as those released in scenario DON-0138B.

When the recommended Scenario DON-0138B is corrected for the above quantitative errors, the results are dramatically different than those postulated in the baseline analysis. The promised **4-year payback becomes a 9-year payback**. The promised **20-year NPV savings of $238.8 million are more like $56.5 million,** for an average of about $2.8 million (NPV) annually. The **Return On Investment is only 7.1%**. (See table below.)

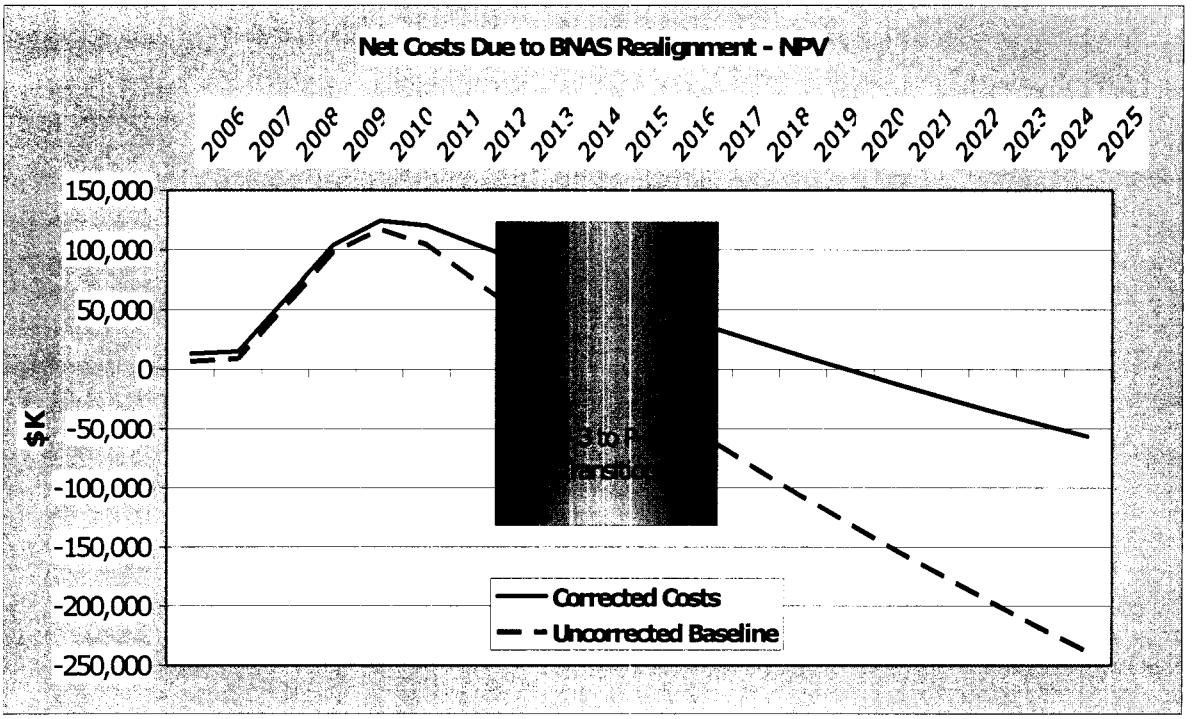
It is important to note that this analysis is based on the questionable assumption that the proposed realignment action can meet the proposed schedule. Even a one-year schedule slip would further diminish the financial case for this realignment action.

Starting Year:	2006
Final Year:	2011
Payback Year:	2020 (9 Years)
NPV in 2025 ($K):	56,460
1-Time Cost ($K):	147,305

Net Costs in 2005 Constant Dollars ($K)

	2006	2007	2008	2009	2010	2011	Total	Beyond
MilCon	9,854	0	45,016	45,459	19,015	0	119,344	0
Person	-120	-647	-1,202	-2,589	-5,263	-15,769	-25,590	-24,864
Overhd	3,724	2,778	2,730	3,266	3,386	2,821	18,705	1,856
Moving	0	0	300	2,189	3,594	2,727	8,810	0
Missio	0	0	0	0	0	2,531	2,531	2,531
Other	0	0	125	1,037	2,110	3,118	6,390	2,518
TOTAL	13,458	2,131	46,969	49,362	22,842	-4,572	130,190	-17,958

	2006	2007	2008	2009	2010	2011	Total
POSITIONS ELIMINATED							
Off	2	2	0	1	1	23	29
Enl	0	6	3	7	20	151	187
Civ	0	0	0	5	15	10	30
TOT	2	8	3	13	36	184	246
POSITIONS REALIGNED							
Off	0	0	0	107	134	36	277
Enl	0	0	0	705	686	303	1,694
Stu	0	0	0	0	0	0	0
Civ	0	0	0	0	0	4	4
TOT	0	0	0	812	820	343	1,975



Conclusion

The DOD's recommendation to realign NAS Brunswick by relocating its aircraft and support personnel to NAS Jacksonville does not consider the MPRA community transition from the P-3 aircraft to the MMA during the payback period. This factor alone has significant impact on the Navy's projected cost savings, and as our analysis has shown, changes the payback period and net present value savings in this scenario.

A review of the Department of the Navy's Analysis Group (DAG) meeting minutes reveals that as early as June 2004 Navy BRAC analysis teams were aware that the P-3 community would be transitioning to the Multi-mission Maritime Aircraft (MMA) as early as 2012. Further, the DAG was briefed in August of 2004 that the MMA aircraft would not fit into the current Type II Hangar Modules. Although these facts were apparent to the Navy evaluation teams, all scenarios concerning the closure or realignment of NAS Brunswick failed to consider the impact the introduction of the MMA would have on cost savings. Additionally, the Navy BRAC process never considered the fact that NAS Brunswick is currently the only Navy active duty airfield with a hangar module capable of hosting the MMA aircraft (a Boeing 737 derivative). The result was an inflated NPV savings figure and shorter than achievable payback period.

The only reason given for the realignment action was to save money through the elimination of personnel. Yet, the cost analysis is based on assumptions that over-estimate the number of maintenance personnel that will actually be eliminated under a realignment scenario. At least 157 of the eliminated positions are already slated for elimination by the

MMA program and should not be counted as cost savings over the 20-year payback period.

Another issue, that must be sorted out to gauge whether projected cost savings are realistic, concerns the schedule for Military Construction at NAS Jacksonville and the timing of NAS Brunswick squadron relocation. NAS Jacksonville's data calls reveal several challenging MILCON issues: demolish 4 historic hangars after filing historical Level II documentation; build 5 Type II hangar modules; build parking apron space, currently not available, but required before receiving any additional aircraft; and, re-route Child street. What was not mentioned in the data call will be a need for additional P-3 trainers for use by the four additional P-3 squadrons that NAS Jacksonville would receive.

Finally, the Navy's cost analysis ignored the cost issues associated with the higher Mission Costs due to the additional distances aircraft must fly on operational flights and deployments.

When the Navy's cost analysis is corrected to reflect the above additional considerations, the financial justification for realignment fails. The payback period becomes a more realistic 9 years and the purported 20-year NPV savings of $238.8 million is closer to $56.5 million.